Yojana

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Development Diary

Quantum Leap In Electronics

Electronics, one of the fastest growing sectors, accounts for more than four per cent of the output of Indian industry. In 1993-94, electronic goods worth Rs. 14,400 crore were produced of which goods worth Rs. 2,481 crore were exported.

The sectors with the strongest rate of growth have been computers, communication and consumer electronics. In the country, consumer electronics at present contributes about one third of the total electronics production. Consumer electronics goods include colour TVs, radios, video cassette players, electronic watches, toys and games.

Annual Plan 1995-96—Allocations For States & U.Ts.

There has been an 18.82 per cent increase in the states' Annual Plan allocations for 1995-96 in nominal terms as compared to the Annual Plan outlay for 1994-95. In real terms, assuming an inflation rate of 7 per cent in 1995-96, the growth rate is 11.05 per cent. The corresponding figures for all the states and union territories together are 18.45 per cent and 10.70 per cent respectively. The grant-loan ratio of normal Central assistance for State Plans continued to be 90 per cent grant and 10 per cent loan in the case of Special Category States and 30 per cent grant and 70 per cent loan in the case of Non-Special Category States. Details in respect of Plan outlay for the states, union territories and North-Eastern Council for the years 1994-95 and 1995-96 are given in cover III.

yojana

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Social Security Schemes

A Timely Fulfilment Of Budgetary Promises

Mahesh Prasad

POVERTY and unemployment have remained as the most pervasive problems in the country despite four and a half decades of planning. In the late 1960s the country had realised that the 'trickle down' effect of growth and the Community Development Programme, launched in 1952, would take a long time to lift the country out of the morass of poverty. Thus, during the tenure of Mrs Indira Gandhi as Prime Minister, special programmes of poverty alleviation and rural development were launched as part of the Sixth Five Year Plan.

The programmes have been continued since then by successive governments, although during 1991-92 the allocations for them were cut together with allocations under other heads to correct the fiscal imbalance in the Budget. The government soon realised that this was likely to cause hardship to the weaker sections of the society and in the two subsequent years, i.e. 1992-93 and 1993-94, the allocations were steeply increased and more than doubled from Rs. 3,100 crore in 1992-93 to Rs. 7,010 crore in 1994-95. In 1995-96 Budget it has been raised to Rs. 7,700 crore. A number of schemes aimed at social security were also announced.

The Prime Minister unfolded the multi-dimensional social assistance scheme for the poor, encompassing old-age pension, family benefits in the case of the death of the bread-earner and maternity benefits, besides a mid-day meal scheme, in a broadcast to the nation. The schemes, which take effect on a national scale from the Independence Day on August 15 are almost entirely funded by the Centre. In his broadcast, the Prime Minister emphasised that the government was committed to providing succour to the poor and the underprivileged sections in the country.

The schemes have to be viewed in the context of the magnitude of the problem facing the country. The incidence of poverty in the country was 29.9 per cent of the population in 1987-88 as per the latest census, declining from 39.4 per cent in 1983-84. However, the average for the country as a whole hides wide disparities among states. Punjab and Haryana had the lowest poverty in 1987-88 as against Bihar and Orissa, where more than 40 per cent lived below the poverty line. About unemployment, which is one of the main causes of poverty, the number of persons requiring employment during the Eighth Five Year Plan was estimated at 58 million. The Eighth Plan envisaged an employment-oriented strategy for accelerating growth in employment to a level of 8 million to 9 million per annum through faster growth of sectors with relatively high employment potential. As against the target, it is now estimated that additional employment opportunities created during 1992-93 and 1993-94 was of the order of 6.4 million and 5.6 million respectively.

It is in this light that one has to view the socio-economic welfare schemes announced by the Prime Minister. The schemes aim at providing succour to the aged and infirm, families that lose the bread-earner and maternity benefits to women for the first two children, besides giving the much needed impetus to primary education. It also seeks to give a fillip to the programme of setting up dwelling units under the Indira Awas Yojana. The schemes would be judged by the extent of the benefit reaching the target sections and the safeguards that are built into them to avoid leakages.

The first of the schemes announced by the Prime Minister was the National Social Assistance Scheme (NSAS). Under the scheme the poor and destitute aged 65 and above with no other means of subsistence would get old-age pension of Rs. 75 per month. The scheme envisages that beneficiaries would not have to knock at the door of the authorities concerned. The amount would be sent to them through money orders, or otherwise accounts could be opened in the names of the beneficiaries in post offices or banks. The procedure is intended to ensure that the small benefit intended for the aged reaches them.

Another component of the NSAS seeks to provide a lumpsum assistance of Rs. 5,000 in case of death due to natural causes of the primary bread-

earner of a family below the poverty line and Rs. 10,000 in case of death due to accident. Details of the scheme were being worked out and it is being implemented from August 15. Maternity benefit is the third component of NSAS, under which an assistance of Rs. 300 would be provided to mothers aged 19 years and above, belonging to a household below the poverty line for pre-natal and anti-natal care as also nutritional support for the first two live births.

Announcement was also made of a Rural Group Insurance Scheme. It aims at "taking insurance to the village." The scheme envisages a life cover of Rs. 5,000 for a "modest" premium of Rs. 60 a year for people upto the age of 40 and Rs. 70 for those between 40 and 50 years.

For the poor households, the premium is to be subsidised at 25 per cent each by the Centre and the state governments. There is also the facility of term insurance for the rural poor, with the person insured having to pay Rs. 3 or Rs. 3.50 per month. In the event of the death of the insured, the family would get Rs. 5,000. The scheme, aimed at promoting social insurance and thrift, will be implemented by the Life Insurance Corporation of India through panchayats. The full details of the scheme, which was intended to give security to the poor was being prepared.

Perhaps one of the most vital of the schemes to be implemented from August 15 is the National Programme of Nutritional Support to Primary Education, popularly known as the mid-day meal scheme, as it takes care of illiteracy, which is one of the root causes of many of the problems faced by the country. The Programme seeks to tackle the problem of drop-outs, which had resulted in the country having the largest number of illiterates. As the Prime Minister told the nation many schemes, including one of giving books free to children, had been initiated, but failed to check the problem of drop-outs. Several state governments had earlier started mid-day meal scheme, but it suffered from difficulties and had to be given up.

Under the Programme, the Centre would provide foodgrains to the villages from the nearest godown of the Food Corporation of India (FCI). The Centre would pay the cost of transportation of the foodgrains and would pay women, who cook the meals from the Jawahar Rozgar Yojana. Since the scheme would take sometime, say one year to implement, school-going children would get 3 kg. of wheat or rice per month, which they could take home, provided they had an attendance of 20 days per month. The entire country would be covered by the programme in three years. In the first year, the poorest regions of the country would be covered. The Prime Minister said in the past the country suffered from food shortage. Today, he said, it had three crore tonnes of foodgrains, from which they could easily provide 15 lakh tonnes for the scheme. There would, thus, be no difficulty on account of the availability of foodgrains. The outlay for the first year of the scheme, which is intended to give a push to achieving the goal of universalisation of primary education, would be Rs. 610.40 crore, which is expected to go up to Rs. 2,084 crore, when the programme becomes fully operational. The Prime Minister had already announced the government's decision to raise the allocation for education to six per cent of GNP by the end of the Ninth Plan.

The Prime Minister also spoke of building dwelling units for those having the sky as a roof over their heads. Under the Indira Awas Yojana for constructing dwelling units, started ten years back, only 18 lakh units were constructed. During the current financial year 10 lakh units would be constructed for those below the poverty line. With this initiative, 50 lakh dwelling units would be built in the next five years.

A critical analysis of the schemes in the context of similar schemes for the poor in the past underlines the need for the government to take care of two aspects. One is that the benefits reach the target sections, while the other is that it does not create too much of dependence on doles. Care would also have to be taken to have a clear-cut definition of poverty, to prevent a misuse of the schemes. While in the case of small amounts to be sent to the beneficiaries through money order or transfer to post office or bank accounts, pilferage may not be possible or attractive with a strict audit of accounts, in the case of amounts of the order of Rs. 5,000, the government would have to ensure that there are no cuts at the hands of middlemen. Similarly in the case of mid-day meals scheme, the government would have to ensure that there is no pilferage of foodgrains in the initial one year's period till the scheme becomes operational and meals are served to the children. Secondly, as a commentator has rightly put it the Centre must cut other and less deserving expenditure to ensure that expenditure on these schemes does not lead to inflation and neutralise their beneficial impact.

Earlier, as the Finance Minister had said in his 1995-96 Budget speech after the cut in the allocation for rural development in 1991-92 Budget as a result of the need to bring about fiscal balance, the government had actually increased the allocation in subsequent budgets. If the impact of the increase was not discernable, it is because of the magnitude of the problem facing the country in the twin fields of poverty

(Contd. on page 13)

Competition Hotting Up For Nationalised Banks

Anil K. Joseph

THE Indian banking system is on the threshold of far-reaching changes. Radical reforms, phased over a period of three years have changed the face and prospects of Indian banking. The banking and other financial intermediaries see the prospects of immense business opportunities opening up in the liberalised atmosphere. While the prospects in the financial sector thus seems attractive, the operating environment in the industry has also qualitatively changed in the recent past.

The year 1992 is considered a watershed in the history of Indian banking after the 1969 nationalisation of leading private sector banks. The significance lay in the introduction of prudential norms on capital adequacy, income recognition, asset classification and provisioning for bad and doubtful advances. Greater flexibility is being brought about in many of the exogenous factors which so far have impinged upon the operational and allocative efficiency of the country's financial system. The Reserve Bank of India (RBI) has rationalised the interest rate structure, reserve requirements of banks in general were reduced and the extent of cross subsidisation has been brought down. In order to tone up the system, prudential regulations and norms have been put in place and the competitive character has been promoted by facilitating the entry of new players, especially foreign banks. An attempt is also on to try and alter the structural and organisational factors, which have affected the performance of banks and financial institutions.

The country's financial system today consists of the vast network of banks and financial institutions offering a wide range of products and services. A significant achievement of the banking sector has been that banking and other financial facilities have over the last two-and-a half decades come to be extended over a large cross section of the people. Despite the overall progress and impressive list of achievements, concern has been expressed from several quarters about the operational efficiency and viability of the Indian banking system. The present predicament of the nationalised banks is the consequence of factors, both external and internal to the banking system and the financial sector reforms seek to address both the issues.

According to the RBI Governor, Dr. C. Rangarajan, "the reforms in the financial sector constitute an integral component of the overall programme of structural reform and are aimed at improving the overall productivity and efficiency of the Indian financial system, which while transferring funds from the surplus units of the deficit ones, does so at the minimum operating cost." Thus, the major task before the Indian public sector banks is to improve their financial performance.

The RBI has classified the 27 nationalised banks into three categories—those which have both positive operating profits and net profit after provisioning; those which have positive operating profits but negative net profits after provisioning; and those which have negative operating profits. The number of banks showing operating profits had increased during 1993-94. However, according to RBI's information, only two nationalised banks are likely to show operating losses during 1994-95.

In order to reduce the losses of the banks, RBI had introduced prudential norms relating to income recognition, asset classification and capacity adequacy. These long-overdue requirements are expected to serve two purposes. Firstly, they make balance sheets and income and expenditure statements of banks provide true reflections of the health of the banks. Secondly, they also act as a tool of financial discipline and compel banks to look at the quality of loans assets and the risks attached to lending. Strongly supporting these moves, Dr Rangarajan says "we have also to conform to international accounting standards, if Indian banks are to get their due place and recognition in the global financial market." "By March 1996, we expect all Indian banks and banks operating in the Indian market to fully conform to all the standards prescribed," he adds.

While the government is not opposed to opening up of new foreign bank branches, competitive forces

within the banking industry have acquired momentum with the advent of new private sector banks. These private sector banks can start off with a strong capital base and with no backlog of non-performing assets and debts. They also have a significant advantage in terms of a high level of computerisation and communication technology aids.

Thus, in the emerging highly competitive banking environment, four factors—progressive deregulation of interest rate, a diverse competitive market place, market determined exchange rate mechanism and technological changes will play a crucial role in the way public sector banks will operate. Interest rate regime in the country has undergone a rapid transformation in the last five years. The structure of interest rate in relation to the banking system has now been rationalised by fixing only three rates. Besides a maximum deposit rate, the prescriptions include a lending rate for loans upto Rs. 25,000 and another lending rate for loans ranging from Rs. 25,000 and Rs. 2 lakh. The RBI has recently abolished the prescription of minimum lending rate for credit limits above Rs. 2 lakh, permitting the banks to fix their own prime lending rates.

Banking experts say the government has adopted a gradual approach while reforming the interest rate structure in the country. Care has been taken to ensure that banks and financial intermediaries do not have incentives which tempt them to lend at high rates of interest assuming higher risk. A major safeguard in this regard has been the prudential norms relating to provisioning and capital adequacy. According to the RBI Governor, interest rate is a variable which is the prime concern of the country's monetary authority. "In fact, it is a role of monetary authority to influence the interest rates upwards if the economy is getting overheated and downward in case the economy needs stimulation," Dr. Rangarajan says.

In the new deregulated environment, the public sector banks have to equip themselves to work independently without government support. Competitive pressures are emanating from within the banking system as well as from non-banking institutions. Thus, industry sources say the banking sector will witness a greater overlap in product coverage between commercial banks and non-bank intermediaries. They should be able to fix the rates on deposits and loans depending upon the overall liquidity conditions, demand factors and their impact on profitability. In this context, banks will have to pay greater attention to market segmentation and specialisation in different niches of the market to consolidate their position and also prevent the foreign banks to establish an edge over them.

Revolutionary Changes

Technology has been a major driving force of the changes in the banking industry the world over. Revolutionary changes in computerisation and communication technologies have changed completely the way in which banking is conducted. Thus, the use of computer and communication technology will assume a critical role in improving the functioning of banks at various levels through use of appropriate technology. Paper-based payment systems will in course of time have to be substituted by electronic transfer, bringing about a qualitative change in the functioning of Indian banks.

Out of the 27 public sector banks, 21 had registered operating profits in 1993-94 as against 19 in 1992-93. With substantial provisioning requirements in 1993-94, 12 banks reported net losses in 1993-94. During 1994-95, most of the public sector banks have shown good results in their operations after implementing prudential norms relating to income recognition, provisioning and capital adequacy.

The Punjab National Bank (PNB) had achieved a net profit of Rs. 86 crore during 1994-95, compared to Rs. 74 crore during 1993-94. The Bank of India (BOI) earned a net profit of Rs. 50 crore during 1994-95 while the Oriental Bank of Commerce (OBC) had a net profit of Rs. 113.36 crore compared to Rs. 32.11 crore during 1993-94. Two leading public sector banks, the Canara Bank and the Bank of Baroda (BOB) reported a net profit of Rs. 204 crore and Rs. 175.55 crore respectively. While the Corporation Bank had a net profit of Rs. 72.54 crore during 1994-95, Vijaya Bank reported a net profit of Rs. 31.70 crore. However, the Central Bank of India (CBI) registered a net loss of Rs. 84.29 crore during 1994-95. The main reason for the losses to the CBI is attributed to the high non-performing assets (NPA) of the bank which was Rs. 1756.19 crore, constituting 24.90 per cent of the total advances made by the bank. The total 'sticky advances' of nationalised banks for 1991-92 as on March 31, 1992 was Rs. 20855.13 crore, constituting 21.90 per cent of the total advance made by 20 nationalised banks.

According to the RBI's latest report on banking for 1993-94, there has been a sharp increase in NPA casting a shadow over bank profitability besides questioning the validity of change in role and banks request for more autonomy. Since the prudential norms require gradual reduction in NPAs, banks may be lured into writeoffs of poor and doubtful debts, eating into the profits and making it even more difficult to stay fit in an

NATIONALISED BANKS WHICH HAVE PRUNED THEIR LOSSES IN 1994-95

(Rs. in crore)

NAME OF THE BANK	1993	1994	1995
ALLAHABAD BANK	-105.89	-367.72	-76.36
ANDHRA BANK	-141.08	-162.25	NR
BANK OF INDIA	-331.12	-1089.15	50.35
BANK OF MAHARASHTRA	-196.51	-296.93	-40.80
CENTRAL BANK OF INDIA	-383.31	-711.93	-84.24
DENA BANK	-90.46	-69.84	30.02
INDIAN BANK	6.51	-390.65	NR
INDIAN OVERSEAS BANK	-752.74	-351.18	10.38
NEW BANK OF INDIA	-75.79	X	X
PUNJAB & SIND BANK	195.19	-175.99	-7.42
SYNDICATE BANK	-670.08	-299.40	-91.79
UNITED BANK OF INDIA	-279.36	-618.06	NR
UCO BANK	-444.19	-546.45	-83.81
VIJAYA BANK	-97.88	4.10	31.10

NOTE: (X) NEW BANK OF INDIA MERGED WITH PUNJAB NATIONAL BANK
NR: BALANCE SHEET NOT YET RECEIVED
'-' INDICATES LOSS

increasingly deregulated environment.

The RBI report also points out that during 1993-94, aggregate deposits expanded by Rs. 46.560 crore to show a large growth of 17.3 per cent during 1993-94 as compared to Rs. 37.814 crore or 16.4 per cent rate of growth in 1992-93. Demand deposits increased sharply by 21.8 per cent at Rs. 10.11 crore in 1993-94 as against three per cent in the previous year. However, the growth in time deposits at 16.4 per cent is the lowest in recent years. The high rate of expansion in demand deposits reflected economic units' preference for liquidity to enable shifts of funds to assets that give relatively higher rates of return, the RBI report says.

Another important development was the sharp increase in food credit whereas overall bank credit recorded slower expansion. In contrast to large growth in deposits, bank credit recorded a slower expansion of 8.2 per cent at Rs. 12.43 crore in 1993-94 compared to a substantial increase of 21 per cent at Rs. 26.39 crore in 1992-93. While non-food credit recorded a modest hike of 5.7 per cent at Rs. 8.27 crore in 1993-94 compared to a 20.1 per cent jump at Rs. 24.31 crore in 1992-93. Food credit also increased sharply by 61.8 per cent in 1993-94 from 44.4 per cent at Rs. 2.07 crore in 1992-93. This surge in food credit was on account of a large food procurement and burgeoning foodgrain stock for the second year in succession.

However, one fails to understand why the government has failed to act on some of the crucial recommendations of Committee for the Reform of the Financial Sector. The Committee, popularly known as Narasimham Committee, had submitted its report in November 1991. Some of the major recommendations of the Committee include deductibility of specific provisions made by the banks and institutions under the Income Tax Act and restructuring of rural credit. The Committee had also questioned the usefulness of centralised recruitment through Banking Services Recruitment Board (BSRB) and wanted the government to review its performance against bank-specific recruitment scheme.

Although the financial sector reforms initiated by the government had been by and large been on the lines recommended by the Narasimham Committee. It has rejected some of the recommendations like reduction in priority sector lending to 10 per cent and setting up of a nation-wide Asset Reconstruction Fund. The Committee has also recommended various proposals like reduction of the Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR), simplification of the interest rate structure, positioning of norms in respect of capital adequacy. Income recognition and provisioning requirements, revision of RBI guidelines for branch licensing and closure, modernisation through computerisation, issue of guidelines for entry of new private sector banks.

While the Indian public sector banks are trying hard to maintain a good show, foreign banks are planning to expand with better customer-oriented scheme. Standard Chartered Bank has chalked out an aggressive marketing strategy to increase its personal banking division. The bank plans to start automatic teller machines (ATM) and telephone banking and passenger car finance in a big way. Another major foreign bank ANZ Grindlays Bank has announced improved performance in its Indian operations. Its Indian operations has contributed to nearly five per cent to the group's profits. ANZ says that its Indian operations would now target retail banking customers, who have emerged as the major contributers to the banking industry's bottomlines.

Indian public sector banks may have so far operated within a captive market, but that does not mean they cannot meet the challenges which liberalisation of the economy is throwing up. Twentytwo years of nationalisation has produced a banking

(Contd. on page 16)

Employment Scenario

Wage Employment Schemes

S.P. Chauhan

THE creation of employment opportunities has always been an important objective of development planning in India. The relative higher growth of population and labour force has led to an increase in the volume of unemployment and under-employment from one Plan period to another.

In the area of employment, planning has generally proceeded on the assumption that economic growth would result in increased employment opportunities and that accelerated rate of economic growth would be able to meet substantially the employment requirements of growing labour force. The actual results, however, did not validate this assumption. This realisation led the planners to give increased emphasis on taking up schemes for providing additional employment opportunities. Various special schemes of employment generation were, therefore, taken up from time to time.

The Rural Manpower Programme (RMP) was taken up towards the end of 1960-61 in 32 Community Development Blocks on a pilot basis for utilising rural manpower to provide employment for 100 days to atleast 2.5 million persons by the last year of the Third Five Year Plan, specially in areas exposed to pronounced seasonal unemployment and under-employment. However, due to resource constraints, a little over 20% of the outlay of Rs. 150 crore, originally envisaged could be provided and the programme ended in 1968-69 resulting in generation of 137 million man-days of employment.

The Crash Scheme for Rural Employment was launched for a period of 3 years from April, 1971 with an annual outlay of Rs. 50 crore with the objective of providing employment to at least 1000 persons in each of 350 districts of the country every year through labour intensive works and creation of durable assets. Although the scheme achieved its immediate objective of providing employment opportunities, the benefits both in terms of direct employment and assets creation were found to be too widely scattered.

A Pilot, Intensive Rural Employment Programme (PIREP) was started in November, 1972 in 15 selected CD Blocks for a three-year period to provide additional employment opportunities to unskilled labour. The project completed its full term of three years and generated 18.16 million man-days of employment.

The Drought Prone Area Programme (DPAP) was started as Rural Works Programme in 1970-71 in 54 DPAP units spread over 13 states in the country. It was initially aimed at mitigating the severity of scarcity conditions by organising labour intensive and production-oriented works so as to generate considerable employment in rural sectors. Towards the end of Fourth Five Year Plan, the programme was changed to Area Development Scheme.

In April, 1977 Food For Work Programme was started as a non-plan scheme to augment the funds of state governments by utilising available stocks of foodgrains. The programme did not make much headway in the beginning due to certain constraints. A total employment to 979.32 million man-days was generated during the years 1977-78 to 1979-80.

The National Rural Employment Programme (NREP) was the culmination of the previous experience in implementing employment schemes. Launched in October, 1980, it became a regular part of the Sixth Five Year Plan from April, 1981. The programme was implemented as a Centrally Sponsored Programme on 50:50 sharing basis between the Centre and the states with the objective of generating additional gainful employment for employed/under-employed persons and creating productive community assets.

The programme was implemented through the District Rural Development Agencies (DRDAs) set up all over the country. The project works were taken up for execution and were mainly executed through Panchayati Raj Institutions. Workers were to be paid minimum wages fixed under the Minimum Wages Act and part of the wages were paid in the form of foodgrains. Allocations of resources to the states/UTs were made on the basis of a formula under which 50% weightage was given to the number of agricultural labourers, marginal farmers and 50% weightage to the incidence of poverty. Contractors were not permitted to be engaged for executing the works. The State Level Coordination Committee for Rural Development Programmes was entrusted with the responsibility of planning, implementation, monitoring,

etc. A Central Committee had also been set up at the Centre to provide overall guidance, lay down the guidelines and to undertake continuous monitoring of the programme.

At the stage of mid-term appraisal of the Sixth Five Year Plan, a new scheme known as Rural Landless Employment Guarantee Programme was introduced from 15th August, 1993 with the objective of improving and expanding employment opportunities for the rural landless by providing guarantee of employment to at least one member of every landless household upto 100 days in a year. The programme having a Central outlay of 500 crore was entrusted to the states/UTs but they were required to prepare specific projects for approval of the Central Committee. The programme continued to be implemented during the Seventh Plan on this basis. A separate provision within the RLEGP aimed at constructing one million houses in the Seventh Plan under Indira Awas Yojana which started on 2nd October, 1985 as a sub-scheme of RLEGP. The guarantee part under the programme, however, could not be implemented due to resource constraints.

Jawahar Rozgar Yojana

The Eighth Five Year Plan aims at bringing employment into a sharper focus with the goal of reducing unemployment to a negligible level within the next ten years.

Experience of implementation of NREP/RLEGP over the years showed that the funds did not invariably go to the areas of concentration of unemployed landless and rural labour. The evaluation showed that there were at least 53% villages which had not ever got the benefit of any works programme at all. In the light of this background, it was decided to merge NREP/RLEGP into one single rural employment programme known as Jawahar Rozgar Yojana w.e.f. 1.4.1989. The expenditure under the programme is to be shared between the Centre and the state on 80:20 basis.

The objectives of JRY are (a) generation of additional gainful employment for the unemployed and underemployed, both men and women, in the rural areas; (b) creation of sustained employment by strengthening rural economic infrastructure (c) improvement in the overall quality of life in the rural areas. People below the poverty line are the target groups under the JRY and preference is given to SCs/STs for employment. 30% of the employment opportunities are reserved for women. Funds under the Yojana are provided to all the rural districts and village panchayats in the country.

In the context of the stabilisation programme under the new economic policy the strategy was modified from 1993-94 to ensure better implementation of the Yojana during the VIII Plan, especially in backward districts where there is concentration of unemployed and under-employed persons. The impact on wage level, creation of community and social assets, creation of sustained employment by strengthening economic infrastructure and also assets in favour of the rural poor for their direct and continuing benefit and overall improvement in the quality of life in rural areas, will remain the attendent benefits of the scheme. JRY is now being implemented in three streams, the details of which are given below.

(A) Jawahar Rozgar Yojana—First Stream

The resources under this stream are to be allocated to the states/UTs on the basis of proportion of rural poor as per the latest available estimates of the National Sample Survey Organisation (NSSO). From states to the districts, the allocation will be made on the index of backwardness formulated on the basis of proportion of rural SC/ST population in a district.

JRY has two important sub-schemes viz., Indira Awaas Yojana (IAY) and Million Wells Scheme (MWS). The funds earmarked for these are to be operated at the district level. Not less than 80% funds allocated to each district have to be distributed to the village panchayats.

Indira Awaas Yojana, launched during 1985-86 as a sub-scheme of RLEGP, continued as part of Jawahar Rozgar Yojana (JRY) from April, 1989. Till 1992-93, the objective was to provide free dwelling units to members of SCs/STs and freed bonded labour below the poverty line. 6% of the total allocation of JRY was earmarked for IAY at national level. It has been noticed that the utilisation of funds under IAY has been extremely satisfactory. From the year 1993-94, the sectoral earmarking for IAY has been raised from 6% to 10% and its scope was extended to cover non-SC/ST rural poor subject to the condition that the benefits to the non-SC/ST poor should not exceed 4% of the total allocation. No contractor is allowed in the contruction of IAY houses nor any government department. Suitable local voluntary agencies with proven good track record wherever available should be associated with the construction of IAY houses.

Million Wells Scheme (MWS)

Million Wells Scheme was taken up as a sub-scheme of NREP/RLEGP during the year 1988-89 and is being continued under Jawahar Rozgar Yojana. Till 1989-90 the objective of the MWS was to provide open irrigation wells to small and marginal farmers amongst SC/ST and freed bonded labour but from the year 1993-94, the scope has been enlarged to cover non-SC/ST small and marginal

farmers, who are below the poverty line. The sectoral earmarking has also been raised from 20% to 30% from 1993-94 subject to the condition that the benefits to non-SC/ST should not exceed 10% of the total allocation.

The following suggestions are made for the smooth implementation of JRY at the field level:

- 10% of the resources are earmarked for IAY for the construction of houses free of cost.
- 30% of the total resources are earmarked for the implementation of MWS.
- Upto a maximum of 2% of the total funds during a year can be spent on administration (State/ District/Block/Village Panchayat).
- After setting apart the funds earmarked, about 80% funds at the district level are to be distributed amongst the village panchayats and 20% can be retained by the DRDA/ZPs.
- DRDAs/ZPs can spend a maximum of Rs. 50,000 to meet training expenses of the officials and non-officials involved in the implementation of JRY.
- Village panchayats can incur an expenditure upto a maximum of Rs. 1000 per year for purchasing items of stationery, registers etc.
- Sectoral earmarking of DRDAs/ ZPs share of funds (i.e. 20%) is as under:

(a) economically productive assets, minor irrigation works, development of rural markets, watershed development projects, social forestry, water and soil conservation measures, reclamation of wastelands, nursuries, agri-horticulture, pasture development, link roads selected on the basis of a Master Plan to enhance the linking of unconnected villages within the district etc., —60%,

(b) individual beneficiaries scheme for SC/ST —22.5%

(c) other works including roads and buildings —17.5%

- There is no secotral earmarking for the resources available at the village panchayats level except that 22.5% of the annual allocation must be spent on the items of work which directly benefit the SCs/STs.

The wages for the category of employment would be as notified for the relevant schedule of employment under the Minimum Wages Act. Equal wages are to be paid to both male and female workers. The wages under the Yojana may be paid partly in cash and partly in foodgrains to improve the nutritional standards of the family of the rural poor.

The wage-material ratio under JRY is 60:40 and the wages paid to the skilled labourers are included under the wage component subject to a limit of 10% of the total wage cost. Contractors are not permitted to be engaged for the execution of JRY works.

All rural works which result in creation of durable productive and community assets can be taken up under JRY. For the implementation of the Yojana, DRDA/ZP would prepare annual action plan giving priority to the completion of incomplete works over taking up all new works. While preparing the plan of works, care should be taken to safeguard the interests of the weaker sections in the villages and highest priority should be given to the works benefiting the SCs/ STs, women and the other weaker sections of the village society.

(B) Jawahar Rozgar Yojana— Second Stream

There was a persistent demand from various quarters that from 1993-94 20% of the funds under JRY subject to a minimum of Rs. 700 crore are being used to intensify JRY in 120 backward districts in different states in the country where there is concentration of unemployment and under-employment. The index of backwardness mentioned in first stream of JRY above has been used for selection of these backward districts in consultation with the Planning Commission. Funds under this scheme are to be placed at the disposal of the concerned DRDAs/ZPs who will identify the pockets of unemployment and under-employment within these districts and take up works within a prescribed basket of schemes which may include construction of all weather roads, minor irrigation works, soil and water conservation works, water harvesting structures, wastelands development, farm forestry etc. They may also include schemes to strengthen rural infrastructure like primary schools, primary markets in backward tribal areas etc., with appropriate supplementary funds from other sources/programmes. Districts will prepare a comprehensive action plan consisting of appropriate schemes from the basket specified above, which will be approved by the DRDAs/ZPs for implementation in the districts. Keeping in view the tremendous demand for houses under IAY, from the year 1994-95, 10% of JRY allocation are allowed to be spent for construction of houses. From the year 1994-95, watershed-based development has been emphasised under JRY to redouble efforts on drought proofing, treatment of dry lands and reclamation of wastelands. The water-shed approach, as against the traditional approach, entail schematic investment with people's participation and

provides ample scope for local and scientific inputs and interventions.

(C) Jawahar Rozgar Yojana—Third Stream

It was also thought that special attention has to be given to areas from where migration of labour takes place and the areas which need drought proofing. Accordingly the remaining 5% under JRY subject to a maximum of Rs. 75 crore will be kept apart for taking up special and innovative projects such as those aimed at prevention of migration of labour, enhancing women's employment, special programmes through voluntary organisation aimed at drought proofing as well as watershed development, wastelands development resulting in sustained employment. Operation Black Board and such other schemes which are specially important for the main objectives of JRY are included under this scheme. These projects will be considered and approved at the Central level by a Screening Committee to be chaired by Secretary (RD).

Monitoring

Jawahar Rozgar Yojana is reviewed regularly by the Central and the state governments. The review of the programme is done through monthly, quarterly and annual progress reports received from the state governments.

In addition, the Government of India periodically convenes meetings with the State Secretaries and the Project Directors of District Rural Development Agencies/Zilla Parishads to review the programme with a view to effecting improvements in the quality of implementation. It has also undertaken concurrent evaluation of JRY through independent institutions/organisations to assess its impact in the rural areas.

The Ministry of Rural Development has also introduced a system of Area Officers during the year 1993 with a view to effectively monitoring the various programmes of rural development including JRY. Under this scheme, senior officers at the level of Deputy Secretary and above have been allocated one or two state(s).

The Area Officers Scheme has further been strengthed from 1994 by including officers from the Department of Programme Implementation, Department of Wastelands Development and the Planning Commission.

The monitoring of the programme at the state level is done by the State Level Coordination Committee for Rural Development Programmes. Since the implementation of JRY is decentralised, effective supervision has to be exercised by the elected Panchayati Raj bodies, who will be in direct charge of the implementation of this programme.

Performance

For the year 1995-96 the Central allocation for JRY is Rs. 3862 crore. With a view to providing assured purchasing power to the most needy persons in most backward areas of the country, the Prime Minister, in his Independence Day address to the Nation in 1993 announced a new Employment Assurance Scheme (EAS) which started on 2nd October, 1993, in rural areas of 1778 identified backward blocks of the country. During the year 1994-95, it was decided to extend the EAS to 2447 blocks, which are situated mainly in the drought prone areas, desert areas, tribal and hill areas.

Expenditure under EAS is shared between Central and the state government in the ratio of 80:20. Under EAS unlike JRY, the works are opened as and when there is need for employment. That is to say, the EAS is a demand driven scheme.

The primary objective of the EAS is to provide gainful manual employment during the lean agricultural season to all able-bodied adults in the rural areas who are in need and who are desirous of work, but cannot find it, either on farm or on other allied operations or on the normal plan/non-plan works during such period.

The scheme will provide assured employment for 100 days of unskilled manual work to the rural poor men and women, over 18 year and below 60 years of age. A maximum of two adults per family would be provided this assurance if and when they seek it during the lean agricultural season. Persons seeking work under EAS should be given employment within the area of the block on works started from out of the shelf of works prepared for this purpose by the implementation authority. It should be ensured that the provision of employment under this scheme results in the creation of durable productive assets in the block area.

For the commencement of the scheme Rs. 6.25 lakh per block were released initially. Further releases under EAS are being made to the districts on the basis of attendance of workers at the work sites during the lean season and the progress in the utilisation of the funds already provided.

The Central Assistance under the scheme is relased directly to the District Rural Development Agencies (DRDAs)/Zilla Parishads (ZPs). The matching share of the states to DRDAs/ZPs by the states will have to be relased within a fortnight of the release of the Central share.

The District Collector/Deputy Commissioner (DC) of the district is in overall charge of the EAS as the "Implementation Authority". In this

capacity he is responsible for coordination of work and for allocation of funds among the blocks. The Divisional Commissioners and Heads of Departments of implementing agencies should also exercise overall supervision, vigilance and disciplinary powers to ensure that the works under EAS are executed properly and effectively. All works have to be executed departmentally only by the respective implementing agencies and in no case any contractors can be used in the execution of these works by implementing agencies.

Priority is to be given to the works contributing to sustained employment generation and development of core infrastructure for socio-economic development of the Area. Works identified on the basis of the treatment plans prepared for water conservation, land protection, vegetative barriers, afforestation, agro-horticulture, silvipasture under watershed development and minor irrigation tanks, percolation tanks, village tanks, canal works etc. are given higher priority.

All works started under EAS should be labour intensive works only. Labour intensive works are defined as those which have a ratio of wages of unskilled labour to equipment, material and other skilled works of not less than 60:40.

Persons above 18 years and below 60 years of age who need and seek employment under the scheme should register themselves in the village panchayats where they are residing. Each village panchayat within the blocks covered by EAS should maintain these registers containing the names and details of those registered. Every family consisting of the husband, wife, children and other dependants, whose adults are registered for works under the scheme will be issued a family card immediately. Whenever at least 20 adult persons, whose names figure in the family cards issued under the scheme demand work during the lean season, they would be provided unskilled manual employment by opening new works by the BDO under EAS/departmental or other works in the area. The wages paid to workers under EAS should be the minimum agricultural wages for unskilled labour prescribed by the concerned state government. Equal remuneration shall be paid to men and women workers for the same work or works of a similar nature and there shall be no discrimination while employing men and women workers. A part of wages may be paid in the form of foodgrains, not exceeding 2 kgs. per man-day and not exceeding 50% of wages in cost. Payment of wages in foodgrains will be optional depending upon the price in the open market.

All the works taken up under EAS are labour intensive and on muster rolls. It is extremely important that quality of works is maintained and the payment of wages is done strictly as prescribed. For this purpose, the state governments will prescribe a minimum number of field visits for each supervisory level functionary from the state to the block levels and ensure that it is strictly adhered to.

The states have to constitute a District Employment Assurance Scheme Committee in every district where the scheme is in operation and a block EAS Committee in every block covered by the EAS. The membership of this committee may include district level officers of the implementing agencies, prominent elected representatives and NGOs. Similarly, at the block level, the membership of the committee may comprise block level officers of the implementing agencies, prominent elected representatives and NGOs. Every district level committee shall coordinate the working of the block level EAS Committee of the district.

Wide publicity has to be organised in the villages especially among the rural poor on the main provisions and details of the EAS. Posters and pamphlets giving these details should be exhibited in panchayat offices and other public place in the villages.

During the year 1993-94, Rs. 600 crore was allocated under the scheme which was raised to Rs. 1200 crore during 1994-95. The budget allocation for 1995-96 is Rs. 1570 crore. So far, 1.24 crore persons have registered themselves for employment under EAS. ❐

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and unemployment. The Prime Minister had made his concern for the poor known as early as February 1994 at the World Economic Forum at Davos, when elections were not round the corner. At Davos, the Prime Minister while speaking about India's commitment to economic reform had said "In the new-found enthusiasm for change, governments should not go overboard and plunge large chunks of their people into mass misery; they have no right to do that. I am not propounding any theory. I am merely saying that I have no right to throw millions of people out of their jobs overnight because I want a particular change. If someone asks me to do so, I would say in all humility that either he does not know my country, or does not know what I am really trying to do." The message he was conveying to his audience was that the reforms were on and will continue, but that there were limits to the pace and extent of reforms. ❐

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Women Today

All Eyes Towards Beijing

Padma Alva

THE fourth World Conference on Women in Beijing in September this year is poised to set the agenda for women of the world, especially the underprivileged and exploited on global scale for the next century. The eleven-day summit, held once in a decade, would aim at accelerating implementation of all the strategies evolved for the empowerment and advancement of women and ensure their active and just participation in all spheres of public and private life through a full and equal share in economic, social, cultural and political decision making. It would seek to establish, once again, the principle of shared power and responsibility between women and men at home, in the workplace, and in the wider national and international communities. The conference would reinforce what women have been stridently demanding—that equality between women and men must be seen as a matter of human rights and that a condition for social justice was a fundamental prerequisite for equality, development and peace.

As the draft of the platform for action (PFA) that would be adopted at the Beijing summit puts it "a sustained and long term commitment is essential so that women and men can work together for themselves, for their children, and for society to meet the challenges of the next century."

It must be remembered that women cannot work in isolation to improve their lot. They share common concerns that could be addressed only by working together with and in partnership with men towards equality at all levels.

India is truly a land of contrasts. The nearly 400 million women of this country hardly have a uniform image. Multitudes of them are overworked, underpaid, illiterate, exploited at home and in the workplace. However, the one-third reservation for women under the Panchayati Raj system has given them a chance to guide their destinies. The only thing remains is to actually ensure that this privilege translates into reality and the women who enter the local bodies are in a position to improve their lives and not continue to be oppressed and remain subordinate in society.

The uniqueness of the Indian Constitution is in that it not only grants equality to women but also empowers the state to take measures that would eliminate discrimination of women and imposes a fundamental duty on every citizen to renounce practices which are derogatory to the dignity of women.

The country paper which India is to present at the Beijing summit is still in the process of being finalised. While it points out that things have improved since India gained Independence and there is considerable improvement in several health, education and employment indicators, women still comprise the largest section of population living in absolute poverty and that they represent the poorest of the poor.

The draft paper admits that women as a group and poor women in particular have been adversely affected by the process of gross economic transformation and development; gender discrimination and violence against women is also another area of critical concern.

The extent of gender discrimination in India is clear from the sex ratio in the country which declined from 934 females per thousand males in 1981 census to 927 per thousand males in the 1991 census.

The situation of the poor women is dismal to say the least. They continue to be in marginal employment and low levels of skill and their contribution is almost invisible. They are still relegated to reproduction, caring for the young and the family's cooking, cleaning and other household drudgery. They continue to be low paid or unpaid, but shouldering heavy work responsibilities in agriculture, tending cattle etc. Illiteracy and lack of training are two reasons why women are excluded from political, social and economic power and the power of knowledge.

As the draft country paper says, "while comprising nearly half of humanity, contributing two-thirds of world's work hours, she earns only one-third of the total income and owns less than one-tenth of the world's resources".

It says that if objectives of development are to enlarge peoples choices, nowhere is the challenge more stark and daunting than in the case of poor women. The situation is made more complex, even dangerous by the fact that the society is inadequate in its response to development.

Women themselves, more often than not, are browbeaten into insensitivity and unquestioned submission to biases and discrimination that they end up thinking this is what was ordained for them and there is no escape from it. As for the men, "they go around blind, seeing and yet not seeing anything", says the draft country paper.

If the lot of women has to be improved, the ideology of patriarchy and the accompanying culture of silence would have to be broken so that development translates into advancement for the other half, that is the women, says the draft paper.

Unique Response

The empowerment strategy is being described as the unique Indian response to the challenges of equality, development and peace. Thus women should be provided with an expanding network of support services so that they are freed from some of their gender shackles. If women are to be economically empowered, they would have to be provided with alternative forms of informal credit, training, employment, management skills and social security.

The paper cites the national credit fund for women, the step programme or the Mahila Samriddhi Yojana or the women's development programme, as the few alternatives that would help women to stand on their feet and be counted.

The one-third reservation in the Panchayati system is correctly described as the crowning glory. In this India has given a lead to the world.

Moreover, the setting up of the National Commission for Women, the expanding of legal literacy programmes, gender sensitisation by the police force, bankers and the administration as a whole are steps in the right direction. Attempts at empowerment have been highly successful. Some of them being: SEWA of Ahmedabad, the working women's forum of Madras, the Chipko movement (which historically was begun by women), the anti-arrack movement in Tamil Nadu and Andhra Pradesh—in each case, poor women have been mobilised and empowered.

However, many new challenges have been thrown up by certain global developments which have had major domestic implications. Some of them cited by the country paper, say, the international economic order with its accompanying reverse flow of resources from the poor South to the rich North, the globalisation of media, the global technological revolution and the economic restructuring process invariably accompanies the race towards a free market economy today. All these have the potential of imposing a disproportionately high burden on our poor women.

Labour market changes resulting in greater job insecurity and the fact that the concept of lifetime employment even for men is a thing of the past. The cutting down of social services on account of budgetary constraints, rising food prices, and increasing export orientation have all led to marginalisation of women. This is especially so among women who have low levels of skills.

Counter Measures

All this calls for counter measures such as expanding safety nets, gender orientation of macro economic policy makers, emphasis on training and reorientation of attitudes of the society.

The country paper has put on record the response of the government, the non-governmental organisations (NGOs) and women's movement in India. It notes the persistence and reiteration of distorted patriarchal values both at the societal and household levels which exacerbate the deprivation of poor women. It stresses that it is absolutely imperative that women's access and control over factors of production and social services is established firmly. Further, the adverse fallout on women of the structural adjustment policies have to be anticipated and countered with suitable remedial action.

Gaps in health care and the process of enlarging women's reproductive choices which have been identified as they key issues would also have to be addressed urgently. Moreover, education and literacy would have to be central to women's empowerment so that they are able to participate more effectively in decision making structures and process.

The report focuses on participation of women in the local bodies in India and points out that according to rough estimates, very shortly 8 lakh women would be entering public offices in rural areas alone. This would undoubtedly go a long way in empowering women and their advancement.

While both the government and the women's movement are eagerly awaiting the momentous participation of women in the process, it must be remembered that for this to happen in reality, it would be vital for women to be made legally literate. It is here that other interventions especially the media, the print, as well as the audio-visual, would have a crucial role to play.

One of the critical concerns of women the world over and also India is the increasing gender violence, both physical and psychological. The threat and perpetration of violence continues throughout their lives, whether at home or the workplace. It is this fear of violence that is seen as a major factor which leads to exclusion of women from the process of development.

The government, NGOs and women's movement leaders are unanimous in their conclusion that it is vital to mobilise women, make them aware of their rights and entitlements, sensitising the enforcement machinery and reviewing legislations in order to make them more effective. India has already ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and set up the National Commission for Women.

Though India would be presenting its position at the Beijing summit, what would finally matter is that all participating countries commit themselves to the platform of action that would be adopted at the end of the summit and actually incorporate it in the national policies and ensure its implementation. The platform for action has categorised the strategic objectives and the actions to be taken in each case.

Though a portion of the final declaration would have to be negotiated in Beijing itself, officials and NGOs have over preparatory meetings ironed out more than sixty per cent of the voluminous document.

Tasks

The Platform for Action will seek countries' commitment to enabling women to overcome poverty. Ensuring equal access to education (eradicating illiteracy among women by 2001 AD), ensuring non-discriminatory access to health and related services reproductive rights, eliminating violence against women, advancing peace, promoting conflict resolution and reducing impact of armed conflict on women and children.

The PFA would also call for positive action to facilitate women's equal access to resources, employment, market and trade, elimination of occupational segregation and all forms of employment discrimination, end to inequality between men and women in sharing power, decision making at all levels by taking special measures, allowing them complete access, integration of gender perspectives in all legal action, public policies, programmes and projects and elimination of all forms of discrimination against the girl child. The participating countries at the women's summit would have the primary responsibility for implementing the platform for action.

Commitment at the highest political level would be essential to ensure its implementation and it would be for the governments to coordinate, monitor and assess the progress of advancement of women.

In order that the Platform For Action is implemented the government would have to establish more effective national machinery for advancement of women at the highest political level, appropriate intra and inter-ministerial procedures and staffing and other institutions with the mandate and capacity to broaden women's participation and integrate gender analysis into policy and programmes. The participating countries would also have to reaffirm to early consultation with various institutions and NGOs (preferably by the end of 1995 itself) to develop implementation strategies of the Platform for Action.

Apart from this, regional commissions of the United Nations and other sub-regional and regional structures would be asked to promote and assist the pertinent national institutions in monitoring and implementing the global platform for action within their mandates. This would have to be done in coordination with the implementation of the respective regional platforms or plans of action and in collaboration with the Commission on Status of Women and taking into account the need for a coordinated follow up to the United Nations conferences in the economic, social and related fields.

It has been a bumpy ride for the women's movement from the first United Nations conference on women in Mexico in 1975, the Copenhagen conference of 1980, the 1985 summit in Nairobi and now in Beijing. The score of years since Mexico have gone on from women's problems to women's issues, now to women's perspective.

Thus, the women of the world look to Beijing for a fulfilment of their hopes, dreams and visions. ❐

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network which is now spread across the length and breadth of the country. It is a system which has been structured and maintained to meet the larger socio-economic objectives of the government. The objective of setting up of a wide banking network was to have geographical coverage and provision of credit facilities to the needy and weaker sections of the population. Thus, the commitment to social and rural banking cannot be taken away from the public sector banks all of a sudden to achieve commercial viability. "In fact, one should take the view that these banks already have a competitive advantage in terms of knowing the peculiarities of the Indian market, wide infrastructural facility of branch network, supportive systems and procedures and adequate manpower. Even the government's overall watchful eye and readiness to come to the rescue should be seen as an added advantage" a banking expert says. Thus, a scientific/systematic, low-cost marketing strategy has to be chalked out by the public sector banks to withstand and respond to the challenging times ahead.

Industry watchers say banks in India can look forward to the future with optimism. Thus, banks and financial institutions are legitimate instruments of social and economic change. Even as banks expand their activities to meet the diverse credit requirements, attention must be paid to those sectors which may have special needs. In other words "good banking should not be inconsistent with socially concerned banking." ❐

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New Technologies For Women In Agriculture

Asha Uberoy

IN India, agriculture accounts for 32% of the net national product. About 70% of the total working population and 84% of all economically active women are involved in agriculture. Women make up 46% of the agriculture work force. Statistical data demonstrate that there is a progressive increase in the number of women involved, both as cultivators and wage workers.

90% of rural women are unskilled and 88% are illiterate, which makes them vulnerable to exploitation. Low levels of nutrition and frequent pregnancies make them prone to poor health, limiting their productivity. Yet, women have to do varied agricultural tasks like tilling, manuring, weeding, transplanting, harvesting, threshing and storing. They also have to look after dairy animals, poultry, fuel needs, food processing, storing and drawing of water. Activities within the house are classified as house work and not considered a contribution to the economy and most of their work is invisible.

But a scrutiny of the situation behind the statistical figures indicates that women are vital and productive workers. The poorer the family, the more it depends on the economic productivity of its women.

The Indian agriculture system has not yet redefined agriculture as an equal female activity. Males dominate the field and attract most attention in research and extension activities. There is a clear bias in research on technology in favour of males. Some implements traditionally used by women such as hoes and sickles are also taken over by men as these tools become more efficient. There is an important relationship between implements and tools used and social status of users. Men use improved and more efficient tools, while women use labour intensive tools.

A study has recently been conducted by National Institute of Science, Technology and Development Studies on behalf of the National Commission for Women, to study the impact of new technologies on women's participation in agriculture. Eighty S&T projects were selected from governmental departments like DST, Ministry of Agriculture, ICAR, IARI; from NGOs like CAPART, VIKASANA, CWDS and AFPRO and international organisations like UNIFEM, DANIDA, IDRC etc.

It has been observed that, for technological development for rural women there is no alternative but to start from the scratches, which include skills, techniques and organisation. Whether the women accept new technologies or not, depends largely on how the technologies have been created and how the potential users participated in the development of the technology through their own cooperation. It is impossible to change the cultural and organisational framework of a society to implement a given programme. Once a programme has been accepted by the women on the basis of its merit, it will induce them to expand upon its implementation.

The new Technologies documented in this study are:

Agriculture

It is seen that most of the projects in Agriculture are in Maharashtra, Tamil Nadu, Andhra Pradesh and Garhwal in U.P. In Maharashtra, some projects are on propagation of mosaic virus free sugarcane, while others are mainly in organic agriculture. Most of the projects in Andhra Pradesh are on improving rice strains, or designing of transplanters. Special mechanical paddy transplanters have been designed for women working in rice fields. Modified chaff cutters and threshers have been introduced for them. In Kerala and Tamil Nadu, the emphasis is on projects for green vegetables and cereals. Many projects have been initiated in the earthquake-hit areas in Garhwal, U.P., where agriculture had to be revived.

Biodynamic gardening has been introduced in Maharashtra and Tamil

Nadu. Projects on multiplication programmes of blue-green algae as a biofertilizer have been taken up in Andhra Pradesh. The concept of organic farming has proved very popular in Maharashtra. Techniques have been adopted for:

— Harvesting solar energy through leaves of plants
— Use of organic waste as fertilizers
— Use of herbal products for pest control
— Optimum use of land, water and labour
— Maximising production

Low cost spirulina culture techniques have been introduced in Maharashtra. Spirulina is a nutritive food enriched with vitamins and minerals. Women have been given training in the cultivation, harvesting and application of Spirulina.

Sericulture

Sericulture has emerged as an important all India technology because it is an easy way of afforestation and also gives good returns to the farm women. It does not need agricultural land as most of the plantations are done on common land. CWDS has a mammoth project in Bankura, West Bengal. Other projects are in J&K, U.P., M.P., Tamil Nadu, Orissa, Kerala, Gujarat, Bihar and Andhra Pradesh.

Available land can be utilised successfully by developing centres for sericulture. It also provides opportunities to rural women to utilize their time and energy for their benefit by working within the village. Sericulture can generate employment and help uplift socio-economic standards of unemployed rural people.

The growing of mulberry trees can help arrest the ecological imbalances of the area. Women and farmers are being trained to utilize the mulberry leaves for silk worm rearing and production of cocoons and fibres silk centres are being developed to supplement the sagging silk industry in the country. Cooperative societies can be set up to develop rural marketing centres for the sericulture produce.

Sericulture is an industry which does not involve drudgery and can be practised on a small scale within the village. It has varied uses. It also solves the ever increasing demand of fuel wood of the rural women.

Dairy And Animal Rearing

The projects documented in the NISTADS study are being implemented in Rajasthan, Manipur, Gujarat and West Bengal. In other states like Punjab and U.P., Karnataka etc. milk schemes are consolidating the whole process on a large scale. This is perhaps another area where the services of women are being exploited.

The National Perspective Plan for Women in India indicates that 75 million women are employed in dairying and 15 million in small animal husbandry. The corresponding figure for men in these sectors is 5 million and 2 million respectively. Women invariably perform the most strenuous tasks of actual stock management like feed procurement, feeding, cleaning sheds and animals and milking. It is therefore essential to train women, more than men, in scientific animal husbandry and basic veterinary care.

To facilitate ready acceptance and implementation, the trainers need also to be women. The animal husbandry training includes livestock disease control; feed preparation; good breeds of livestock—methods for pure breeding and cross breeding, artificial insemination, parturition and fertility. Women have to be trained in clean milk production, and the importance of keeping clean cows, premises and handling. Scientific ways of feeding growing animals and care of pregnant animals show better results. Other animals like rabbits, sheep, goats poultry, pigs, bees, as per location needs, can also be reared by women for added income and improved nutrition.

Pamphlets in local languages are prepared and distributed to the women by agencies like UNIFEM, UNDP, etc. Proper rearing methods result in minimum wastage. Good quality fodder is the basis of quality milk and meat production. By adopting scientific methods, animals can be reared fast and with fewer mortality.

Rearing of sheep and goats help when crops fail. They are called the "mortgages lifters" of the rural poor as they are an additional source of income. Women are trained in new scientific ways to use regular deworming and other preventive measures that keep the animals free of diseases. By vaccinating the birds, the poultry can be prevented from many dreaded and fatal diseases especially viral diseases for which there is no treatment. Popultry housing must also be done in a hygienic method. Overcrowding of birds is harmful. Physical environment is conducive to optimal egg or poultry meat production. Rabbit rearing is another lucrative occupation for women. Rabbits need less food and have a high reproduction rate. They can be reared for meat or for wool and fur.

Aquaculture

Most of the projects are along the coastlines of Orissa and Kerala. A few projects have also been initiated in Manipur and Madhya Pradesh. Maharashtra and West Bengal are also rich aquaculture areas but the number of projects are fewer there. More projects can be started in these areas.

Aquaculture opens up new vistas of economic progress for rural women. It can be practised as an extra

occupation simultaneously with any other traditional vocation. Even small backyard ponds can be turned into successful resource bases with the use of appropriate aquaculture technology. The country side is virtually dotted with such ponds without any economic use.

Aquaculture, taken up in combination with horticulture or even poultry and duckery, allows broad basing of economic activities nearer home and within the purview of the housewife. Effective training and demonstration programmes based on need based technologies can promote aquaculture in a big way. To be appropriate, technologies must be:

1. Compatible to the physical capacity of the women
2. Easy to adopt and rewarding in economic terms
3. With marginal capital investment need and less demanding on time,
4. Drawing upon locally available or domestic resource base
5. With ease of expansion into moderate to large scale enterprises in due course.

Technical assistance such as fish seed, fish toxicants, feed etc. can be provided to initiate the project. As follow up action the women can be encouraged to venture into integrated projects of horticulture—like growing vegetables, bananas, papaya etc. on the embankments. Poultry and duckery projects can also be taken up simultaneously.

With the help of proper training a steady stream of income can be generated all the year round. The same pond can be utilized for fry rearing, fingerling rearing and table size fish production. Women show great skill in acquiring fishing net fabrication skills that could be used as an indoor income generating activity.

The activities of women in aquaculture have proved to be of great significance for bringing out innovations in approach. It has been established that even very small backyard ponds of 0.01 ha are enough to generate adequate fish round the year. These lucrative activities can be pursued in convenient leisure time without being detrimental to other vocations or domestic chores.

The more progressive women participants have mastered the breeding technique of the common carp. The spawn produced was a good source of income and provided the starting material for fry production. Table size fish production remains to be the core activity. Each centre has to be nurtured to evolve its own pattern of successful aquaculture. Professional expertise can be developed in due course to manage fish breeding and fish seed raising jobs independently. These technologies have proved to be highly successful on a commercial scale. They can be expanded into moderate to large scale enterprises which can be managed by groups of women entrepreneurs. This would essentially require strong extension support, government incentives and cooperation from male counterparts in the village.

Aquaculture is a potential field of rural employment for women. Lack of adequate supply of feeds is a major constraint. Knowledge in the formulation and preparation of feed in the village level will help to overcome this hurdle and will provide new employment opportunities specially for women.

In Kerala, the production of shrimps from aquaculture systems can be doubled in the coming 5 years by the conversion of more brackish water areas into shrimp farms. It is estimated that about 25,000 tonnes of feed would be required for supplementary feeding and provide employment to 5,000 women if appropriate technology is evolved and training imparted to the village women. Kerala has a 135-crore development project in aquaculture. Successful feed preparation technology can be adopted in other states with necessary modification. Cottage level production of shrimp feed is a departure from factory level production which can be implemented with great success for women. It will also provide balanced diet at the village level.

Medicinal Plants

A study of Science and Technology projects on medicinal plants for women has yielded rich information of herbal systems in traditional medicines. A lot of valuable data have been documented, validated and revived. Many plants which were on the verge of extinction have been collected, identified and grown. The maximum projects are in Tamil Nadu, Manipur, Maharashtra, West Bengal, Kerala, Andhra Pradesh and Gujarat.

These projects have a multidisciplinary effect. The cultivation of medicinal plants is an important upcoming branch of agriculture, with a high S&T content. The other manifold aspects of these projects are:

1. Preservation of rare and endangered medicinal plants
2. Creation of interest in native systems of medicine
3. Income generation for women by cultivating and selling medicinal plants
4. Developing agro-technologies for difficult medicinal plants
5. To establish medicinal plant nursery and germ plasm centres.

These projects contribute to self-reliance of rural women in management of their common health problems with the use of local plant resources. Another spin-off from these

projects is that there are many wrong beliefs and myths prevalent among the rural women which can be removed when they are trained in health care. They are mostly related to women's health and childbirth.

It is seen that all of the projects taken up in this study were initiated from 1992 onwards. Most of them are in Kerala, Maharashtra, Andhra Pradesh and Tamil Nadu and indicate a predominance of South Indian states. It is obvious that the cultivation of medicinal plants is spreading and will become one of the most lucrative and useful mode of agriculture adopted by women.

Women have a significant role in the production of new formulations. They are the ultimate beneficiaries and users. It is but natural that housewives take the maximum interest in preparation of home remedies for common ailments and in identification and cultivation of plants.

Food Processing

Various home science projects have been offered by ICAR, specially for women in food processing. It is seen that most of these projects are being implemented in Punjab and Himachal Pradesh where the produce is in plenty.

A few projects in some areas of Manipur and Kerala aim at value added products for the local women. For example, women were collecting and selling raw tamarind at Rs. 2/kg in Bangalore. With a simple CFTRI technology they were taught to prepare and sell a tamarind concentrate for Rs. 15/kg. Other food processing technologies like pickling and food preservation can help generate more income for farm women.

There are very few projects in food processing documented in this study. Such units have been set up at Punjab and Himachal Pradesh. Other projects can be developed along the green fertile belt around the rivers, Ganga and Jamuna in U.P. and West Bengal. These projects are promoted by ICAR under the Home Science and Nutritional Studies Divisions.

Composting Technology

The concept of organic farming is catching up very fast in India. The farmers (specially women) have realised that the use of pesticides and chemical fertilizers is most harmful in that they denude the soil of its natural ingredients.

'Nadep' composting is a simple process by which cowdung and agrowastes are decomposed into a very effective method of producing organic manure. CAPART has been promoting the building of compost pits in Gujarat, Rajasthan, H.P., Karnataka etc.

Nadep composting is a simple and efficient method of conversion of agrowaste into a rich manure in a short period. The proportion of agrowastse: soil : Cowdung = 100 : 60:4. Cowdung used is very little which acts as innoculum of micro organisms to bring about decomposition of the compost. The concept of organic farming is catching up very fast in India.

Other activities which are associated with compost making are:

— Social Forestry programmes

— Farm forestry etc. under Mahila Mandals

— Kitchen gardening in 5000 families

— Biomass, use of wasteland etc.

Mushroom Technology

This is a recent addition to S&T projects for women. The target group is literate women who can handle the spawn etc. in a scientific manner. Projects in Manipur, Nagpur and Delhi have been recorded in this study. Mushrooms grow well in J&K and other cooler climates. It is recommended that this lucrative crop is promoted in areas where the climate is appropriate.

Conclusions

Technical development during the Green Revolution had resulted in a decrease of womens' involvement. This approach is to bring them back into the mainstream. The role of women in technical development in agriculture has only been receiving special attention recently. It had not surfaced in discussions, on development strategies earlier. The need for uplifting rural women cannot be ignored or neglected any longer.

It is observed that almost all the S&T projects are initiated with a local survey to see the particular farm activities of the area, the role of women and how this can be improved upon. The aim is to raise the level of productivity and also make the women's lives easier and happier.

Most of the projects have been planned around social and scientific observations and implications. Local bodies and groups have been formed such as societies, sansthas, NGOs etc. to provide technical assistance. Local women are brought together and they are encouraged to air their problems and discuss solutions.

Technologies have been selected and further adapted to suit the particular group of women and information disseminated to them in the form of training. Other help in the form of land, seeds, plant saplings, spawn is acquired from governmental sources or research institutes and extended to the women. The trainees are identified with a view to creating animators, i.e., women who will in turn train other women in technical methods for improvement in agricultural activities. The training has to have a multiplier effect to be of some meaningful impact.

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Women In Agriculture

M.K. Widge

WOMEN in agriculture make up a substantial portion of the Indian rural population. Like men, they undertake various types of agricultural operations including the allied fields, such as livestock, forestry, plantations, fisheries etc. Broadly, they are engaged in these operations in three ways depending on the socio-economic status of their family and certain other regional factors. They work as (i) paid labourers, or (ii) cultivators—doing labour in their own land as unpaid workers or (iii) managers of certain aspects of agricultural production by way of labour supervision, participating in post-harvesting processing etc. The table below shows the total number of main workers, both males and females, (those who work in some economic activity for the major part of the year for a period of six months—183 days or more) engaged in agriculture in 1981 and 1991, according to 1991 census (excluding Assam and Jammu & Kashmir):

No. of main workers by categories and sex 1981, 1991

CATEGORY	(In crore)			
	Males		Females	
	1981	1991	1981	1991
1. Cultivators	7.67	8.56	1.48	2.15
2. Agricultural labourers	3.47	4.55	2.08	2.82

The above table shows that the male cultivators have increased in the country by 11.67 per cent from 7.67 crore in 1981 to 8.56 crore in 1991. The female cultivators, however, increased at a much faster rate of 45.23 per cent from 1.48 crore in 1981 to 2.15 crore in 1991. The number of male agricultural labourers increased by 31.18 per cent from 3.47 crore in 1981 to 4.55 crore in 1991. Female agricultural labourers increased by a slightly higher percentage of 36.15 from 2.08 crore in 1981 to 2.82 crore in 1991.

The position regarding persons engaged in allied fields is stated to be as follows:

Main workers engaged in Livestock, Forestry, Fishing, Plantations, Orchards and allied activities.

(In crore)

Males		Females	
1981	1991	1981	1991
0.41	0.42	0.08	0.10

There is no denying the fact that rural women have been contributing largely to the country's economy which is mainly agriculture-based. Their share of labour is particularly significant in the context that they actually perform their agricultural work in addition to long and arduous work in household maintenance, child-rearing, cooking, fuel/wood collection, fodder collection, fetching drinking water etc. However, unfortunately this is also the sector where women's role as unpaid labour in productive activities is most prominent. The type and extent of agricultural activities in which women are engaged vary in different states. For instance, in Orissa, Tamil Nadu, West Bengal, Kerala and Kashmir, women are engaged in transplanting, weeding, harvesting and threshing of paddy. In Gujarat, they tend, weed, harvest and thresh pulses, whereas in Himachal Pradesh, besides growing food for their families, women produce cash crops like potatoes, apples, peas, mushrooms, ginger etc. In North-Eastern states, they work in tea plantations.

In agriculture sector, the remuneration and division of labour is highly sex based. Discrimination is manifest in the male and female earnings. Though the existing legislations, like the Minimum Wages Act, the Equal Remuneration Act, the Plantation Act, do not permit discrimination in wages on the ground of sex, the daily earnings of women labourers are generally less than those of men. The National Commission on Self Employed Women and Women in the Informal Sector (1988) in its report has observed that the most common wage women reportedly earn in agriculture was Rs. 4 per day, although the range went from 1/2 kilo of grain for a full day's work in Maharashtra to Rs. 20 per day in paddy fields in Kerala and Assam. Forest produce collectors's income ranged from Rs. 0.20 to Rs. 10 per day, Rs. 2 being the most common amount that women received. Operations that fetch higher wages are male preserves, whereas work of arduous nature bringing in lower wages is done by women. Discrimination against women is also manifest in lower rates for the job traditionally done by women. A study "Public Enquiry on Women in the unorganised sector", conducted in Tamil Nadu by Centre for Labour Education and Development for the National Commission for Women (1994) also shows that there is exploitation of women agricultural workers and discrimination in wage inspite of the hard work done by them. They always fear losing the job if they demand minimum wages. Other problems

brought out by this study are: non-permanent nature of work, no accident relief, no creche facility and lack of facilities for education, health care including maternity care, housing, drinking water and sanitation. In short, the basic reasons for the disparity in wages are: (i) seasonal nature of the demand for labour, (ii) the traditional classification of some jobs as the monopoly of women, (iii) unorganised nature of farm labour, (iv) the ease with which hired labour can be substituted by family labour and (v) poverty, illiteracy and ignorance regarding the laws.

There also exists the problem of off-season during which women in agriculture have to struggle hard to fend for alternative source of income. The absence of alternative opportunities for employment in the rural sector is intensified by the decline of traditional handicrafts. In drought prone areas, the plight of such women is worse. Some of the new technologies have further added to the problem as these have displaced women from many of the traditional activities. Such women try to take up any work available to them in or near their villages e.g., road construction, forest produce collection etc. At times they are subjected to verbal/sexual abuse or physical harassment. In many cases, to get employment, they have to bribe the persons in-charge of such works.

Another problem faced by these women is the non-availablity of loans. The financial institutions are hesitant to extend credit to them as they lack security to offer as collateral. By and large, these women are unaware of existing credit facilities or are physically unable to reach the banks or are unfamiliar with their policies and cumbersome procedures. Hence the two major factors restricting women's access to formal credit are (i) women's lack of control over economic resources and (ii) the nature of their economic activities. As a result of this, women are accustomed to taking informal credit from a variety of sources, such as relatives, money lenders, pawn brokers etc. There is lack of women's groups/cooperatives which may help such women in obtaining the required credit.

The need for attention of children of women in agriculture needs no overemphasis. These are necessary not only as support services for the mother but also for the allround development of the child. However, these services are lacking in the rural areas. Usually, the children of women in agriculture do not get the full attention of the mothers as they are away from homes for most part of the day. The children are either looked after by the older siblings-mostly girls-thereby denying them the opportunity to go to school, or they are carried by the mother to the work place. They are brought up in unhygienic conditions leading to many physical, social and psychological problems, malnutrition etc. They are generally exposed to hazards at work, get affected by accidents and contact diseases.

There is also dearth of local women's organisations. Trade unions are non-existent or almost so. The women who have organised themselves into some groups like mahila mandals or cooperative societies or have some interaction with some development projects have become aware about their rights and privileges as also regarding improved methods of farming, benefits of extension service, facility of credit etc.

Recognition

The Eigth Five Year Plan gives due recognition to the role of women in agricultural production. It envisages distribution surplus land to women-headed households and grant titles to women in the allotment of house-sites and other productive assets. Emphasis is on the expansion of programmes of training in soil conservation, dairy development, social forestry and other allied occupations like sericulture, dairying, horticulture, poultry etc. besides strengthening the extension services. The latter would help rural women in forming cooperatives/ mahila mandals. Measures would be taken to reduce the element of drudgery among rural women through improved sanitary and environmental conditions, smokeless chulahs, bio-gas plants, solar cookers and low cost technologies. Under the various existing anti-poverty programmes, it would be ensured that the target set for women beneficiaries is reached and that there is greater flexibility in the training inputs for organisational and managerial skills and support for raw materials, marketing and services from the concerned departments.

Various steps have been taken by the government to bring more and more women farmers into the main stream. Extension and training is an important programme which attempts to bridge the gap between actual and achievable production levels by providing effective transfer of technology. The curriculum of Farmers Training Centres, which organise training for women, takes into account the technological needs of women farmers, with emphasis on village based training. There is also stress on gender sensitisation programme for officials, extension functionaries and women as contact farmer. Special projects for women, aided by foreign agencies, have been taken up in some states to provide training to farm women, with emphasis on skill development in agriculture and allied areas. To motivate and mobilise farm women through group approach, a scheme, namely, Women in Agriculture, has been introduced in 7

states. It is being implemented on pilot basis in one of the districts in each these states.

The importance of cooperatives in any economic activity is well known. The National Cooperative Development Corporation has been providing financial assistance for development and promotion of cooperative societies for women in the field of handlooms, fisheries, dairy, poultry etc. A Central scheme for 'Financial Assistance to Women Cooperatives' has been started to bring about improvement in the socio-economic status of women by providing special protection to them in the form of assured work through cooperative venture in agro-based commercial/industrial sector. The scheme generates employment which in turn helps in the augmentation of their income.

The Integrated Rural Development Programme (IRDP), which enables the identified rural poor families to cross the poverty line, has 40% reservation for women. Subsidy and credit are being provided for securing an income generating asset or venture. Groups of women forming thrift and credit societies are provided matching grant for a revolving fund equal to the savings generated by the groups subject to a celling of Rs. 15,000 per group. Similarly, the scheme 'Development of Women and Children in Rural Areas' (DWCRA) lays emphasis on the formation of groups of 15-20 women from poor households at the village level for delivery of services like credit and skill training, cash and infrastructural support for self-employment. It has a provision for child care too. Under the scheme of 'Training of Rural Youth for Self Employment' (TRYSEM), training is provided to rural youth at training institutes like Krishi Vigyan Kendras, State Institute of Rural Development, Extension Training Centres etc. The minimum coverage of women under the programme is 40 per cent.

Many appropriate technologies have been developed to improve the working conditions of farm women. A study titled "S&T Projects for Women in Agriculture—An Evaluation Report" conducted by the National Institute of Science, Technology and Development Studies in 1994 on behalf of the National Commission for Women has documented about 80 case studies of S&T projects for women in agriculture including fisheries, sericulture, dairy development, aquaculture, medicinal plants, food processing, compositing technology and mushroom development. These projects have been sponsored by various agencies like Department of Science & Technology, CAPART, ICAR and Ministry of Rural Development. Maximum number of these projects are in Andhra Pradesh, Madhya Pradesh, Gujarat, Kerala and Maharashtra, probably because women in these regions are better educated. All these projects are stated to be well-conceived and are based on local needs and natural resources available in the area. The pattern is to take up the traditional technolgies already prevalent in the area and improve upon them with better varieties of seeds, implements, manure etc. Technologies are disseminated to them in the form of training besides other help extended to them in the shape of land, seeds, plant saplings etc. which is acquired from governmental sources/research institutions.

Misconceived

The report observes that these specially constructed projects for women belie the common view held that adoption of technolgies displace women. On the contrary, they are avid and once they accept a technology, they put in their best efforts to learn it. Women actually outnumber men in most of the agricultural operations. Agricultural modernisation has made a definite impact on farm women-on their income, expenditure pattern, behaviour, time utilisation and quality of life. There is awareness regarding their issues, needs and what requires to be done. A sense of accomplishment is prevalent following learning of new skills and earning independent income. This has resulted in self-confidence and improvement in their standard of living. There is a lot of demand for innovative approaches to women's work with a view to reducing their drudgery. The lady village agriculture workers are found to be motivated and enthusiastic. Local bodies/NGOs etc. also provide technical assistance. There exists an intensive system of training and visits to reach out to a large number of women farmers.

However, an interesting observation made in the study is that unless there are drudgery removing and time saving devices, the women do not welcome more yeild in their farming. More production means more work for them and more time spent away from their families which they cannot afford.

To sum up, women in agriculture have vast potential, intelligence and ability, which if tapped properly, may enable them to join the main stream of agricultural development. The main disabilities and source of exploitation of these women are rooted in their ignorance, helplessness, landlessness, lack of education, lack of organisation and inequality of status. It is, therefore, necessary to equip these women with required information, knowledge and skills to enable them to do their work efficiently and become equal partners in agricultural production. Media has a tremendous role to play in this direction. The unprecedented expansion of radio and T.V. network

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Transfer Of Technology To Farm Women

Anita Jhamtani

MODERN agricultural technology and its transfer is *sine qua non* for modernisation of Indian agriculture and development of our farmers'. However the moment we talk of a farmer we picture a man working in his farm, never or rarely, if ever, do we imagine a woman in the farm; from this itself male bias in agriculture is evident. Even though most farmers are women as reported by UN 1991, only men are better recognised as farmers.

It is now a well known fact that women contribute equally if not more to agriculture, especially in a developing country like ours. Their contributions for long had remained shadowed. It was during the 'decade for women' and subsequent to it that corrective measures were taken to document their contributions.

Women contribute significantly to agricultural development and allied fields which includes crop production, livestock production, horticulture, post-harvest operations, agro/social forestry, fisheries, etc. According to Swaminathan (1982) some historians believe that it was women who first domesticated crop plants and thereby initiated the art and science of farming. While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating those of interest from the point of view of food, feed, fodder, fibre and fuel.

In the rural scenario today, there is hardly any agricultural activity where women are not found contributing except probably ploughing the field. Research conducted during the decade of eighties amply support this. Aggarwal (1993), found that labour contribution of 70-85 per cent for weeding and over 60 per cent for harvesting is provided by women. Anandlakshmy and Sawhney (1988), revealed that women play a prominent role in crop cultivation, post harvest operations, management of milch cattle and perform all major agricultural tasks.

Extent of participation in farming has been studied by several researchers; some of their findings reveal that on an average women spend 8.2 hours each day on the farm (Saxena and Bhatnagar 1985, Sridevi 1984, Hiranand et. al 1988. Verma (1989) report that on an average a woman devotes 13 man-days as against 9.94 devoted by a man in cultivation of one acre of wheat crop in Haryana. In paddy cultivation these figures were 17.3 and 11.5 man-days for women and men respectively.

Saikia (1983) reports that agriculture is the highest employer of women labour, its extent being 97.54 per cent, which includes 84.38 per cent full time and 15.62 per cent part time. Despite this knowledge, there is hardly any organised effort to reach them. Most agricultural development programmes are planned, even today, by men for men. Any programme for rural farm women, planned and implemented by development agencies is done with 'welfare' as its focal approach. Development and enhancement of capability of farm women is rarely the consideration.

Planned technological development for agriculture in the past did not consider farm women as important clients to be approached. As and when technologies developed they were focussed towards male farmers. The men on the farms were trained and educated to use the technological innovation.

'Technological change and improvement in any sphere, increases economic returns, gives status and enhances development process of the nation. The most visible technological innovation in agriculture began in the mid-sixties with the high yielding genotypes that led to the popular green revolution in agriculture. One of its consequences was an increased interest in and support for agricultural research for technology development.

During the early phase of technological development in agriculture the prime concern was to boost agricultural production. Later on development with concern for social justice became an issue and it was felt that due attention must be paid to develop technologies that are neutral to the size of the farm so that small and marginal farmers can also partake the benefits of development. The development agencies then focussed attention on small and marginal farmers leaving women out, rather totally ignoring women farmers as a special group. It was only after the U.N. declaration of 'decade for women (1975-85)', that women in agriculture were considered as an important, economically and socially poor group that was being side-tracked by development effort, especially technological developments in agriculture.

The research and extension system in agriculture too has been largely man-oriented. Almost negligible effort has been made to develop the potential of farm women. All agricultural

services are aimed at men, having a definite male bias. Women are mostly bypassed in these development efforts. Women's child bearing and child-rearing roles are highlighted not only by the society in general but also by the development agencies. Just as the rural men folk refuse to acknowledge women's role of a producer, the development agencies also rarely target them to enhance their capability as producer of food. At best they are targeted for processing of food and storage activities. Extension workers are almost always men. While conducting research on organisational environment of development department of Delhi, Jhamtani (1986), did not find a single lady extension worker in position. In other developmental agencies functioning around rural Delhi women workers are mostly employed for teaching and keeping small children in Balwadis, Aanganwadis or teaching women to stitch. Sewing is one activity that gets undue attention from the development agencies keeping agricultural knowledge out of reach of women. Sewing classes no doubt attract large number of rural women, this actually can be used for initial motivation and attention of rural women for training in agricultural technology, rather than as an end in itself.

Swaminathan (1982) observed "Extension workers almost exclusively male, aim their advice at men and at men's activities and crops. In some regions this bias may depress production of subsistence food crops (often women's crops) in favour of increased production of cash crops (often men's crops) so that family nutrition suffers".

Special Effort

It may be argued, and quite logically that women are not side-tracked intentionally. Agricultural programmes and Extension activities are designed and delivered for development of agriculture and whoever participates can partake of benefits. To an extent it is true but if we delve into these programmes we discover the male bias though not directly but indirectly. The socio-cultural factors inhibit women's participation. Unless a special effort is made to reach women, they cannot be brought into the fold of development activities. If a group discussion meeting is held in a village, open to both men and women, we know it will be only men who would come forward to participate, especially when the venues and timings of such meetings are inconvenient to women. Thus even the most needy women will have to keep away.

Women are not given the status of a producer. Despite their contribution in agricultural production they face severe handicaps. They are the largest group of landless labourers. In case of a family break up through death of husband or divorce, they are left with little or no security. Owing to their illiteracy, dependence on the male members since childhood, coupled with the inheritance laws and customs which discriminate against them women are left with virtually nothing to eke out a living on their own. They rarely hold title of the landed property and thus have no access to developmental resources like credit and technology.

The technology that is designed and created for women is based on the tasks performed by women. In technology development for farm women, the tasks commonly performed by women are identified and machines are designed to perform these tasks. No thought is given to the fact that whether the machines so designed can be handled by women or not. Often these machines are of the nature that only men would operate them. In the words of a Haryana farmer, once a machine is invented that operates on power it becomes the sole right of men to operate it, for power is associated with strength and with men. Very often these machines displace women labour force pushing them further into joblessness, especially the farm women labour force.

While developing technologies for women it would be better to focus on small tools and machines rather than on women related tasks. In any case division of labour between the sexes is not a permanent one rather it keeps changing with changing situations. The fodder cutting machine is reasonably sized and women do operate it. The wheat grinding store that has been replaced by an electrically operated small machine for household use has become exceedingly popular in villages of Haryana, Delhi and Punjab.

Extension

In addition to development of technologies for women there is need to strengthen the extension system with induction of women workers trained in agriculture. So far the few women workers available in extension system are trained in Home Science. Therefore, labour saving techniques in agriculture and productivity resulting from it is rarely passed on to farm women. It would be good to impart agricultural training firstly to the Home Science extensionists so that they are also equipped to carry out transfer of agricultural technology to farm women alongwith home science knowledge. While inducting and training women extension/field workers it must be borne in mind that these group of women workers also have special needs with regard to their safety, housing, transport to reach villages, etc. Unless these are provided, more recruitment will not be worthwhile. Female functionaries would certainly have an edge over male functionaries in reaching and

transferring technology to farm women.

The design and plan of training programme for farm women also has to be different from the one applicable to male farmers. The major differences being; first and foremost the training programme should be conducted in the village so that farm women do not have to leave their houses for long. The location and timing should be such that it suits the participant and some arrangements for small children at the training site should be provided so that farm women can pay undivided attention. The regular contact between farm women and extension agencies will not only help enhance the knowledge and skill of farm women but also bring women together as a group which in turn will give them confidence and improve their bargaining powers in agricultural labour sector. Besides, with the continued contact the technologies that are developed for drudgery-reduction in a woman's life can be monitored to ensure that the benefits reach women and do not eliminate or push them out of paid labour jobs.

The transfer of technology to farm women would have to synchronise with the effort in technology generation to reduce drudgery in women's life. There is an equal need to conduct researches in socio economic implications of the new technologies. ❐

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in the country may be effectively utilised as mass approach in dissemination of information. It may, however, be imperative to form a group of experts to work out the strategies, prepare the correct messages for presentation and review the same periodically for bringing in modifications, if required. A regular system for feed-back would also be necessary.

Study Needed

There is no data available regarding the actual work done by the women in agriculture and other related fields, both paid and unpaid, the problems faced by such women in various parts of the country, the forms of assistance these women actually are availing of, the effects of modern technology on their work, both at house and work place, the types of women's groups associated etc. Some region-wise studies need to be undertaken by professional research institutes/ organisations on these aspects.

Improving women's access to appropriate technolgies can significantly reduce their work load and bring in efficiency in both basic household and agricultural chores, thereby leading to enhanced productivity. Appropriateness of a technology may be measured by parameters such as being user-friendly, low cost, sustainable, tailored to local needs, drudgery reducing, time saving, income-generating, adaptable, easy maintenance and accessible.

Most of the women work under harsh and undesirable conditions/ surroundings. Besides, modernisation of agriculture has exposed them to various types of injuries because of the low levels of inputs in terms of knowledge, poor quality of tools and machinery etc. Women are also exposed to occupational diseases while performing certain operations like spraying of insecticides, using fertilisers without sufficient safeguards, standing continuously in water while transplanting paddy seedlings etc. Statistical information regarding the incidence is not available. An assessment of the problem by certain agencies will help in ameliorating this situation. On-farm R & D will be highly effective.

During the lean agricultural period, the women have to seek alternative work. Sometimes they fail to get the same. It leads to lot of hardships. Some specific schemes-say on the lines of the Employment Guarantee Scheme of Maharashtra-may be formulated to provide employment to such women during off-seasons and thereby reduce their hardships and various other types of atrocities they are often subjected to.

The Constitution (Seventy-Third Amendment) Act, 1992 came into force from 24.4.93. An important aspect of this Act is that women too will be represented in the Panchayats through reservation of seats. Not less than one-third of the total number of seats to be filled by direct election in every Panchayat shall be reserved for women. These grass-root level women would have to be empowered and made aware regarding the various issues and needs of the women in agriculture and the ways in which the same could be tackled.

The implementation of various existing protective legislations has been extremely tardy. The same needs to be enforced vigoursly. It may perhaps be necessary to review these legislations to bring in the amendments, if required, to make their enforcement more effective. Besides, there should be legal safeguards for the provisions of maternity benefits, creches and balwadis for children of farm women.

Voluntary organisations have played an important role in promoting development programmes for women. These need to be strengthened through financial and other infrastructural support wherever they already exist and encourage the formation of such agencies where they do not exist. These may prove very useful in (i) solving some of the problems of farm women and (ii) disseminating necessary information. ❐

The author is a free-lance writer.

NGOs' Role: Micro-Level Perception

I.C. Srivastava

THE all-pervading presence of government and its control over means of production and distribution in economy has become a phenomenon of the past with the collapse of 'iron-curtain' of the Soviet Union and Communism as an alternative to Market Economy. But while the State retains its hold and power on predominant sectors of economy in India as well as in many other developing countries, non-government organisations (NGOs-this U.N. terminology encompasses all types of voluntary organisations) have become prominent actors in the field of development all over the world.

The term 'voluntarism' is derived from the Latin word 'voluntas' which means 'will' or 'freedom'. Thus simply defined, voluntary organisation is a group of persons who organise themselves on the basis of voluntary membership without External and State control, for the furtherance of some common interests of its members. Briefly, the absence of external or State control defines the inherent strengths and weaknesses of the voluntary organisations at the same time.

In India, a voluntary organisation is generally registered as a Society or Trust and acquires its legal status as such under Societies Registration Act or Indian Trust Act. It has definite aims and objectives and programmes to fulfil them. Generally, an NGO has a constitution and an administrative structure too and is propelled by democratic principles and team spirit. It raises funds in the form of contributions and suscriptions from members but is not averse to receiving grants from governments and international agencies as well. The voluntarism of an NGO may be inspired by religion, philanthrophy, social service or developmental activities besides keenness to create awareness by educating people or providing them training skills.

With the above conceptual framework, let us have a look at the present scenario in India. As we all know, India's Kaledescopic culture is full of contradictions. While we are proud of our rich cultural heritage and glorious past, cultural and moral values have eroded considerably. For some political parties and voluntary organisations, the glory and splendour of hoary history rekindle the low spirit and thus distract attention of people notwitstanding world economic realities which should enable build up of national consensus on vital issues. The glorification and deification of historic heroes have become a passion to be pursued with zeal and vigour. Thus the past becomes a burden of song without substance.

The second most important feature of Indian scenario confronts us in the form of poverty of people. The paradox of riches and poverty is summed up in the proverb 'India is a rich country where poor people live'. While the country is rich in mineral and human resources, its vast majority live an impoverished life which compares favourably only with the people of ten poorest among the nations of the world. Thus poverty will remain our biggest problem combined with unbridled population.

India's population is growing menacingly every year despite the long drawn family planning and family welfare programmes spread over four decades of freedom and democracy. It may be recalled at the expense of repetition that India was among the few and foremost nations to adopt a national policy for control of population and family welfare. As every one knows, the approach and strategy adopted for population control in terms of sterilisation of eligible and

ineligible couples did not pay off during and after Emergency period and only resulted in marginal decrease in population in the country as a whole. Kerala as a state remained an island of excellence with its highest rate of literacy and near ideal population control.

Finally, perception of people of all walks of life towards government, politicians, rulers and powers that be has failed to provide focus on the most burning issues which need to be tackled urgently on the basis of a national consensus. People in general barring a few perceptive minds are confused and misguided by the phenomenon of self-denigration or self-glorification on the one hand and revival of religious fanaticism and all that goes with it on the other. The all-powerful State has almost lost its strength and teeth for it can neither enforce discipline nor command obedience through its bureaucratic machinery and other instruments of sovereign power.

Thus nostalgia for the past, population, poverty, politics and perception of problems characterise the present Indian society. What can NGOs do against this background. The cliche, 'where do we go from here' bears repetition. How should NGOs proceed in this setting. First of all, let us start with people. What Abraham Lincoln said about 'Democracy, I would like to assert about NGOs. It is the will of the people, for the people and by the people, which needs to be generated for their own good by voluntary action of good NGOs and their leaders. But the million-dollor question still remains: how to get the spread effect of good NGOs. The 'trickle down' economic theory will not serve the purpose as the world marches ahead at a galloping speed. The biggest problem envisaged in NGOs' role is that there are very few NGOs who can do the net-working with other voluntary organisations for necessary spread effect. While some NGOs like SEWA (Ahmedabad) and such others have become islands of excellence in themselves, others fade far away and dissolve themselves and are thus forgotten by others in course of time without leaving any trace or impact. Recently, SEWA's exemplary work prompted the American President Bill Clinton and his wife Hillary to announce that its module of women's empowerment would be adopted for operationalizing in USA. But we know that SEWA has failed to deliver the same or similar 'goods' in empowering women in other parts of our country.

Some people argue that the achievements of an excellent NGO cannot be replicated by another NGO because each voluntary organisation is inspired and motivated by its charismatic leaders who are born great and achieve greatness by sheer dint of will and courage. While it may be correct to argue on these lines to some extent, an intelligent person has a right to question or to suggest why should reputed NGOs not replicate themselves, or do net-working with other NGOs in order to achieve the much needed impact in the rural area where millions of our countrymen are waiting to receive succour and sustenance.

The perception of a good NGO is as follows: It should have its base at the grassroots of a Panchayat area or in a cluster of Panchayats so that its operations are anchored in ground realities. The members of a good voluntary organisation should be motivated by the perception of most important or upper-most needs of the people of that area which should be addressed in the first instance. Secondly, the members of an NGO should not only get together but act together all the time cutting across barriers of caste, creed, religion or region and local politics. A secular spirit should form their working relationship with common people. Thirdly, members of a good NGO should have the capacity to work with government functionaries at various levels on the one hand, and Panchayats and other local bodies on the other. Their capacity should be reflected in placing 'right men on the right job', keeping in view the closeness or the report of a person with the people of the area. Fourthly, members should have an innate ability to net-work their activities with those of other voluntary organisations besides devotailing with government programmes in the area. Finally, the success of an NGO will depend on the sensitivity of its members to respond to the genuine needs of the people of the area.

Above Politics

In the final analysis, the NGOs' functioning should rise above petty politics of the area and should encompass the vital interests of the people with a view to providing focus to the burning issues. Before embarking upon their work, the NGOs should identify the issues and problems they would like to address individually and the focus should not be lost sight of. For instance, NGOs devoted to creating awareness or educating people should be distinguished from service or development oriented NGOs. An NGO interested in training people in skills and thereby empowering local people cannot undertake developmental activities except in a pilot programme for exploring experimental results. Therefore, NGOs' approach should be introspective to begin with. Thus what members can do for themselves or their area in the best possible way should be the guiding principle for any NGO. Secondly, a good NGO should have an inter-active approach, that is, its members should not only

intermingle and live with the people of a village or area but they should also draw out the best in the common people by involving them for their own good in the identified activities.

Whereas there are a large number of activities which an NGO can undertake in a rural area, a few can be listed for exploring and adopting with good results.

Millions of young men not very educated but full of zest for life and vigour for work are waiting to be called upon to perform tasks which may yield good results for their village or group. These may relate to cleaning up and paving village streets, deepening tanks or walls or growing trees on Panchayat land for afforestation. Mass literacy work has vast potential for tapping human and other resources for tackling the most important challenge facing the country. Besides, young men can be provided short term training for writing out various types of petitions to the government functionaries at various levels without which bureaucratic machinery can not be moved. By organising people with their power and potential, the youth can fight superstitions and undesirable customs on the one hand and the challenge of the poverty on the other. NGOs can and should provide some gainful jobs which can invigorate the youth and channelise them into productive purposes which may also ameliorate the lot of the poor.

However, the success of an NGO will depend largely on its capacity to involve people at the grassroots level in formulating and implementing developmental schemes so that 'development-at-doorstep' becomes a reality and does not remain a mere slogan or a cliche to be repeated in conferences and seminars. This challenge of participatory approach poses many 'Ifs' & 'Buts'. Keeping in view the wide spectrum of NGOs' activities and their source of funding, ranging from government grants to contributions by local people, the constraints and bottlenecks should be looked into closely before making suggestions for strengthening them. We are already aware that a large number of NGOs work with and are dependent on government which tries to control them by monitoring their progress. On the other hand, some NGOs are supported by international agencies which assume that implementation of schemes by governmental agencies has been tardy and unsatisfactory. At the other end of the spectrum, we find activists like workers of 'Narmada Bachao Andolan' struggling against all odds to save the eco-system and ethnic culture of the area from their own point of view. Finally, some voluntary institutions have been set up by people with vested interest in order to avail of tax-exemptions on donations made by them for rural development. These institutions have developed their own philosophy and out-look, being self-sustaining in many ways.

Thus it becomes clear that NGOs are a divided house. In this context, the mechanism of control on NGOs' spending by government and international agencies has its own logic and rationale. Besides, there is the requirement of sending regular progress and administrative reports to government, which is apparently based on sound principles. The plethora of NGOs supplement government efforts and do not compete with them so that decentralisation becomes a reality.

There were many avenues of work for voluntary village groups as envisaged in the Seventh Five Year Plan but the quality of work and output of NGOs far from satisfactory in a majority of cases as the heterogenous workers have been drawn from the elite groups who are not rooted in rural realities. We all know that a successful voluntary group should be small to begin with. It should be voluntary and fully participatory and non political to the core. But such a voluntary group more often than not develops a love-hate relationship with government which is concerned with a target approach for achieving social and economic goals vis-a-vis the non-target, participatory approach of the voluntary group.

To sum up, the present scenario is more confusing and perplexing than ever. But much is not lost, so to say, anywhere. Where local people have supported an NGO, results have been miraculous and far-reaching. On the other hand, the government's initiative in involving people, especially women, to run and control literacy and health programmes directly has also paid off. For instance, the Maharashtra Government has associated women-elected or coopted—in Panchayats to certify local school teacher's attendance, which enables them to keep an eye on the functioning of the school. On the whole, the NGOs can and should take initiative to bring together official and non-official workers available at grassroots level with a view to bringing about greater and better convergence in the delivery of services to the poor. A two-fold approach 'share the work and share the facilities' by workers of NGOs as well as government functionaries at village and panchayat level alone will provide the necessary common platform for development activities. This strategy will ensure a bottom-up approach in formulation and implementation of appropriate schemes. This will also result in NGOs' success and all-round progress at the village level. Hopefully, then, 'reaching out to people' will become a re-invigorating reality. ❐

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Electronic Media—The Future Scenario

P.S. Sundaram

BROADCASTING is a vital component of the domestic communication infrastructure of a country. Throughout the world, huge investments have been made in radio and television broadcasting infrastructure both by public and private broadcasters. Broadcasting is the most efficient means of delivering mass message. Its benefits are universaility and portability which will not be supplemented by wire or fibre technology. Broadcasting provides message free to subscribers and has a simultaneous capacity to address the consumers selectively.

In the radio transmission of broadcasting which began in mid 1920s, many new developments have taken place during the last decade, mainly due to digital techniques combined with computers. Today the stress is on new developments for delivering the signals and in making use of the frequency specturm more optimally. However, the broadcasters also face the task of maintaining backward compatibility to protect the consumers' interests.

Before proceeding to discuss the emerging media technologies it will be appropriate to overview the developments in All India Radio and Doordarshan, the radio and television broadcasting networks in the country.

All India Radio has shown steady growth since the inception of the First Five Year Plan. Today the network has 175 broadcast centres comprising 168 full-fledged stations, 3 relay centres, one auxiliary centre and 3 exclusive Vividh Bharati commercial centres, providing radio coverage to 89.7% of the population. The network has 146 MW, 49 SW and 85 FM transmitters.

A recent highly important development is the launching of FM Radio Paging service utilising 17 FM transmitters in the first phase, making the entry of AIR into the new era of Data Broadcasting.

Another major step is the launching of the Sky Radio service by AIR which has opened up the facilities to the multilingual population of India to receive radio programmes of excellent quality in their own language from any corner of the country.

Doordarshan, the television broadcasting network in the country has also registered a very healthy growth rate over the years. At present the network has 696 transmitting stations of various capacities and 32 programme production centres. Its signals cover 67.8% of India's land area and are accessible to 85.1% of the population as on 31st January, 1995.

Of the 696 transmitting stations, 670 transmitters broadcast the primary channel, 24 DD metro channel and two broadcast Parliament proceedings. 670 transmitters broadcasting the primary channel are split up as follows:

1. High Power Transmitters	74
2. Low Power Transmitters	476
3. Very Low Power Transmitters	100
4. Transposers	20

For terrestrial transmission of DD2 (metro) programmes, 24 transmitters including 6 high power transmitters are in operation in the big cities.

The network has also launched 13 satellite channels. These are the primary channel, metro channel and 11 regional language channels. It has also launched an international channel. It's future plans include satellite transmission of 5 or more programmes through a single transponder using digital compression technology.

With the planned launching of INSAT-2C in the latter half of 1995, two C-band transponders of wider beam coverage, two XC-band transponders and one KU-band transponder would be available to Doordarshan for dissemination of additional services.

Radio

The last three decades have witnessed many developments in the fields of production and post production techniques for radio and television broadcasting. Sophisticated equipment with maximum use of computer and micro-processors both for production and post-production areas became available in the 80's. Optical and opto-magnetic recording techniques are also now set to revolutionise broadcast programme production. During this decade, the thrust has been mainly on new programme delivery methods. Several new transmission technologies both in radio and television are being attempted and some have already been implemented by many broadcasters.

The transmission standards have a direct impact on consumers, as the equipment to receive the signal would need to conform to these standards. Many transmission technologies developed in the laboratories have not become successful mainly due to lack of international standardisation. The three new transmission technologies which might be implemented by many broadcasting in the coming years are AM Stereo, Digital Audio Broadcasting and Data Broadcasting service through FM network.

AM Stereo: The AM broadcast transmitters can be utilised to transmit stereo audio signals with minimum modifications and additional capital investment. The technology development for AM stereo transmission has an enthusiastic approval of many broadcasters in the USA and Japan. The *de facto* standard which has been adopted by the USA and Japan is Motorola C-Quam. The mono signal (L+R) and the stereo signal (L-R) are modulated using two balanced modulators with quadrature RF signals 90^0 out of phase. The resultant sum signal, after stripping the incompatible AM components from the signal is amplified and sent to the broadcast transmitters. While maintaining compatibility with AM mono receivers, it also provides a fairly good AM stereo quality.

The number of AM broadcast transmitters which have adopted AM stereo transmission in the world are more than 750 today. As AM stations world-over convert to AM stereo, prices will drop and AM broadcasting will get a new lease of life.

Digital Audio Broadcasting, a new concept in radio broadcasting, is being experimented in many developed countries and high investments have been made in the research and development of the scheme and also in the development of compatible receivers. Through digital audio broadcasting, a number of CD quality audio programmes could be multiplexed and transmitted both through satellite and terrestrial transmitters. By digitising the audio and then applying advanced data compression techniques, tests have proven that excellent performance is possible with improved spectrum efficiency. The techniques used for DAB would provide highly reliable quality reception even to mobile receivers. The World Administrative Radio Conference held in 1992 allocated frequency spectrum for countries for Digital Audio broadcasting. The allocations are a 40 MHz wideband (1.452-1.492 GHz) in the 1 GHz band on a global basis and 2.310 to 2.360 GHz and 2.535 to 2.655 GHz. DAB provides an ideal solution to transmit multiple channels of hi-fi quality programme direct to home. For example, using a 7 MHz RF bandwidth it is possible to transmit as many as 33 audio monophonic channels (128 Kbits/second per channel) or 16 stereophonic pairs and one data channel. For countries with multiplicity of languages, DAB would be an ideal solution and reach all parts of the country. This would also provide to every listener the choice of programmes.

Though the DAB receivers which are under development today could be highly expensive (in the range of US$ 200 to 500), like any other consumer electronics product it is expected that these would also become cheaper in the future.

Radio Data System (RDS)

Data Broadcasting through Radio: which has been standardised by the CCIR and the EBU is finding immense application in many countries for the last few years. Radio Data System (RDS) or Radio Broadcast Data System (RBDS) is a transmission standard defining how FM station could broadcast data utilising 57 KHz sub carrier. RDS has a number of highly touted benefits like receiver display of station name, programme type, programme service, emergency alert etc., but at present paging service seems to offer the promise to broadcasters. Paging is to 'summon', or 'alert' a person on the move. Coded messages in numeric (upto 16 digits) or alphanumeric text messages not exceeding 80 characters per message could be transmitted through RDS format to individually addressed subscribers. One million subscribers can be addressed by one network of transmitters. USA, many countries in Europe, China and India have already implemented RDS paging for nation-wide service.

Experiments are already on to establish high data rate transmission at 76 KHz of the FM baseband at a bit rate of 16 to 19 kilo bits per second for mobile applications. Application of such service could be for traffic information, stock market information, news, weather forecast, down guide with graphics, etc. This mode of wireless data services when transmitted through broadcast transmitters could provide valuable information at a much economical rate. Besides mobile reception possibility with powerful error correction code built-in, makes it more attractive compared to wired data service.

Data Broadcasting Through Television

High speed data broadcasting in television is a reality today. Recent demonstrations held at various countries have shown that it is technically possible to transmit data at speeds up to 1.5 mega bits per second without affecting the quality of the video and audio signal. It is expected that the standard for this data broadcasting will be finalised shortly.

Information Booths

An important potential application of data broadcasting is the setting up of 'information booths' for use by public. The booths will be equipped with data decoding and display systems and could be coin or card operated. A user can extract the data or information of his/her choice from the transmitted data stream. This system will have a highly user-friendly interface. The broadcast network could update the data at regular intervals. The service can in turn also generate new revenue stream for broadcasters.

Television Broadcasting—New Technologies

In the field of television broadcasting, several new technologies have made their entry over the last decade. The most important among these are Digital Video Compression (DVC), High Definition Television (HDTV) and Enhanced Definition Television (EDTV). However, some of these technologies have failed to take off mainly because of a lack of public interest. Some of these technologies are described in the succeeding sections.

Digital Video Compression

The focus of the industry is to move from traditional analog system to fully digital systems employing compression. The purpose of compression is to provide additional bandwidth in existing channels and, therefore, dramatically reduce the transmission cost per channel. By means of this technology, the digitised video bit rate can be brought down to as low as 4% of the original rate. This is achieved by removing redundant information and using the predictable nature of video sources and also the psychovisual characterstics of the human eye to efficiently code the remaining essential information.

The fundamental algorithm used in the digital video compression process is known as Motion Compensated Discrete Cosine Transform (DCT) coding.

An International Standards Organisation (ISO) Committee called Moving Pictures Experts Group (MPEG) was formed in 1988 to help attain the goal of having an international digital compression standard for both video and audio. MPEG first proposed the MPEG-1 standard in 1990 for coding of moving pictures and associated audio for use with digital storage media. Later on, an MPEG-2 committee was formed to develop a compression standard specially optimised for full interlaced TV video and backward compatibility with earlier MPEG-1 compression material.

The MPEG-2 standard allows multiplexing together a number of compressed video signals along with their associated compressed audio signals and other user defined data into a single stream. The net outcome of all these developments is the emergence of a number of systems for multichannel digital video transmission using both satellite and terrestrial transmission.

MPEG-based digital video transmission systems are currently under development in various parts of the world. A number of manufacturers such as General Instruments, CLI, Scientific Atlanta, TVCOM, NTL and many others have joined the race.

Video Compression technology promises to be the most significant technological development of the decade. Future digital television broadcasting system promises to be very flexible. The same channel might be used at alternate times of day for say one HDTV service, two extended definitions services or many standard definition services or a combination of these.

From the consumer's point of view, this technology has the potential to become a popular one as it provides the viewer a choice of multiple channels. Further received pictures will have the inherent quality enhancement associated with digital transmission.

Enhanced Definition Television (EDTV)/HDTV

The introduction of colour television in the sixties was a very significant step in the evolution of television broadcasting and was readily accepted by the viewers. The quality improvement inherent in the transition from black and white to colour pictures was striking enough to persuade the viewers to go in for costly colour TV receivers. However, the need to have compatibility with the then existing monochrome television imposed severe constraints on the system designers. Because of this, present day colour television system suffer from a number of limitations and defects.

The advent of the concept of Direct Broadcasting by Satellite (DBS) provided a rare opportunity for the broadcaster to consider the way in which the television signal is structured. This is because the viewer will in any case require additional equipment in the form of either an add-on adaptor or special receiver. These reasons led to the development of a new encoding scheme for television signals for DBS transmission known as MAC (Multiplexed Analog Component)/packet system. MAC system enjoys several advantages over the conventional analog systems. The MAC/packet system is a combined carrier of digital data and analogue vision. The data resource enables the provision of several high quality sound channels as well as numerous data services.

The absence of subcarriers in the MAC approach gives a flexibility to the vision bandwidth specifications.

The flexibility of the MAC/packet system is such that a picture aspect ratio of either 4:3 or 16:9 can be provided. Over the years, there had been a number of public demonstrations of D2MAC (the particular variation of MAC chosen by EBU for DBS transmission in Europe). However, this has failed to evoke sufficient interest in the consumers to go in for the new receivers mainly because they are too expensive.

The consumers' response to these new technologies clearly proves the point that the question of price sensitivity plays an important role in determining the success of any mass market product.

International standardization is seen to be an essential element in the successful introduction of consumer electronic products. Despite the advantages of a single worldwide standard, there has not yet been an agreement on world-wide production standard for HDTV. Similarly, confusion prevails over standards for Advanced Television (ATV) systems. This failure to arrive at uniform international standards is likely to hinder public acceptance, with experience in the areas of consumer electronics demonstrating that uncertainty about standard can suppress demand.

There is a unanimity of opinion among broadcasters that the long term future of television is undoubtedly digital. As already pointed out in preceding sections, digital compression combined with sophisticated modulation of and error correction coding techniques offers a wide range of options for the future development of all digital televisions transmission systems.

Given that the future lies with an all digital system encompassing the properties of scalability, interoperability and extensibility, how are we to make the transition from the exsiting analogue system to the digital system. The prospect of enhanced television system is seen by some as a means of facilitating the transition to HDTV, whereas others see it as an obstacle.

At this stage this conflicting situation still remains unresolved. What course is finally adopted will depend mainly upon the consumers' perspective.

Multimedia

Multimedia communication is the representation, storage, retrieval and dissemination of machine processable information expressed in multiple media such as Text, Voice, Image, Audio and Video. Presently envisaged typical applications of multimedia include education, medicine, travel, banking, insurance, administration, advertising and real estate.

The coverage of telecommunication and broadcasting technologies leads to many other useful applications like electronic cinematography, printing, graphics, still image applications, computer displays, medical, military, video conferences and home interactive video terminals.

The Cable Television distribution is gaining in popularity in most of the countries. Multimedia would find useful applications for home through these networks. Televisions and radio broadcasts could be effectively combined for disseminating information to every home through the Cable TV network.

The broadcast information services whose contents could be updated will become one of the useful sources. Combined with user-friendly software, the Telecomputer concept would offer TC newspaper, TC advertising, TC rerference services, and multi-lingual services. The Telecomputer of the future could serve as a gateway to other popular networks in the world and could become a home commodity.

The Integrated Service Digital Broadcasting (ISDB) is the future infrastructure of delivery of various integrated services such as video, audio, teletext, data and other imaging services such as fax, newspapers, etc. Its advantages are:

- Flexible transmission channel (Many non-broadcasting services multiplexed and selected by service identification codes)
- Wide range of different services, broadcast and non-broadcast (video, audio, teletext, data and fax, etc.)
- Various non-broadcast equipment used in broadcasting mode
- Flexibility and extensibility
- High quality services
- Common integrated how cost receiver.

ISDB signals will use satellite broadcast channels, terrestrial broadcast channels and also cable networks. Transmission bit rate would be 24-32 M b/s (Multichannel pcm audio) and 40 M b/s (satellite channels) with digital modulation.

The emerging new technologies are clearly pointing to the future scenario which will witness an increasing convergence of computer, telecommunication and broadcasting technologies. We are at the threshold of a digital era and the integrated services digital broadcasting concept of today will become a reality in the near future. In this fast changing scenario, broadcasters, particularly those in the developing countries, have to take a cautious approach while planning for the future. While some of the emerging new technologies could be used for more effective information

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JITNet And Technology Business Promotion

Dr. Om Vikas

THE Japan-India Technology Network (JITNet) has been developed with the objective of sharing and dissemination of information on science, technology and business, especially in small and medium enterprises in India and Japan. It would greatly help in accelerating the process of technology-based investments and upgradation of technologies.

The Japan-India Technology Network Action Group is a voluntary group. Its objectives are:

1. To identify technology information sources in industry, government and academia in India and Japan and to develop mechanisms to access them.
2. To encourage technology transfer consultancy services or intermediaries of Small and Medium Enterprises (SMEs) in India and Japan.
3. To promote publication and wider distribution of technology offers/ requests and analytical reports to also benefit non-internet users.
4. To prepare Vision Papers for innovative and wider application, and effective utilization of JITNet.
5. To explore possible extension of JITNet's services to other Asia-Pacific countries towards implementing "Asia-Pacific Technology Network (APTNet)".
6. To formulate joint-project proposals aiming at promotion of technology transfer in SMEs.

The process of technology transfer could include the subprocesses of (1) input from technology suppliers and publishers; (2) requirements from technology users; (3) technology information dissemination.

Associated services may grow in the form of translation of technology information, and understanding of technology through consultants. The efficacy of technology transfer information would also require performance evaluation of JITNet. The implementation would require the consideration of nodal centers in India and Japan, design guidelines and financial support. Normally, there are a few technology requests (about 15%) and more technology offers (about 85%). We observe that linkages between large and small industries are weakening and technology infrastructure in Japan is essentially based in small industries. These small and medium enterprises now lack preparedness for international technology-based business cooperation and in-house research and development facilities. This is where technology information exchange between Indian research institutions and industrial associations in Japan will be of mutual benefit.

Conceptual Design Of JITNet

JITNet will have two functions: (i) information dissemination in a one-to-many mode; (ii) processing of specific queries and technology requests.

For (i), JITNet members may be accessed through a single JITNet internet address. For (ii) there could be queries relating to industrial policy, licensing, duty structure, tax system, industries, research labs, industrial standards, patent laws etc. For many of these, databases have already been developed in both India and Japan.

Some of them are accessible through the internet and for others, appropriate agencies are being identified.

Implementation Strategy

An internet address has been set up for those wishing to join JITNet. For those without access to the internet the technology information for offers or requests can be sent in freeform or in the standard JITNet proforma. For query processing, it is proposed to design a Homepage on the World Wide Web. The requirements for this would be the access mechanisms to the existing databases in India, Japan and other countries.

To begin with, JITNet is being initiated in cooperation with Indian Embassy in Tokyo at Tokyo Institute of Technology and Science, University of Tokyo. Cooperation of government agencies, industrial associations/ federations in India and Japan is being solicited to make this endeavor a success.

The JITNet Homepage is an index document written for the World Wide Web (WWW) and can be viewed using a WWW browser such as Mosaic

Netscape or Cello. WWW is a protocol that facilitates linking and viewing geographically distributed files of even words, on heterogeneous computer systems via the internet. These files/ words could be text, images, sound or movie clips.

The Homepage has been divided into three parts-JITNet Homepage, Japan Page, and India Page. While viewing the Homepage, when users click on any of the underlined or coloured items with a mouse, they will be connected to the document or homepage of that item. Depending on the item chosen, the user will be presented with a file resident within JITNet, or will be connected via the internet to the particular site. For example, clicking on the item, "Science and Technology Cooperation between Japan and India" will fetch a local file within JITNet, while choosing "Do a Web Crawler Search" will connect the user to a search tool situated at University of Washington in US, from where an internet-wide search can be made.

The JITNet Homepage: The main Homepage provides (i) Information on JITNet that includes a detailed introduction to JITNet, conceptual framework of JITNet, information on the JITNet mailing list etc., and (ii) general technology information (a dictionary of management and technology terms, the Asia-Pacific Chamber of Commerce, International Trademark Classes etc.). It also allows the user to do an internet-wide search for information using three different types of search tools. Contact addresses for further information on JITNet are included. Clicking on the flags of Japan and India with a mouse will connect the user to detailed information on the respective country.

The Japan Page: The Japan Page is divided into two categories: (i) Science and Technology Pointers and (ii) General Information.

Science and Technology Pointers are subdivided into Documents and Databases, Government Agencies, National Research Institutes, Universities, Japanese Corporate and Business Information, and Other Information Networks. The sites listed under them are interactively linked to provide more information, like overview of activities, reports, researchers and staff members, contact addresses etc. Under documents/ databases, "Technology Transfer database" is periodically updated. Requests or offers of technologies from Japanese companies are presented. A company desirous of making a technology request or offer can submit it to JITNet. This will then be included in the database. Japan Industry Technical Reports (JITR), Economic Survey of Japan, Industrial Standardization in Japan can be viewed here. Government agencies or ministries like Ministry of International Trade and Industry, Science and Technology Agency, Ministry of Agriculture, Forestry and Fisheries, Ministry of Post and Telegraph, National Center for Science Information Systems are linked to JITNet. Fifteen Japanese National Research Labs and more than 88 universities are also listed.

General Information: including information on culture of Japan, current news, tourism information, maps, facts and figures, a Japanese dictionary, etc. can be found here. An interactive map that is clickable to obtain more information on a particular region of the country is also included. Such information is available from sites in Japan as well as other countries.

India Homepage: The India Homepage is also divided into two parts: (i) Science and Technology Pointers, and (ii) General Information.

Science and Technology Pointers: The key feature of this section is the "India Economic and Business Overview (IEBO)" which contains information on the important features of the Indian government and institutional structure, the economy, and statistical details of each state of India. These include the industrial policy, taxation systems, intellectual property rights etc. The composition of the regulatory environment and pertinent information on how to set up an Indian venture for foreign companies are also included.

Other information in this section includes periodic issues of "India Investment Window"; offers and requests for technologies from companies in India; a listing of e-mail addresses of institutions connected to ERNET (Educational and Research Network of India), and Indian universities. A comprehensive listing of over 40 research institutes under the Council of Scientific and Industrial Research (CSIR), along with e-mail access is also given. Each description of a research institute lists its mandate, major R&D programmes, significant achievements, technologies transferred to industry/available for transfer, future programmes, major facilities and services available, and contact addresses, etc.

Two web servers, "India Online" and "India World" are included. India Online provides information on business telecommunication, shipping, travel, food etc.; India World provides information on current news, business, finance and technology, art, books and entertainment, advertising etc.

General Information: Information of general interest, like culture and tourism information, current news and events in India, maps, and other topics are presented here. An interactive map that is clickable to obtain more information on a particular region of the country is also included. Such information is available from sites in

India and other countries.

Membership to JITNet is free and automatic by sending an e-mail to listproc@caren.net with a one-line message (Replace "firstname" and "lastname" with your name!):

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http://sunsite.sut.ac.jp/asia/india/jitnet/index.html

http://www.soc.titech.ac.jp/titsoc/higuchi-lab/jitnet/index.html.

Thus in a nutshell, JITNet (Japan-India Technology Network) is a prototype facility developed essentially to facilitate sharing and dissemination of information on science and technology and business. JITNet is expected to speed up the process of technology acquisition, dissemination, matching, upgradation, absorption and business initiation. New business of technology transfer consultancy will emerge. Entrepreneurs, who are not usually technology experts, will have opportunities of technology orientation and training with access to wide range of multimedia information—a mix of text, image, sound and animation—in interactive mode. This concept may further be extended from bilateral to multilateral facility such as APTNet (Asia-Pacific Technology Network). Thus "Technology Culture" of industrialized nations like Japan will spread in developing countries. JITNet Action Group has been formed for sustaining the developments with cooperation of governments, industries and R&D institutions. ❐

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Each trained woman is required to train at least 5 other women. They are also encouraged to form their own groups.

The NISTADS study shows that important spin-offs of these S&T projects are:

1. Validation of traditional remedies by the cultivation of endangered local medicinal plants, not only are the traditional healing methods been revived but they are also validated and documented. This could be compiled into an important data bank in the field of Indian herbal traditional medicines.
2. Afforestation: Women as a rule do not own land of their own and so it becomes easier for them to take up projects like afforestation of forests which have been denuded by man.
3. Progress and social transformation: All experts agree that progress in any field cannot be total until the women are educated and trained. For any kind of progress women have to be brought forward. Social transformation is possible only when women become educated and strong.
4. Use of Biomass.
5. Wasteland development and dry land irrigation.
6. Water preservation.
7. Agroforestry.
8. Combating exploitation by rich landlords and middlemen.
9. Cooperative society for marketing.
10. Improvement in socio-economic conditions.

Once the S&T factor is taken to remote villages and tribes there is no going back. The very structure of their life changes and it spreads like a revolution. The poor, destitute people are waiting for someone to show them a way out of their poverty and other difficulties. To get educated social workers and scientists to visit them and study their problems is an uplift in itself. Women have innate strength and the boldness to try new methods. ❐

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dissemination leading to overall socio-economic development of the country, one should not lose sight of the fact that the needs of the people in developing and developed countries are vastly different and implementation of any new service has to be well-planned, keeping in view the appropriateness of the technology and its economic viability. ❐

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India Enters International Space Market

THE most significant event of the year 1994-95 was the successful launch of the Polar Satellite Launch Vehicle, PSLV-D2, on October 15, 1994. It demonstrated India's capability to launch IRS class of Indian remote sensing satellites. PSLV-D2 placed the 804 kg IRS-P2 satellite into the intended polar sun-synchronous orbit. The 283 tonne, 44m tall, PSLV is designed for launching 1,000 kg class of remote sensing satellites into 900 km polar sun-synchronous orbit. Three more continuation flights of PSLV have also been approved.

During 1994-95, India's achievements in the development and application of space-based remote sensing technology drew worldwide attention. The US company, EOSAT Co, entered into a commercial agreement with the Antrix Corporation of the Department of Space (DOS) to receive and market the data from IRS satellites on a global basis. The company has already augmented its ground station at Norman, Oklahoma, USA with the assistance of the DOS and commenced receiving data from the presently operational IRS-1B satellite. Several more stations, covering other parts of the world, are being augmented to receive data from the present and forthcoming IRS satellites.

The SROSS-C2 satellite, launched by ASLV-D4 in May 1994, carrying two scientific payloads, the Gamma-Ray Burst (GRB) experiment and the Retarding Potential Analyser (RPA), is providing valuable data to the scientific community. Several interesting celestial gamma-ray bursts have been detected which are being analysed by the scientists. The National Mesosphere-Stratosphere-Troposphere Radar Facility (NMRF), Gadanki near Tirupati is providing valuable data for the atmospheric studies. The X-ray payload to be flown on IRS-P3 is sure to benefit research in high-energy astronomy.

Considerable progress has been made in the development of GSLV. A number of advanced technologies have qualified and fabrication of most of the vehicle hardware have been initiated. The successful development and qualification of the silicon phenolic throat for the GSLV liquid propellant engine is another significant achievement during the year. The L-40 liquid propulsion stage of GSLV is now getting ready for its qualification in 1995.

INSAT-2C is scheduled for launch this year and INSAT-2D, a year threreafter. INSAT-2E, slated for launch in 1997-98, will have additional spectral channel and improved coverage for its meteorological payload.

Substantial progress has been made during the year in the realisation of IRS-1C scheduled for launch in 1995. Work on IRS-1D, similar to IRS-1C, is also progressing well. IRS-1C and IRS-1D incorporate advanced features such as the LISS-III camera, a Panchromatic camera (PAN) and a Wide Field Sensor (WIFS) enabling better spectral and spatial resolutions than their predecessors, thereby enhancing the application potential of these satellites. These satellites have capability for stereo viewing and on-board recording.

The remote sensing applications continue to grow and cover more and more disciplines. Many of these applications like crop acreage and yield estimation, drought monitoring and assessment, flood mapping, landuse and land cover mapping, wasteland mapping, ocean/marine resources survey, urban mapping, mineral prospecting, forest resources survey, etc, have become an intergral part of the resources management system in the country. The Integrated Mission for Sustainable Development (IMSD), launched in June 1992, now covers 157 districts which have been identified for generation of action plans for locale-specific development using, mainly, IRS data. ❐

Waterlogging—Problems And Solutions

B.N. Navalawala

SOIL and water are a vital natural resource whose proper use greatly determines the capability of life support systems and the socio-economic development of a people. Land degradation is one of the major threats facing mankind which not only undermines the productive capacity of an ecosystem but also affects global climate. Having already affected 2 billion hectares of land world-wide, the current rate of soil degradation of 5-7 m.ha per year is likely to climb up to 10 m.ha per year as per FAO/UNEP estimate. A large proportion of India's land shows clear evidence of advanced and continuous degradation, threatening to undermine our capacity to increase food production and alleviate rural poverty. The socio-economic and ecological consequences of this are immense.

Out of India's geographical area of 328.9 m.ha., nearly 175 m.ha. (about 53% of the total area) is affected by major degradation processes. Water and wind erosion affect nearly 141 m.ha. and waterlogging affects about 8.53 m.ha. Expansion of irrigation has been one of the key strategies for achieving self-sufficiency in food production. India has increased the net irrigated area from 20 m.ha in 1950 to about 77.52 m.ha at present. A large fraction of expansion in the irrigated area has been achieved through transported canal water. In most canal irrigated areas, due to rise of water table, problem of soil deterioration through salt accumulation has assumed serious proportions. Salt problems have also increased where saline groundwater has been used for irrigation. In many coastal areas, excessive exploitation of groundwater has caused seawater intrusion resulting in worsening of the salinity problem.

Soil degradation is a complex phenomenon with no easy solutions. The technologies for reclamation and rehabilitation of degraded lands have been provided by the concerted efforts of the scientists in various institutes in the country. Yet we are learning that the resilience of the soil resource is not infinite and many kinds of degradation are not easily reversed in the short term. As we proceed to make corrections based on past experience and adopt new approaches to technology generation, they are bound to result in significant advances in our efforts to control degradation in the coming decades. Our dream and goal to become a prosperous nation depends additionally on our commitment to using our soils and waters more efficiently. The solutions are undeniably not cheap but the long term protection of our soil and water resources is a responsibility we bear towards future generations. This requires interdisciplinary efforts to devise environmentally clean technologies and reverse soil degradation and help develop productive, profitable and sustainable agricultural system and cleaner environment.

So far as the earlier data on waterlogged areas are concerned, the National Commission for Irrigation (1972) and NCA (1976), Ministry of Agriculture (1984-85) reported 4.84, 6.00 and 8.53 m.ha. respectively. This data is for both irrigated commands as well as of the areas outside the irrigation commands. The Working Group set up by the Ministry of Water Resources in 1986 collected the information and estimated that an area of 2.46 m.ha is suffering from waterlogging in irrigation commands. So far as the area affected by excess salt concentration is concerned, National Commission on Agriculture (1976) has estimated it to the extent of 7 m.ha out of which 2.5 m.ha is under alkali soils and 4.5 m.ha under saline soils, but later Ministry of Agriculture estimated this area to the extent of 9.08 m.ha which includes 3.58 m.ha. under alkali soils and 5.50 m.ha. under saline soils, including coastal sandy areas. The Working Group attempted to estimate this area under irrigated commands as 3.30 m.ha. i.e. 3.06 m.ha under saline soil conditions and 0.24 m.ha under alkali soils. In some of the countries the problem is even worse, like in Egypt where 30-40% area is suffering from salinisation, Syrian Arab Republic 30-35%, Cyprus 25%, Iraq 50%, Austria 15-20% etc. Even a country like Pakistan, having similar irrigation system to that of India, has good percentage of irrigated land affected by waterlogging and soil salinity. In the United States of America, the percentage of irrigated land which suffers from salinisation is to the tune of 20-25%. This indicates that the problem is widespread and exists practically all over the world and that the solution lies in taking effective preventive and remedial measures.

The problems of waterlogging, soil salinity and alkalinity were noticed in different states even before independence and reclamation efforts were

made in the states of Punjab, Maharashtra and U.P. The main activities comprised construction of drainage network in the canal cammands, installation of pumping stations and tubewells, lining of canals etc. During the post Independence era, greater strides have been made in the development of water resources in the country. The problem of waterlogging and salinity too has accordingly assumed a greater magnitude. Although a number of preventive and remedial measures have been taken by Agriculture and Irrigation Departments of the states from time to time, these have been rather moderate with the result that still large tracts of agricultural lands are suffering from hazards of waterlogging and salinity.

Options

Drainage is a measure to remove excess water from the soil or from the soil surface. It is known that canal irrigation upon overuse often leads to rise of water table and drainage is essential but even today adequate attention is not being paid to this while designing and planning of canal irrigation projects. Owing to this neglect, many irrigation projects in the arid and semi-arid areas have created serious problems of waterlogging and of salinity and alkalinity. Drainage is essential for sustaining healthy plant life and crop yields obtained are in many places, much less than the optimum. The recent history of Indian irrigation projects shows that the problem of waterlogging, salinity and alkalinity are arising even before the full potential of projects are exploited. Subsurface drainage which induces ground water flow cannot meet the requirements of draining excess rain water in the humid and sub-humid tropics. However, sub-surface drainage can help in controlling salinity by facilitating leaching of salts. Under the situations where limited quantities of canal waters may be available to supplement saline ground waters, these need to be used most judiciously. Choice for the options of blending or making cyclic use of the two supplies is governed by EC of the saline water, relative tolerance of the crops at different growth stages, soil properties in relation to water composition, leaching probabilities and the cost-benefit analysis. This substitution enhanced germination, crop growth and yield markedly and also resulted in better utilisation of soil water even from lower soil layers. Thus, it is a better strategy to use non-saline water in early growth stages and switch over to poor quality waters when crops can tolerate higher salinity. This has been further established with experiments on wheat and mustard where its yields could be maintained by delaying the irrigations with drainage effluents/saline waters.

For optimum production, the crops must get requisite quantity of water at various critical stages of their growth. For various crops with different base and critical periods, total requirements are often difficult to meet from either surface or ground water alone especially for high yielding varieties, requiring more exacting water requirements. Besides, with increasing intensity of irrigation and tendency on the part of the cultivators to over-supply irrigation from surface water, the problem of waterlogging and salinity is growing in the irrigated commands. Under such situation, the conjunctive use of surface and ground water holds key to the solution of the problems especially in the Indo-Gangetic plains, the coastal areas of Orissa and Andhra Pradesh, the Brahmputra valley, the Cauvery delta and parts of the Narmada basin.

Average construction cost of drainage network, presently being Rs. 5000 to 10,000 per ha (sometimes even more), total investment as involved in providing drainage network, would be a huge amount. Hence the saying 'prevention is better than cure' is a better option. Taking up the correction of system deficiency and proper water management efforts like construction of field channels, field drains, land leveling and shaping, providing proper irrigation structures, growing low water intensive and high water use efficiency crops, judicious use of irrigation water by way of ensuring proper quantity and intervals, enforcement of proper warabandi system in the farmers fields, properly managed night irrigation, using sprinkler and drip irrigation wherever feasible, conjunctive use of surface and ground water etc., are the measures to keep the water table down for avoiding the conditions of waterlogging and soil salinity.

Even in a well-managed irrigation project, the equilibrium between inflow and outflow gets disturbed since the efficiency of irrigation normally could be maximum to the level of 60-70% and this 30-40% additional water would ultimately lead to the problem of waterlogging and soil salinity. In the areas where surface flooding is a common feature, open drains can meet the requirement. However, it has its own limitation. Instead of constructing open surface drains under which a lot of valuable land is lost, sub-surface drains consisting of pipe or effective tiles can also be constructed. These have been found to be very effective. In the case of sub-surface drains, pipes are usually placed at 2 metres depth below the land surface for drainage of excess water and salts. In the case of black cotton soils, due to their poor drainability, and in particular where impermeable murram layer is around 5-10 metres below the ground water surface which hinders deep percolation, chimney drains have been found to be very effective when the artisan pressure exists. Such type of construction has been done in the Purna and

Jayakwadi CAD Projects in Maharashtra through the United Nations Development Programme assistance.

CGWB through observation on 5000 wells in early eighties estimated that the area with water levels within 2 mt. depth below ground level is 36.36 m.ha in August which goes on decreasing in subsequent months to 3.422 m.ha. in April. The simultaneous development of ground water, especially through dug wells and shallow tubewells helps in lowering the water table. On a rough estimate, it is considered that by depressing the water levels by one metre in the waterlogged areas, it will be possible to use this reclaimed water to create an additional irrigation potential for an area of about 5 million ha. Taking an average of 10 ha of area as the gross command per tubewell, this programme will need 5 lakh shallow tubewells of about 25 mt. depth requiring investment of Rs. 1500 crore (at an estimated cost of Rs. 30,000 per tubewell). However, substantial high incidence of cost of ground water development compared to surface water, lack of regulation by the states on the control and exploitation of ground water on the merit of resource availability and non-availability of power uniformly everywhere at critical requirement periods are the impediments in the conjunctive use.

To deal with the problem of waterlogging and soil salinity, appropriate organisational set up both for monitoring as well as for taking up reclamatory measures is essential. Besides the existing organisational structures in the project commands at the state level and those at the Centre, like the All India Soil and Land Use Survey Organisation and the National Land Use and Conservation Board under the Union Ministry of Agriculture, the National Bureau of Soil Survey and Land Utilisation under the Indian Council of Agriculture Research, the Central Soil Salinity Research Institute, Karnal, the Central Arid Research Institute, Jodhpur and the Central Ground Water Board and the Command Area Development Organisation under the Ministry of Water Resources, a three-tier infrastructure needs to be created to deal with these problems. This would comprise at project level a multi-disciplinary team of professionals drawn from the field of Civil Engineering, Agricultural Engineering, Soil Science and Agronomy to carry out the planning of preventive/remedial measures and advising the executing agencies and monitoring and planning organisations at state level. At Central level, the work of monitoring is proposed to be entrusted to the Central Ground Water Board under the Ministry of Water Resources by suitably strengthening the organisation. There is a strong and urgent need of integrating the activities related to reclamation of irrigated lands adversely affected by waterlogging and salinity both at the state and Central level.

Although conjunctive management of surface and ground water may vary from basin to basin and is more or less site-specific, but as a general guide, it may be done through the following broad strategies:

(a) The main reason for low conjunctive use of ground and surface water is the lack of integrated approach for ground and surface water in the formulation of project right from the planning stage. In most of the cases it is rather a subsequent addition as a result of needs and compulsions. Whereas the entire capital cost of the construction as well as subsequent operation and maintenance of surface water projects is made from public funding, in case of cost of construction, energisation and operation of tubewells, it is mostly borne by the beneficiaries. This is acting as a big disincentive in the development of ground water in the canal commands. It is essential to plan and implement ground water development programme in the command areas as a part of the total water resource development plan, regulate surface water release in the upper reaches in a manner that the farmers are motivated to take up development of ground water for meeting the requirement of the second and third crops and to meet or subsidise the capital cost of construction and energisation of wells and tubewells;

(b) utilisation of surface water supplies supplemented by ground water or direct use of ground water should be made during periods of low canal supplies or canal closures or in the areas showing declining water table trend;

(c) ground water irrigation to be provided exclusively in the pockets of canal commands where terrain is uneven and in areas showing rising water table trend;

(d) pumping of ground water should be done in irrigation command areas to lower the water table wherever it might have risen as a result of seepage from surface irrigation and pumped water should be used to supplement irrigation supplies. The usage of ground water within the canal command areas should form the integrated part of command area project planning as well as be reflected in irrigation water pricing structure;

(e) shallow tubewells in tail ends of canal systems and water pumped in the canal to maintain a constant canal water supply for irrigation use.

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Indian Electronics Industry—Geographical Spread

Rajiv Rastogi, N.R. Tripathi and Ashok Hanamsagar

UPTO 1971, the electronics industry had grown up around three major centres: Bangalore, Bombay/Pune, and Delhi. Bangalore was the site of major public sector corporations in defence and tele-communications. Bombay and Pune were the traditional locations of private sector, largely foreign-owned firms, established in the late forties to early fifties. The Delhi region became important in the sixties with the emergence of a dynamic SSI industry making radios, components for radios, and later black and white TVs.

To encourage geographic distribution of the electronics industry in the seventies public sector new plants at various new locations became operational. The states were encouraged to establish electronics development corporations. These corporations are helping in promotion and development of electronics in respective states. Many of the states are now providing special incentives like sales tax concessions, creation of separate industrial areas for electronics, subsidy for setting up units in backward areas, financial participation either as joint sector or assisted sector etc. This action, combined with the dispersion of additional public sector units, encouraged the emergence of several secondary electronics centres. Hyderabad, which reflects the expansion of ECIL, is the most important of these. Other secondary centres include Hosur, Trivandrum, Madras, Calcutta, Baroda, Mohali, Ahmedabad and Aurangabad.

During the last two decades, electronics units have come up in a fairly wide geographical location. Till 1987, Maharashtra occupied the top position followed by Karnataka and Delhi (except in 1985 where Karnataka was at top). Due to rapid growth of electronic industry in Uttar Pradesh, it occupied top position in 1988, 1989 and 1991 but in 1992 and 1993, Karnataka again emerged as the leader. Delhi occupies a significant place due to a large concentration of small scale units making consumer electronic products. For calculation of the share of different states in production and employment, physical location of the plant is considered.

An analysis of regional distribution shows that the North accounts for about 35 per cent of production, mostly in Delhi and its vicinity. The east is underdeveloped relative to its population. The west accounts for 23 per cent of electronics production mostly in Maharashtra (Bombay and Pune), contributed mostly by private sector firms both in small scale and organised sectors. The south, primarily, Bangalore, accounts for about 36 per cent of production. Bangalore is the site of major public sector units as well as a very fast-growing, organised private sector in computer and industrial products.

Top 5 States in Electronics Production During Last Three Years.

Rank	1991	1992	1993
1	Uttar Pradesh	Karnataka	Karnataka
2	Karnataka	Uttar Pradesh	Uttar Pradesh
3	Maharashtra	Maharashtra	Maharashtra
4	Delhi	Delhi	Delhi
5	Tamil Nadu	Tamil Nadu	Tamil Nadu

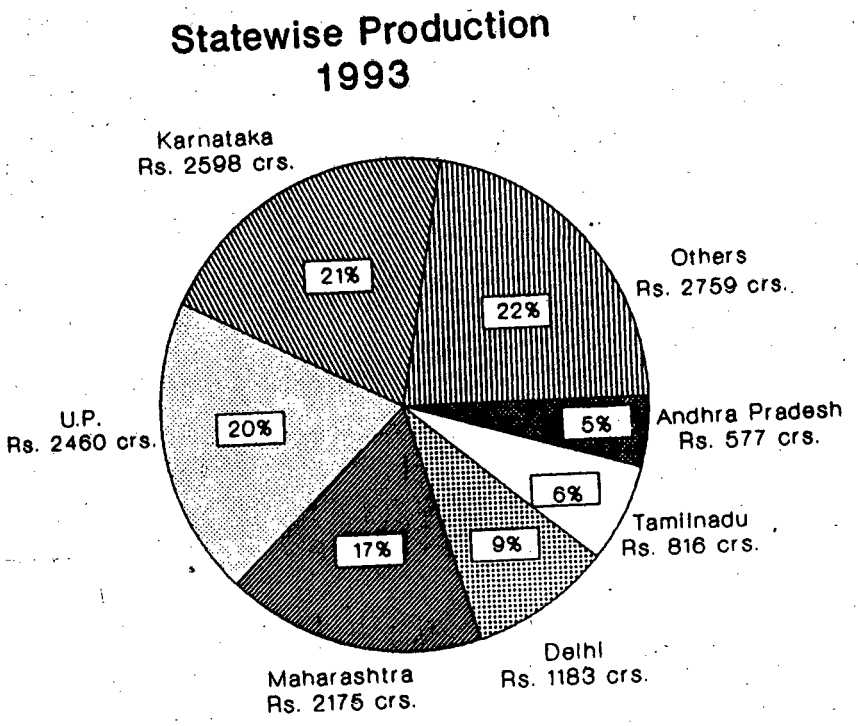
A study of the distribution pattern of electronics production presents an interesting picture. At present, about 58 per cent of the production is accounted for by Karnataka, Maharashtra and Uttar Pradesh alone. However, Karnataka and Maharashtra had over 75 per cent share in 1971. Bulk of the components produced are contributed by Uttar Pradesh, Maharashtra, Karnataka, and Punjab while consumer electronics production item produced by most of the other states is TV receivers only. Bulk of professional equipment is produced in Karnataka and U.P.

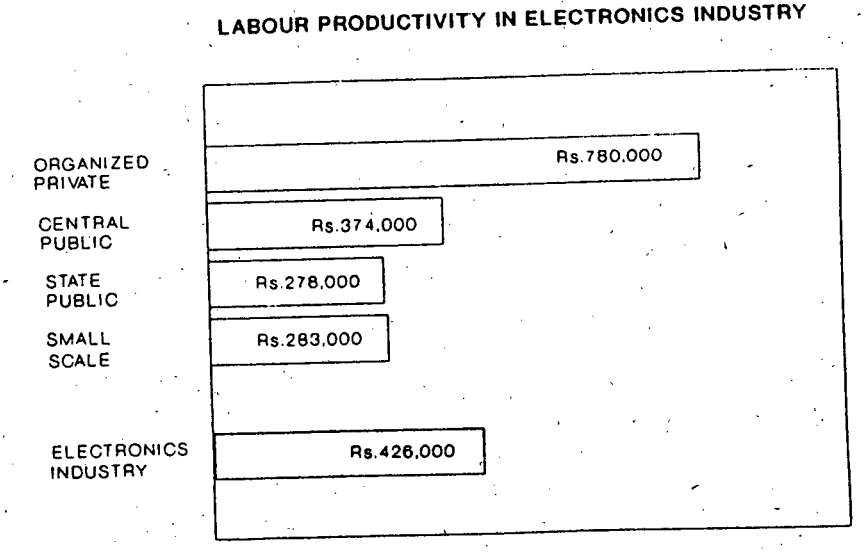
Per Capita production in Delhi is the highest--Rs. 1,315 per person in 1993, though it ranks 4th in the total electronic production. It is followed by per capita production of Rs. 580 in Karnataka, Rs. 276 in Maharashtra, Rs. 252 in Punjab, Rs. 211 in Goa, Rs. 196 in Pondicherry, Rs. 190 in Chandigarh and Rs. 177 in Uttar Pradesh.

Statewise Per Capita Production of Electronics-1993

State	Production	
	1990	1993
Andhra Pradesh	88	87

Assam	1	1
Bihar	2	2
Chandigarh	92	100
Dadra & Nagar Haveli	—	small
Delhi	990	1315
Goa	108	211
Gujarat	84	117
Haryana	103	94
Himachal Pradesh	26	85
Jammu & Kashmir	8	2
Karnataka	303	580
Kerala	91	160
Madhya Pradesh	15	31
Maharashtra	187	276
Meghalaya	2	3
Orissa	14	14
Pondicherry	139	196
Punjab	142	252
Rajasthan	55	84
Sikkim	small	—
Tamil Nadu	105	147
Uttar Pradesh	125	177
West Bengal	44	61





Employment

The Electronics industry has a high employment-to-capital ratio, and, therefore, a high potential for employment generation. The proportion of in-plant and white collar workers differs from one sector to the other as it depends on factors like the extent of industrial automation, the usage of sub-assemblies, etc. Personnel in the category of scientists/engineers are required to look after the design and manufacture of tools and products, control of production, process control, plant installation, maintenance, quality control, design and fabrication of assembly, test jigs and other R&D activities. Personnel with diplomas are required for supervision of plant, machinery and assembly line operation. Persons trained at the industrial training institutes (ITIs) are required to work on the tool room and other precision machines and are also suitable for maintaining production machines and routine type of test and measuring instruments. The semi-skilled workers are required to work on the assembly line operations. Thus, this is a sector which has the potential to employ a large number of school and college leavers, apart from others who develop skills on their own or with intermediate education.

The total direct employment in electronics manufacturing industry has increased from 130,000 in 1981 to 310,000 in 1993 during which period the production has registered an increase from Rs. 8,560 million to Rs. 132,000 million. The major source of employment continues to be the public sector which accounts for 34 per cent of the total employment and contributed to 28 per cent of total

production in 1993. On the contrary, organised private sector employs only 24 per cent of the total manpower and accounts for 39 per cent of production. The share of employment and production for the small scale sector is 42 per cent and 28 per cent respectively. Sectorwise breakup of employment is summarised below:

Manpower Employed in Electronics Equipment and Components Sector (at Factory Level)

	1981	1990	1993
Public Sector			
-Central Public	67,000	84,000	85,500
-State Public	4,500	18,000	19,500
Organised Private Sector	27,500	63,000	73,000
Small Scale Sector	31,000	120,000	132,000
Total	130,000	285,000	310,000

Comparison of Statewise production during 1981 and 1993

	State	Production 1981 Value Share(%)	(Rs. crore)	State	Production 1993 Value Share(%)	(Rs. crore)
			Consumer Electronics			
1.	Maharashtra	89	36.0	Maharashtra	901	23.4
2.	Delhi	74	29.9	Delhi	637	16.5
3.	West Bengal	21	8.5	Karnataka	514	13.3
4.	Tamil Nadu	18	7.2	Uttar Pradesh	484	12.5
5.	Uttar Pradesh	12	4.8	Tamil Nadu	392	10.1
			Control Instrumentation and Industrial Electronics			
1.	Maharashtra	46	28.9	Maharashtra	455	26.7
2.	Karnataka	33	20.8	Karnataka	271	15.9
3.	Rajasthan	20	12.6	Uttar Pradesh	218	12.8
4.	Andhra Pradesh	12	7.5	Rajashtan	162	9.5
5.	Uttar Pradesh	11	6.9	Tamil Nadu	109	6.4
			Computer Systems			
1.	Uttar Pradesh	9	30.0	Karnataka	327	31.1
2.	Maharashtra	9	30.0	Delhi	252	24.0
3.	Andhra Pradesh	5	16.6	Maharashtra	176	16.8
4.	Delhi	4	13.3	Uttar Pradesh	137	13.0
5.	Gujarat	1	3.3	Andhra Pradesh	52	4.9
			Communication and Broadcast Equipment			
1.	Karnataka	70	45.4	Uttar Pradesh	1040	33.0
2.	Uttar Pradesh	32	20.8	Karnataka	967	30.7
3.	Maharashtra	14	9.0	Maharashtra	207	6.6
4.	Madhya Pradesh	10	6.5	Punjab	197	6.3
5.	West Bengal	2	1.3	Kerala	180	5.7
			Strategic Electronics			
1.	Karnataka	28	40.5	Andhra Pradesh	124	34.6
2.	Uttar Pradesh	21	30.4	Karnataka	108	30.2
3.	Andhra Pradesh	19	27.5	Uttar Pradesh	97	27.1
4.	Gujarat	1	1.4	Tamil Nadu	24	6.7
5.	Haryana	—	—	Kerala	4	1.1
			Electronic Components			
1.	Maharashtra	40	23.1	Uttar Pradesh	483	19.6
2.	Karnataka	36	20.8	Maharashtra	433	17.6
3.	Delhi	37	21.4	Karnataka	409	16.6
4.	Kerala	11	6.4	Punjab	223	9.0
5.	Andhra Pradesh	11	6.4	Delhi	176	7.2

Statewise Employment in Electronics vis-a-vis Population

State	Employment in Electronics (per lakh population) 1990	1993
Andhra Pradesh	38	41
Assam	1	1
Bihar	2	2
Chandigarh	54	100
Dadra & Nagar Haveli	small	small
Delhi	402	430
Goa	32	54
Gujarat	37	34
Haryana	43	37
Himachal Pradesh	15	18
Jammu & Kashmir	5	4
Karnataka	98	107
Kerala	31	34
Madhya Pradesh	9	11
Maharashtra	71	76
Manipur	4	small
Meghalaya	5	4
Orissa	5	6
Pondicherry	45	75
Punjab	30	39
Rajasthan	21	23
Sikkim	small	—
Tamil Nadu	24	30
Uttar Pradesh	27	30
West Bengal	18	20

In addition, a sizeable employment is also provided in the area of computer software, ancillaries/repairs and maintenance, video cassettes lending libraries, software generation for AIR and Doordarshan, production of plastic and metal parts and vending of consumer electronic products, etc. It is estimated that computer software industry employs about 60,000 persons, ancillary units about 30,000 persons, repairs and maintenance 90,000 persons and other areas such as video cassettes lending libraries, dealers' network etc. employ about 200,000 persons.

Over the years, the labour productivity in the manufacturing units has increased considerably. The average output per person has increased from Rs. 69,000 in 1981 to Rs. 425,800 in 1993. Sectorwise break-up of productivity per person is given below:

Labour Productivity in Electronics Industry

	Average Annual Production/Person(Rs.) 1981	1990	1993
Public Sector			
-Central Public	46,000	284,000	374,000
-State Public	87,000	262,000	278,000
Organised Private Sector	88,000	563,000	780,000
Small Scale Sector	79,000	234,000	283,000
Industry Average	69,000	323,000	426,000

Courtesy: Electronics Information & Planning.

Contd. from page 40

Future Strategy

In order to accelerate the pace of reclamation activity, the researchers and planners should give a serious thought to the following:

(i) Efforts should be made to develop low-cost alternative technology;

(ii) Several pilot projects on reclamation of inland waterlogged saline soils should be launched so as to explore various alternative approaches. An interdisciplinary team effort should be made to undertake rapid appraisal of farmers' circumstances and resources so as to design viable alternatives;

(iii) There is a need to design technologies which may be easily adopted by the farmers. Salt resistant varieties of crops may play an important role in utilising these soils more efficiently. There is an urgency to expand the crops which can be economically cultivated by cheaper technologies;

(iv) In order to accelerate the pace of reclamation 'single-window' system should be provided with favourable credit and other essential inputs;

(v) Technical 'know-how' is the very foundation for facilitating favourable investment decisions. Operationalisation of the technology and its demonstrations by the concerned subject matter specialists working under the World Bank implemented training and visit scheme should be given impetus in a way that a multiplier effect is realised. For this, human resource development programmes should be regularly conducted by appropriate institutions;

(vi) Group oriented technologies to manage saline soils are not frequently adopted. Therefore, appropriate educational programmes should be launched to encourage formation of farmers' cooperatives which can adopt available technologies on a large scale so as to benefit from economy of scale. ❐

The author is Adviser, Planning Commission.

The Great "C.K."

M.K. Dharma Raja

THE inspiring name of C.K. Nayudu shines resplendent in the annals of Indian cricket. A player endowed with extraordinary skill, style and versatility, he shed lustre on the game and thrilled spectators everywhere. His very presence at the crease sent shivers down the spines of the opposition—bowlers and fielders alike. His fielding was superb and captaincy—an object lesson to those called upon to lead a cricket team. Nayudu's majestic presence and athletic build evoked a feeling that he was born to play cricket like a Titan.

Cottari Kankaiya Nayudu, born in Nagpur in 1895, was an outstanding athlete and excelled in several games at school. But it was to cricket that the young Cottari Kankaiya applied himself more seriously. An early break in his cricket career proved propitious. The shot in the boy's cricketing arm came from none else than the legendary "Ranji", the Jamsaheb of Nawanagar, who had been a friend of Nayudu's father from their undergraduate days together at Cambridge. Impressed with the boy's extraordinary gifts of height and agility, Ranji asked the elder Nayudu, "Why doesn't he hit the ball?". From then on the young "C.K.", under the vigilant eyes of his father was transformed into a superlative attacking batsman.

Hard physical exercise—a regimen he maintained until an advanced age—helped Nayudu in acquiring both strength and stamina, the essential ingredients of an aspiring cricketer. The youthful "C.K.", did indeed, succeed remarkably enough quite early in his career. His debut in first class cricket began in his inimitable style, with a sixer off the very first ball that he faced. That was in the Bombay Quadrangular—his happy hunting ground where the young Nayudu also made his dazzling entry into international cricket. The fans who converged on the cricket venues for the quadrangulars always looked forward to Nayudu striding majestically into the field for his spectacular displays with his punitive bat. It was with the same expectation that the game's enthusiasts awaited his participation in the annual Presidency match in Madras between the Indians and Europeans.

C.K. Nayudu's name in the game came to be associated in course of time with his uncanny ability to hit sixes off the most intimidating bowlers. Almost all cricket venues in India bear testimony with landmarks of spots where the ball landed when Nayudu scored his soaring sixes. While on England's tour with the Indian team in 1936, a Nayudu six once cleared the river that formed the boundary between Warwickshire and Worcestershire. He has been therefore acclaimed as the only batsman to have sent a ball from one county to another.

It was one of those episodes of big hitting by this remarkable cricketer that signalled his entry into international cricket. The occasion was the Bombay match against the MCC team under Arthur Gilligan that toured India in the 1925-26 season. The batting genius of "C.K." unfolded itself against the visitors who had bowlers of the calibre of the renowned Maurice Tate. When Nayudu reached his century against the MCC with a flurry of breathtaking sixes and fours, even the umpires were moved to clap enthusiastically. His innings of 153 was studded with 11 sixes and 13 fours. And he took only a hundred minutes to hit up this score. Gilligan described the feat as "a truly great innings by a master batsman". Nayudu was also easily the best fielder in the match on either side.

The MCC captain was highly impressed by both the standard of cricket in India and the batting proficiency displayed by Indians, particularly C.K. Nayudu. The "C.K." factor was among the strong reasons that made India's admission into the fraternity of cricket-playing nations a smooth affair. It also paved the way for the official tour of England in 1932. Nayudu had already played in England during the previous season for the Indian Gymkhana and had captained them at some matches. Though he had turned 37 years at this stage, Nayudu was as fine a cricketer as ever.

C.K. Nayudu has the unique distinction of being remembered as India's first Test captain. Both the captains on the tour, the Maharajah of Porbunder and the Vice-captain K.S. Ghanshyamsinhji of Limbdi, had gracefully stood down in his favour. India were no match against the experienced England in the only Test played on the tour. But the hosts suffered quite a few setbacks before winning the match. Despite badly damaging his hand while attempting a catch, Nayudu batted well enough to emerge top scorer in India's first innings with 40 runs. He led the team admirably against the formidable England. Nayudu's captaincy came in for commendation by Wisden in these

(Contd. on page 50)



Thus spake the Mahatma...

On Women

Status

"Man and women are of equal rank but are not indentical. They are a peerless pair being complimentary to one another; each helps the other so that without the one, the existence of the other cannot be conceived." (CWMG Vol. XIV, p. 206).

"Equality of the sexes does not mean equality of occupations. There may be no legal bar against a woman hunting or wielding a lance. But she instinctively recoils from a function that belongs to man. Nature has created sexes as complements to each other. Their functions are defined as are their forms." (CWMC Vol. LXX, p. 381).

Occupation/ Education

"I do not envisage the wife, as a rule, following an avocation independently of her husband. The care of the children and the upkeep of the household are quite enough to fully engage all her energy. In a well-ordered society, the additional burden of maintaining the family ought not to fall on her. The man should look to the maintenance of the family, the woman to household management, the two thus supplementing and complementing each other's work." (Harijan, 12.10.1934)

"Women in the new order will be part-time workers, their primary function being to look after the home." (Harijan, 16.3.1940).

"Man and woman are equal in status, but are not identical....In framing any scheme of women's education, this cardinal truth must be constantly kept in mind. Man is supreme in the outward activities of a married couple and therefore it is in the fitness of things that he should have a greater knowledge thereof. On the other hand, home life is entirely the sphere of women and therefore in domestic affairs, in the upbringing of and education of children, women ought to have more knowledge." (CWMG Vol. XIV, pp. 206-7).

Moral Strength

"To call women the weaker sex is a libel, it is man's injustice to woman. If by strength is meant brute strength, then indeed is woman less brute than man. If by strength is meant moral power, then woman is immeasurably man's superior." (Young India, 10.4.1930)

"The real ornament of the woman is her character, her purity. Metal and stones can never be real ornaments. The names of women like Sita and Damayanti have become sacred to us for their unsullied virtue, never for their jewellery, if they wore any." (CWMG Vol. LVI, p. 432)

"Indian women are in no way inferior to European women. Much of their strength lies suppressed and some of it has had no opportunity to reveal itself." (CWMG Vol. XLIX. p. 33).

"Woman is sacrifice personified. When she does a thing in the right spirit, she moves mountains." (Young India, 22.12.1921).

Uplift

"I hold radical views about the emancipation of women from their fetters which they mistake for adornment. My experience has confirmed me in the view that real advancement of women can come only by and through their own efforts." (Discussion with Representatives of Hindustani Talimi Sangh on 27.10.1944).

"They have the power denied to men of creating new ideals and translating them into action. By comparison, man is thoughtless, impatient and given to pursuit of novelty.... If education women... think independently about the important questions affecting their sex, we shall find it quite easy to solve many a knotty problem." (CWMG Vol. XIV, pp. 86-7).

"Woman must cease to consider herself the object of man's lust. She must refuse to adorn herself for men including her husband, if she will be an equal parter with man." (Young India, 21.7.1921).

"The way to women's freedom is not through education but through change of attitude on the part of men.... Even without literary education, our women are as cultured as any on the face of the earth." (CWMG Vol. XIV, p. 127).

"If she stops thinking that she is weak, she will be free this very day." (CWMG Vol. XIV, p. 308).

"Man has converted her into a domestic drudge and an instrument of his pleasure, instead of regarding her as his helpmate and better half. The result is a semi paralysis of society." (CWMG Vol. LXVIII, p. 341).

Social Work

"Don't go in for scents and lavender water; if you want to give out the proper scent, it must come out of your heart and then you will captivate not man but humanity.... The service will bedeck you more than the fineries you are wearing." (With Gandhiji in Ceylon, pp. 16-21).

"If the cultured women of India make common cause with the villagers and that too through their children, they will produce a silent and grand revolution in the village life of India." (Harijan, 30.10.1937).

"Woman is the embodiment of sacrifice and suffering and her advent to public life should, therefore, result in puriyfing it, in restraining unbridled ambition, and accumulation of property." (CWMG Vol. XLII, p. 5).

Conclusion

"So long as women in India do not take equal part with men in the affairs of the world and in religious and political matters, we shall not see India's star rising.... I want the women to have tenacity of purpose, a religious disposition and love for India." (CWMG Vol. XV, p. 290).

"A woman who has fully grown in soul, deserves to be revered as the world's mother." (CWMG Vol. XLIV, p. 309).

Note: 'CWMG' stands for the Collected Works of Mahatma Gandhi, the 100-Volume series brought out by the Publications Division, Ministry of I & B, Government of India.

Gandhi—The Friend And Mentor

Among the many Europeans Gandhi befriended during his early years in South Africa was Hermann Kallenbach, a German architect, settled in Johannesburg. Under Gandhi's influence, he effected momentous changes in his life and became his most devoted friend and co-worker. During the Satyagraha campaign, he totally and unconditionally identified himself with the cause of Gandhi and the Indians. He even went to jail, was for a time President of the British Indian Association of Transvaal and commanded the Satyagraha Movement in Gandhi's absence.

A collection of some 277 original letters written by Gandhi to Kallenbach has been published in Volume 96 (Supplementary Volume VI) of the 100-volume Collected Works of Mahatma Gandhi series brought out by the Publications Division, Information & Broadcasting Ministry last October.

Review Article

Probing Areas Of New Initiatives

M.K. Ghoshal

The book deals with the complex inter-relationship involving corporate finance, capital markets and financial institutions. It has seven chapters starting with introduction and ending with agenda for the future, highlighting certain policy prescriptions and guidelines for healthy and orderly growth of the capital markets. Against the backdrop of changed socio-political environment opening new and vast opportunities to investing public, the author examines the functioning of the private corporate sector and its impact on shareholder returns. In particular, he reviews the evolution of the equity securities market, the constraints and compulsions of corporate funding, the catalystic role of financial institutions and development banks as intermediary change agents and the emergence of equity securities as a broad-based investment avenue.

The author laments that not much research work has been done in India in the area of shareholder returns and their relationships to financial policy parameters followed by business organisations. The book is intended to bridge this information gap and generate valuable input assistance in policy formulation at regulatory, managerial and investment evaluation levels. It reviews observed corporate financial policies and their influence on shareholder returns as well as perception.

The book is based on a time-series study of corporate performance spanning fourteen years 1976 to 1988. The sample profile includes a total of 697 industrial companies with a minimum of five and a maximum of ten accounting periods, the latter accounting for 67.15 per cent of the overall sample. One important finding is that equity returns to the shareholders in 1980s were higher and more attractive than in the preceding years. Statistical relationships between the capital structuring decision and delivered shareholder returns are brought out in Chapter 5. The highlights are: the inverse relationship between higher financial leveraging and lower returns to shareholders at the market place, the impact of growth in fixed assets and sales on shareholder returns and other signalling parameters.

Results of an in-depth relational analysis of smaller sample of 65 selected companies in the general engineering industry group are presented in Chapter 6 to highlight the role of a number of financial policy variables including financial leverage, as determinants of, or contributories to shareholder returns. Among key variables influencing shareholder returns and improving shareholder value, are funding pattern, efficient use of capital, appropriate pricing, cost-effective manufacture, improved productivity and control on overheads. All these aspects of corporate management are also equally relevant for doing sound business.

In the concluding Chapter 7 the author emphasises the need to recognise mutually re-inforcing intractions between corporate finance and the real economy for achieving desired socio-economic objectives. In the context of the policy shift towards greater privatisation and free-market mechanism, there is considerable scope for growth of corporate sector as also capital market. Since many competing opportunities will be available to shareholders, corporate management will have to pay greater attention to financial policies and discipline to woo private investors. The prospect of attracting investors naturally leads to the logical step of maximisation of shareholder returns in terms of dividend and market price of equity. The author presents an action plan agenda for the future suggesting *inter-alia* gradual reduction in debt: equity ratios, treating short-term bank borrowings as part of debt, seeking improved profitability instead of higher profits, focus on cash flows rather than book profits and deferred taxation.

This is a useful book for both general readers and professionals in corporate managements, financial institutions, banks, stock markets, research institutions and government. Above all, it is a timely publication in search of fresh initiatives and changes relevant to adjust corporate management to new development perspective. ❐

CORPORATE FINANCIAL POLICIES AND SHAREHOLDER RETURNS by N. Balasubramanian. Published by Himalaya Publishing House, Bombay 400 004 (Ramdoot, Dr. Bhalerao Marg, Girgaon), Delhi-2 and Nagpur 440 013. Pages 266. First Edition 1993. Price: Rs. 275/-.

BOOKS

HANDBOOK OF TRAINING METHODOLOGY AND MANAGEMENT by Dr. D. Paul Chowdhry; Published by: Inter-India Publications, D-17, Raja Garden, New Delhi-110 015; Price Rs. 350.

In a developing country like India, the imperative need of human resource development can hardly be over emphasized. The need for appropriate human resource development in different spheres to build up organisations is the crying need of the hour and training forms an important component of this strategy. In ordinary parlance, the purpose of training is to change the knowledge, skill and attitudes of the people as the situation demands and a lot of literature is available in this field particularly in Training Methodology. But most of this literature is based on the perceptions and experiences of western countries which generally do not correspond with the reality of our needs and thus it is bereft of Indian reality. However, the book under review is a welcome addition in the field of training literature which is based on the author's own experiences in the field of academics and the different positions he enjoyed in Government of India, as a Director of NIPCID, International Youth Centre, Centre Social Welfare Board and the Indian Council of Child Welfare. With the vast knowledge and experience gathered in different areas, he has tried to bring in a summary form as to how one should conduct training particularly in the fields of child development, child welfare; social welfare, community development and rural development both by the government agencies as well as NGOs. The book has been devoted to the issues as to how one should approach training, planning and organisational part, the methodology issues and the research evaluation for improving the content of the training. Even though, the book has been addressed to the social workers, psychologists and sociologists, one finds the methodology particularly how to organise training plan, very useful for all practising trainers in all the training institutes of our country. In fact, the present reviewer used his training methodology to design a programme for the Chief Development Officer (CDO) of Uttar Pradesh. Since the book is an outcome of the author's personal field experience spanning over 3 decades, the book is replete with practical touches which are quite evident in the chapter on training plans. The DOs and DONT's for trainers will be useful for making any training programme effective and particularly for the novice who wants to design new programmes for the benefit of users. In the training methodology, it would have been better if the methodology had been substantiated with some real life example which could have brought the points very succinctly rather than talking on a very general level. In the Training Aids chapter, a few photographs/pictures would have increased the usefulness of contents. In the final chapter of standards of accredition, it would have been better if there had been examples of some established programmes to drive home the points about the quality of training programme. However, taking all the pros and cons, it may be said, that since training programme is a highly intellectual and creative activity and as the process involves adult learning, it is a highly complex endeavour and no one can be sure which one method will click in the actual situation because every human being is different from the other. To that extent, the book serves a useful purpose and is a welcome addition in the field of training methodology. Even though the price of hard-bound edition is little on the higher side, it would be a good idea if the book is published in a paperback edition at a lower price to reach out to a larger segment of trainers.

Dr. B.G. Mukhopadhyay

TRIBAL SITUATION IN NORTH-EAST INDIA: Edited by Sarthak Sengupta; Inter-India Publications, D-17, Raja Garden New Delhi, 1994; Pp. 272.

India is popularly known as a country with unity amidst diversity. Vast diversities prevail across different regions and even within the region. From this point of view, the North-Eastern region of India is regarded as a distinct geo-ethnic unit. The region covers an area of 255082 sq. km. comprising seven sister states namely, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. It is connected with the rest of India by a narrow corridor between Nepal and Meghalaya. The region is the homeland of a large number of Mongoloid tribes belonging to different ethnic and linguistic backgrounds. These tribes differ greatly in their tradition, economy and complexity of social organisation. In terms of their size, they form more than one-fourth (26%) of the total population of the entire region. In view of their sizeable proportion, an appreciation of various aspects of these tribes is necessary not only to have better understanding about them but

also to devise appropriate measures to bring them into the mainstream of national development.

The book is a timely and notable contribution to fulfill this requirement and information hiatus on tribal population of the North-Eastern region. The volume in one way or other covers almost all important aspects related to the tribal population of the region. Its canvass is evidently comprehensive ranging from the aspects like social formation, agrarian situation and emerging social stratification, its customary land laws, shifting cultivation and agricultural development, status of women in the tribal society, forms of political system, hierarchical system, to all recent development of ongoing tribe-caste transformation taking place in the region. Thus, the topics discussed in the volume are of great topical interest covering the whole gamut of tribal population of the North Eastern region which has remained so far less known to the outside world.

In view of its rich and relevant contents, the compilation is quite informative to enlighten the readers about this distinct geo-ethnic unit of India. Undoubtedly, the volume will prove very useful not only to the scholars and researchers but to the administrators and the policy makers also.

Prof. S.S. Khanka

(Contd. from page 45)

words: "Fortunately for the side, they possessed in C.K. Nayudu—easily their best batsman—a man of high character and directness of purpose who in the absence of the two above him was able to take over the duties of captaincy with skill and no small measure of success. He had indeed proved himself an admirable and outstanding leader on the field."

For "C.K.", the tour was a remarkable personal success. He scored six centuries, 1842 runs and had a batting average of 40 in 34 matches. Two of his centuries were scored at Lord's. Nayudu's most incredible feat on the tour was a tally of 36 sixes—a record for a visiting player. Wisden paid his tribute to "the batting genius" by making him one of the Five Cricketers of the Year.

Nayudu again led India in the first ever Test played on Indian soil at Bombay against England led by Douglas Jardine on their 1933-34 tour. It was here that the young Lala Amarnath scored his century on debut in the inspiring company of his skipper when the two were together in a partnership of 138 runs with Nayudu nursing an injured hand. "C.K." was now turning forty but he remained a main prop of the Indian team in the three-Test series.

The long-enduring cricketer played his last Test series when he was past forty. Though not the hurricane hitter of the earlier tour of England, he lent strength to the team. He proved his worth as an all-rounder by finishing the first tour of England with 65 wickets and the second with 51. And he signed off his Test innings with a daring 81. runs at the oval in the last of the three-Test series. It was this characteristically brave knock by the senior most member of the team that saw India avert an innings defeat.

C.K. Nayudu was without doubt among India's great captains. He always applied maximum pressure against the opponents by adopting bold and dynamic tactics. A great motivator of players, Nayudu led Holkar to victory in the Ranji Trophy Championships four times and took it to the runners-up stage six times. Leading his team by example, a fifty-six year old Nayudu, topscored for the Central Zone with scores of 37 and 39 in the match against the visiting MCC in 1952.

On retiring from the Holkar Army, Col. C.K. Nayudu captained the newly-formed Andhra in the Ranji Trophy and hit 74 in 96 minutes with a six and ten fours. And when he was 62, he led Uttar Pradesh, and in the Ranji Trophy, scored 81 with two sixes off Vinoo Mankad. And at the age of sixty-eight, the master batsman played his last first-class match for the forty-seventh year in succession at Nagpur. Four years later, the one and only "C.K." passed away after a glorious innings in his memorable career.

The Maharaja of Indore held Padma Bhushan C.K. Nayudu in very high esteem. "I may be the ruler of Indore but C.K. is the king of outdoor games,", he used to say. Nayudu was certainly a versatile sportsman. He was a fine athlete having once run 100 yards in 10.5 seconds. Good at billiards, an outstanding forward in hockey and a sound half-back in football, he also played high standard tennis. And what is more, he was a fine polo player with skillful horsemanship. ❐

A centenary tribute by the author who is a veteran sportswriter.

CORRECTION

In the special issue on Cinema and Society, in the article 'Indian Cinema As An Instrument of Social Reforms' by Shri Gautam Kaul, on page 12, first line, column 1, the year should be read as 1896. The error is regretted.

Annual Plan Outlay 1994-95 And 1995-96—Originally Approved

(Rs. crore)

State /Year	A.P. 1994-95	A.P. 1995-96	% growth	In real terms (7% inflation)	% growth in real terms in 1995-96
I. Special Category States					
1. Arunachal Pradesh	335.00	471.00	40.60	440.19	31.40
2. Assam	1051.00	1418.32	34.95	1325.53	26.12
3. Himachal Pradesh	650.00	750.00	15.38	700.93	7.84
4. Jammu & Kashmir	950.00	1050.00	10.53	981.31	3.30
5. Manipur	240.00	300.00	25.00	280.37	16.82
6. Meghalaya	281.00	306.52	9.08	286.47	1.95
7. Mizoram	207.66	227.00	9.31	212.15	2.16
8. Nagaland	220.00	240.00	9.09	224.30	1.95
9. Sikkim	135.00	192.00	42.22	179.44	32.92
10. Tripura	310.00	350.00	12.90	327.10	5.52
Total I	4379.66	5304.84	21.12	4957.79	13.20
II. Non-Special Category States					
1. Andhra Pradesh	2130.00	3159.00	48.31	2952.34	38.61
2. Bihar	2400.00	2500.00	4.17	2336.45	-2.65
3. Goa	182.00	210.00	15.38	196.26	7.84
4. Gujarat	2240.00	2610.00	16.52	2439.25	8.90
5. Haryana	1025.00	1250.00	21.95	1168.22	13.97
6. Karnataka	3275.00	3575.00	9.16	3341.12	2.02
7. Kerala	1260.00	1550.00	23.02	1443.60	14.97
8. Madhya Pradesh	2750.00	2900.00	5.45	2710.28	-1.44
9. Maharashtra	4400.00	5907.00	34.25	5520.56	25.47
10. Orissa	1951.00	1650.00	-15.43	1542.06	-20.96
11. Punjab	1450.00	1675.00	15.52	1565.42	7.96
12. Rajasthan	2450.00	3200.00	30.61	2990.65	22.07
13. Tamil Nadu	2750.00	3200.00	16.36	2990.65	8.75
14. Uttar Pradesh	4562.00	5477.50	20.07	5119.16	12.21
15. West Bengal	1706.00	2065.00	21.04	1929.91	13.12
Total II	34531.00	40928.50	18.53	38250.93	10.77
Total I + II	38910.66	46233.34	18.82	43203.73	11.05
1. Andaman & Nicobar	205.00	215.00	4.88	200.93	-1.98
2. Chandigarh	88.00	100.00	13.64	93.46	6.20
3. D & N Haveli	25.00	29.00	16.00	27.10	8.41
4. Daman & Diu	18.50	23.00	24.32	21.50	16.19
5. Delhi	1560.00	1720.00	10.26	1607.48	3.04
6. Lakshadweep	32.00	38.60	20.63	36.07	12.73
7. Pondicherry	135.00	175.52	30.01	164.04	21.51
Total III	2063.50	2301.12	11.52	2150.58	4.22
Grand Total (I+II+III)	40974.16	48534.46	18.45	45359.31	10.70
NEC	277.00	366.08	32.16	342.13	23.51
Total I + II + III + NEC	41251.16	48900.54	18.54	45701.43	10.79

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Yojana: 33 Years Ago

(September, 1962)

The Nagarjunasagar dam has now risen to a height of 100 feet in parts. Excavation of canals has been done on 20 miles of the Right Bank Canal and is in progress on 50 miles. Also on the Left Bank Canal, excavation has been taken up on 45 miles of which nine miles have been done. The canals are expected to be ready for irrigation by the end of the Third Plan.

Work started in 1955 and Rs. 49 crore have been spent so far

The Nagarjunasagar Project brings a new hope to the scarcity stricken area in the lower Krishna basin in Andhra Pradesh. It envisages to irrigate 35 lakh acres of land, particularly in the districts of Nalgonda and Guntur, and generate power, with an installed capacity of 400,000 kW., for electrification and industrialisation of the area, besides controlling floods in the Krishna. The additional yield of food grains and sugarcane will be 12 lakh tons every year.

The project consists of: (1) a 404-foot high and 3-mile long dam near Nalgonda creating a reservoir of 100 square miles to store 9.30 million acre feet of water, (2) a power station with eight generators of 50,000 kW each and (3) a canal system with two main canals 416 miles in length.

The first stage is expected to be completed by 1971 when 20 lakh acres of land will be brought under irrigation. The dam will be 300 feet high from average foundation level and canals will reach a length of 1.35 miles on the right and 108 miles on the left. The works will cost Rs. 91 crore.

Six Million More

If all the people of India were to stand in a line today and a young man were asked to count them all at the rate of 120 people per minute, he will need seven years to come to the end of the line—except that by then the line would have grown much longer. The provisional total of the 1961 Census placed our population at 436 million. But in every Census there is bound to be some under-count. Therefore, sample checks were held, which showed that for each 1,000 people counted last year some seven had been left out. That gives us three more million. Also, last year's provisional figure did not include the population of Goa, Diu, Daman, Dadra, Nagar Haveli and the North-East Frontier Agency—another three million. So we really are 442 million—a long way have we gone since Bankim sang of 30 crore voices.

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