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CHRONIC POVERTY, FOOD INSECURITY AND MALNUTRITION IN THE NINETIES

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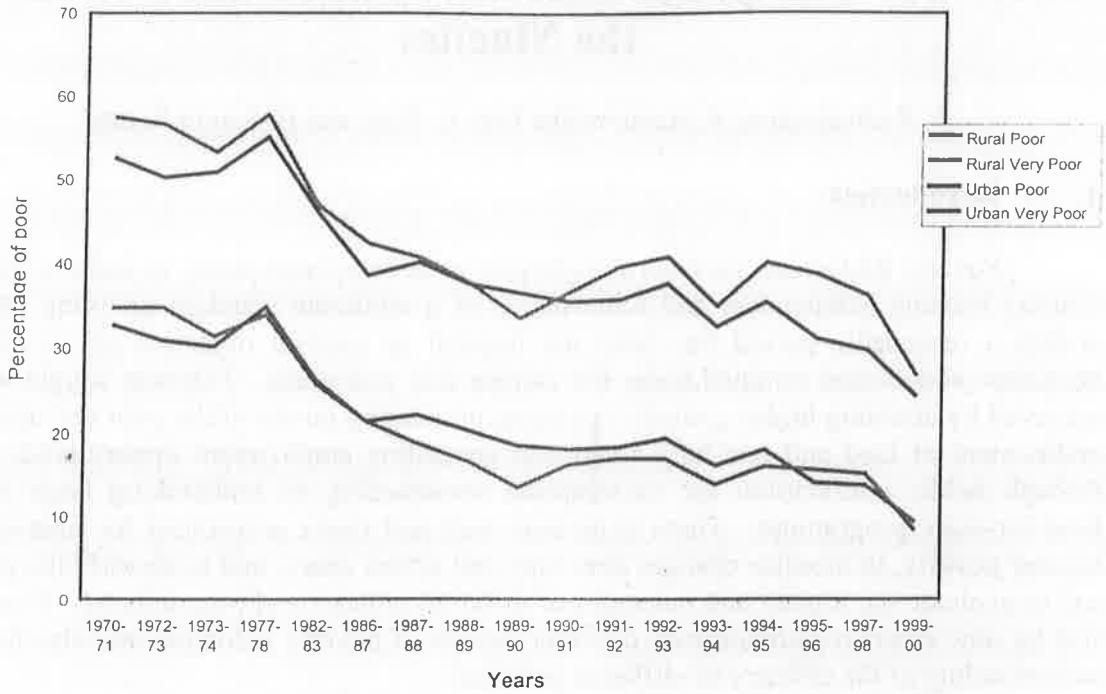
I. Introduction

Poverty Reduction has been a major goal of development policy in India since the country became independent and achievement of a minimum standard of living for all within a reasonable period has been the implicit or explicit objective of all socio-economic endeavours initiated under the various five year plans. This was sought to be achieved by attaining higher growth; by raising purchasing power of the poor through the endowment of land and non-land assets and generating employment opportunities and through public intervention for consumption smoothening by undertaking large scale food-for-work programme. There is by now well laid down procedures for measuring income poverty, to monitor changes over time and across space, and to identify the poor, and to evaluate the impact and outcomes of different policies and programmes. There is also by now extensive literature on different aspects of poverty reduction and also better understanding of the efficacy of different policies.

The proportion of people below the poverty line remained above 50 per cent with no declining trend till the mid-'70's but registered thereafter a declining trend with yearly fluctuations. It declined dramatically in the late seventies and eighties from 51 percent in 1977-78 to 39 percent in 1987-88 (Planning Commission). The intensity of poverty has also declined considerably in both rural and urban areas. Higher growth, improvement in real wages and proliferation of poverty alleviation programmes helped to drive these achievements. The declining long term trend has been sustained in the 1990s although with sharp year to year variations. The trends in poverty and chronic poverty[1] in rural and urban India are depicted in Figure 1.

Fig. 1: Trends in poverty in India



As a consequence of income poverty reduction during the last two decades, the poverty scene is undergoing a transformation and is markedly different from what prevailed in the early years of poverty reduction. The spatial map and social base of poverty have significantly changed over time, and poverty is increasingly getting concentrated in a few geographical locations and among specific social groups. The geographical devide can be illustrated by the increasing relative share of undeveloped states such as Bihar, Orissa, Madhya Pradesh and Uttar Pradesh in All India rural poor from 53 percent in 1993-94 to 61 percent in 1999-00 and declining share of developed north western states (Punjab, Haryana and Himachal Pradesh) from 3 to 1 percent.

That poverty in India is not merely an economic phenomenon but also a social phenomenon is established by the fact that poverty is disproportionately high among scheduled castes and scheduled tribes and their share in all India poverty has been on the rise. Whether one considers the Planning Commission's estimates or those of individual scholars, the share of scheduled tribes and scheduled castes in poverty had gone up during the 1990's. Also, in states which achieved substantial poverty reduction, the remaining poor belong to either of the disadvantaged groups. For instance, in 1999-00, Punjab had 6 percent of its rural population below poverty line, scheduled castes accounted for 78 percent of the poor while their share in rural population was 38 percent.

For a long time, anti-poverty strategies have been looking at poverty reduction in minimalist terms of bringing the poor above the poverty line by focusing on their income improvement through employment programmes targeted to the individual. The poor

near the poverty line might have crossed the poverty line leaving behind the hard core poor who suffer from multiple deprivation. It is now widely recognized that income poverty reduction is relatively easy and elimination of multiple deprivation is more difficult to achieve. The recent body of literature highlights the multi-dimentionality of poverty and the conceptual problems in aggregation across the dimensions.

This paper argues the need for a perspective viewing the poor as a part of a wider society with links and relationships affecting economic conditions and development status of the poor. In this paper we present the multidimensional indicators of poverty including chronic poverty and malnutrition and analyse the conceptual link between poverty and malnutrition. Logitudinal studies with panel data can only provide reliable estimates of incidence of chronic poverty. We aregue tht the profiles of very poor reflect the profiles of chronic poor. We cover mainly the post reform period and focus on the deprivation among the historically marginalized groups such as scheduled castes and tribes.

II. Poverty in the Post Reform Period

During the nineties, the tendencies of slowing down of rural employment growth and slow down in the growth momentum of rural non-agricultural activities seem to have affected the pace of decline in poverty and aggravated rural-urban disparities. We shall review the trends in total expenditure utilizing the NSSO Consumer Expenditure data of last three decades (i.e. 1970-71 to 1998), based on the detailed study of Ravi (2000)[2]. The trend growth rates of per capita expenditure, as computed from various rounds of the NSS between 1970-71 and 1999-00 for four expenditure groups, viz. bottom 30 percent, middle 40 percent and top 30 perent are presented in Table 1.

Trends in Poverty

Rural per capita total expenditure (PCE) per month at 1990-91 prices which was Rs. 158 in 1970-71, increased steadily to Rs. 213/- by 1989-90 and declined sharply by 5 percent to Rs. 202 in 1990-91 (ibid). During 1990-98, it fluctuated between Rs. 202-214, except in 1997 when it reached the highest level of Rs. 235. Its annual trend growth rate fell to 1.2 percent (1.4 percent if 55th round is included) from 1.54 percent during 1970-89 (Table 1). In contrast, the urban annual growth rate accelerated from 1.45 during 1970-89, to about 2.8 percent (2.37 percent if 55th round is included). There was no significant change in the ratio of urban to rural per capita expenditure during 1970-89, but it increased thereafter at an annual rate of 1.6 percent. Clearly, the 1990s growth benefited urban areas the most and aggravated rural-urban divide. Our results are robust whether we include or exclude 55th round from the analysis. The widening rural-urban disparity is coincided with widening inequality in the urban expenditure distribution : gini coefficient of urban consumer expenditure which had no significant trend during 1970-89 increased at an annual rate of 1.4 percent during the nineties. The widening inequality is also reflected in the differential growth across the urban expenditure groups. The per capita expenditure of top 30 percent increased at 3.31 percent (2.55 percent if 55th round is included) per annum while that of bottom 30 percent increased at 1.78 percent (1.5 percent if 55th round is included). In the case of rural areas, bottom 30 percent experienced a decline in its annual growth rate of per capita expenditure from 1.71

percent during 1970-89 to 1.19 percent during 1990-1998 (1.49 percent if 55th round is included). Our analysis conclusively shows that in the 1990s, urban areas gained substantially from growth and the top 30 percent the most and the relative position of rural areas turned adverse. Whether the per capita expenditure growth in rural areas is slowed cannot be said but acceleration as observed in the case of urban areas is ruled ruled out.

Rural poverty ratio declined at an annual rate of 2.5 percent during the seventies and eighties. There does not seem to be any acceleration in the rate of reduction. In fact, during 1990-98, the rate dropped to 0.73 (Ravi, 2000). On the other hand, urban poverty declined at the rate of 2 percent per annum during the seventies and the eighties and at 3.05 percent during 1990-98. Reversing the worsening rural-urban disparity and accelerating the poverty reduction in rural areas will remain a major challenge to policy making.

Profiles of the Poor

The composition of the poor has been changing and rural poverty is getting mostly concentrated in the agricultural labour and artisans households and urban poverty in the casual labour households. (Tables 2 and 3). Agricultural labour households which accounted for 41 percent of rural poor in 1993-94 increased to 47 percent in 1999-00 (Table 3). In contrast, the share of self employed in agriculture in rural poor dropped from 33 to 28 percent. The increase in the relative size of agricultural labour households was due to increase in the dependency of rural households on agriculture for livelihood from 28 to 31 percent as well as higher incidence of poverty among agricultural labour households – 40 percent in 1999-00 in contrast to 26 percent in all rural households. Casual labour households constituted 32 percent of urban poor in 1999-00 which was 25 percent in 1993-94. The increase in its share was both due to their increased dependency on urban labour market from 25 percent in 1993-94 to 32 percent in 1999-00 as well as higher incidence of poverty among urban casual labour households. It needs to be recognised that growing dependency of rural and urban households on casual labour market would also expose them to market risks and tends to increase transient poverty. More and more persons move in and out of poverty due to fluctuations in the labour market.

The geographical landscape of rural poverty has been changing. The percentage share of backward states such as Bihar, Orissa, Madhya Pradesh and Uttar Pradesh in the rural poor rose from 53 in 1993-94 to 61 in 1999, whereas the share of agriculturally prosperous North-Western States such as Punjab, Haryana and Himachal Pradesh declined from 3.03 to 1.26 percent and that of Southern states from 15.12 to 11.23 percent. Surprisingly, some of the better off states such as Maharashtra, Gujarat and West Bengal had relatively higher share in rural poverty. These three states accounted for one fifth of the rural poor in 1999-00. The urban poor were getting concentrated in Uttar Pradesh, Maharashtra, West Bengal, Madhya Pradesh and Andhra Pradesh. Their share in All India urban rose from 56 percent in 1993-94 to 60 percent in 1999-01.

The occupational composition of rural poor varied across the states. In general, in developed states poverty was highly concentrated among agricultural labour households and in contrast in backward states poverty extended to other occupational groups including self employed in agriculture. For instance, in Punjab, Haryana, Maharashtra and Andhra Pradesh agricultural labour household constituted more than 60 percent of the rural poor in 1999-00, and in contrast, they constituted less than 16 percent in Rajasthan and 28 percent in Assam.

Among the social groups, scheduled castes, scheduled tribes and backward castes accounted for 81 percent of the rual poor in 1999-00 whereas they represented around half of the rural population (Table 4). The poor among scheduled castes in rural areas were concentrated in Uttar Pradesh, Bihar and West Bengal. They comprised 58 percent of the poor among scheduled castes. In urban areas, Madhya Pradesh and Uttar Pradesh accounted for 41 percent of the poor persons in scheduled castes. The incidence of poverty among scheduled castes was high in Bihar, Madhya Pradesh and Uttar Pradesh in both rural and urban areas.

The percentage of scheduled tribes population among the rural poor has been increasing fast. It increased from 14.8 in 1993-94 to 17.5 in 1999-00. The increase was mainly on account of comparatively slower reduction in the incidence of poverty among scheduled tribes. the percentage of poor among scheduled tribes declined from 50 in 1993-94 to 44.2 in 1999-00 whereas for all rural population it declined from 37 to 27. Bihar, Gujarat, Madhya Pradesh and Maharashtra together accounted for 75.5 percent of the poor among scheduled tribes in 1999-00 (Table 5). It is worth noting that nearly thirty perent of the poor were located in Madhya Pradesh. The poverty levels in rural areas were high in Orissa (73%), Bihar (59%), Madhya Pradesh (57%) and West Bengal (50%) and in urban areas, in Orissa (59%), Karnataka (52%), Andhra Pradesh (46%) and Bihar (43%).

Severity of poverty

The percentage of very poor in rural areas declined from 15 in 1993-94 to 8 in 1999-00 and in urban areas from 15 to 9 – a decline by about 1 percentage point per year. The data show faster decline in the case of very poor as compared to poor. For instance, Ravi (2000) shows that during 1970-1989, the percentage of very poor declined at an annual rate of 4.15 percent in rural areas and 2.86 percent in urban areas whereas the percentage of poor declined at 2.50 percent in rural areas and 1.96 percent in urban areas. If the historical trends persist the percentage of very poor will reduce to insignificant level by the end of this decade in most of the states.

Inter state variations in the incidence of very poor were significant – the incidence of very poor in rural areas varied between 0 and 21.7 percent in 1999-00 and in urban areas between 0 and 21.6. Meghalaya, Mizoram, Nagaland, Delhi, Chandigarh, A &N Islands, Lakshdeep, Goa and Daman & Diu had no incidence of very poor. All the above union territories and small states performed extremely well in the reduction of severity of poverty. Almost all of them had no or very low incidence of very poor even in 1993-94.

It is worth noting that Rajasthan, a less developed state, performed well in the reduction of the incidence of very poor.

Orissa had the highest incidence of very poor in rural as well as urban areas both in 1993-94 and 1999-00 and presented a different picture in the 1990s in the reduction of very poor. Assam is in league with Orissa in terms of poor performance. The incidence of very poor increased in Assam between 1993-94 and 1999-00 in both rural and urban areas despite a reduction in the percentage of poor implying worsening of inequality among the poor. Bihar and Madhya Pradesh had high incidence of very poor in rural as well as urban areas ; Assam and West Bengal had high incidence of very poor in rural areas and Maharashtra, Uttar Pradesh and Pondicherry in urban areas.

In rural areas, the very poor scheduled tribes were located mainly in four states viz. Madhya Pradesh, Orissa, Bihar and Maharashtra (Table 5). They comprised 77 percent of very poor scheduled tribes in 1999-00. In the case of scheduled castes, the very poor were concentrated in Uttar Pradesh, Bihar and West Bengal – they together accounted for 63 percent of very poor scheduled castes in 1999-00 (Table 6). In urban areas, the very poor among scheduled castes and tribes were mostly located in the above states. It is worth noting that concentration of very poor in the above states tended to be somewhat higher than concentration of poor in the above states (Table 7).

Chronic Poverty

How can chronically poor household be identified among the poor? The sub category of poor persons who are below the poverty line for a long duration, usually five years, constitute the chronic poor. In practice, the availability of data dictates the duration. In the National Sample Surveys, the duration does not extend beyond a year and also specific households consumption is available for a reference period of usually one month. Hence, it is not possible to identify the chronic poor from the NSS data.

We have attempted to identify the chronic poor in an indirect manner by establishing correspondence between NSS and NFHS data. NFHS has not collected any information on income/consumption. However, it has collected information on households possession of durables, ownership of assets, amenities etc. Using this information, standard of living index has been computed for each sample household of NFHS. Correspondence between poverty line and standard of living index has been established by equating the percentage persons below the poverty line computed from the NSS data with the percentage of persons below the standard of living index. The percentage of persons below cut off point of the standard of living index will be equal to the percentage of persons below the poverty line of the NSS. A poor household with a malnourished child is considered as chronically poor. Among the three measures of malnutrition, height-for-age index is an indicator of chronic undernutrition (stunted), weight-for-height index (wasted) reflects acute under-nutrition and weight-for-age (under weight) is a composite measure of both chronic and acute under-nutrition. We have chosen height-for-age since deficiency in food energy intake over a long duration gets reflected in stunting.

The standard of living index data revealed that 57 per cent of children belonging to poor households in rural areas and 50 per cent of children belonging to poor in urban areas were stunted (Table 8). The percentage of stunted children among the poor varied between 32 (in Kerala) and 63(in West Bengal) in rural areas and between 31(in Kerala and 64(in Haryana) in urban areas. It is worth observing that in some of the states with low incidence of poverty, such as Haryana and Jammu and Kashmir, the percentage of stunted children among the poor was higher.

The incidence of chronic poverty has been estimated by multiplying the percentage of malnourished among the poor with the proportion of poor and the estimates are presented in Table 8. The percentage of chronically poor in rural areas is estimated to be 15 per cent in rural areas and 12 per cent in urban areas. The incidence of chronic poverty is higher than the incidence of very poor but lower than the severe malnutrition levels (weight-for-age/height-for-age less than mediam – 3 SD).

The percentage of chronically poor is quite high in Bihar (25.3 per cent in rural and 21.1 in urban), Orissa (24.4 per cent in rural and 21.4 in urban), Madhya Pradesh (21.3 percent in rural and 22.0 in urban) and Uttar Pradesh (19.6 per cent in rural and 10.4 per cent in urban). It is also high in rural areas of Assam and West Bengal. Chronic poverty is very low in: Jammu & Kashmir, North-western states of Punjab, Haryana, Himachal Pradesh and Kerala.

The profiles of very poor are likely to reflect those of chronically poor. Although levels differ, chronic poverty and incidence of very poor are correlated. Since the probability of a very poor household moving out of poverty in some good years is likely to be very low, the incidence of chronic poverty may be high among the very poor. It may be noted that profiles of the very poor are not very sensitive to marginal changes in the cut-off point.

Who gained from poverty reduction in the 1990s?

Three major conclusions follow from the preceding analysis. First, all states with the exception of Assam and Orissa experienced poverty reduction between 1993-94 and 1999-00. However, due to uneven poverty reduction across states and social groups, the poor are getting concentrated more in less developed states as well as among a few vulnerable social groups. In the agriculturally prosperous states, agricultural labour households accounted for bulk of the rural poor and in the less developed regions, rural poverty extended to other occupational groups including the self employed in agriculture. In the urban areas, poverty tends to concentrate more among the casual labour households. Second, Assam, Orissa, Madhya Pradesh and Uttar Pradesh have remained laggards in poverty reduction. Structural factors and inadequate growth might be the major causes underlying their poor performance in poverty reduction. In this context, it is worth mentioning that Rajasthan, a resource poor state could perform better in poverty reduction and may have lessons to offer from its experience. Third, the poor are likely to

be vulnerable to risks in labour market and may increasingly suffer more from transient poverty since their dependency on casual labour market for livelihood is rising fast both in rural and urban areas. Backward regions and disadvantaged social groups are afflicted by chronic as well as transient poverty.

III. Food Insecurity

Food security is jointly determined by availability of food and access to it, which in turn, is determined by incomes of poor households. Food availability is an indicator of food security at the national, regional and local levels. However, household food security requires that food be available at local and regional markets and the poor have adequate purchasing power. Achievement of household food security may not guarantee individual food security due to intra household inequality in food consumption.

India has experimented with a broad spectrum of programmes for improving food security by giving priority to self-sufficiency in cereal production. At the national level, India has solved the problem of cereal insecurity which is reflected in mounting buffer stocks. Yet, there are millions of food insecure and undernourished people. We shall review the trends in food consumption to show that considerations of food security requires moving beyond cereal availability and recognizing the ongoing process of dietary diversification.

Food Expenditure, Food Consumption and Calorie Intake

Cereal Consumption

NSS consumption data reveal that the per capita consumption of cereals has been declining since the early seventies (Radhakrishna, 1991, Radhakrishna and Ravi, 1992, Rao and Radhakrishna, 1997, Rao, 2000). Between 1970-71 and 1997-98, the per capita cereal consumption declined by 0.72 per cent per annum in the rural areas and by 0.74 per cent per annum in urban areas. The cereal consumption in rural areas fell from 15.35 kgs per capita/month in 1970-71 to 12.5 kgs in 1997-98 while the same in urban areas fell from 11.36 kgs to 10.4 kgs during the same period. The declining trend is visible across all the states with the exception of Kerala, West Bengal and Orissa. The decline is very prominent in Punjab and Haryana where the decline is as much as about 6 kgs per capita per month in rural areas. What is most striking is the low per capita intake of cereals in the most prosperous Punjab state (9.8 kgs in rural and 9.7 kgs in the urban areas in 1997-98) and the converse in the backward state of Orissa (16 kgs in rural and 13.25 kgs in urban areas). This is partly due to the diversification of the food basket in Punjab and Haryana in favour of superior non-cereal food, particularly milk and milk products, vegetables and fruits, etc. Can these changes be viewed in a positive perspective? The striking decline in cereal consumption is attributed to changes in consumer tastes and preferences from food to non-food items, within the food group from cereals to non-cereal food and from 'coarse' to 'fine' cereals (Radhakrishna and Ravi 1992). More recently, Rao (ibid.) has shown that the decline in cereal consumption has been sharper in the rural areas where improvements in rural infrastructure made other food and non food items available to the rural households and hard manual work is greatly reduced in

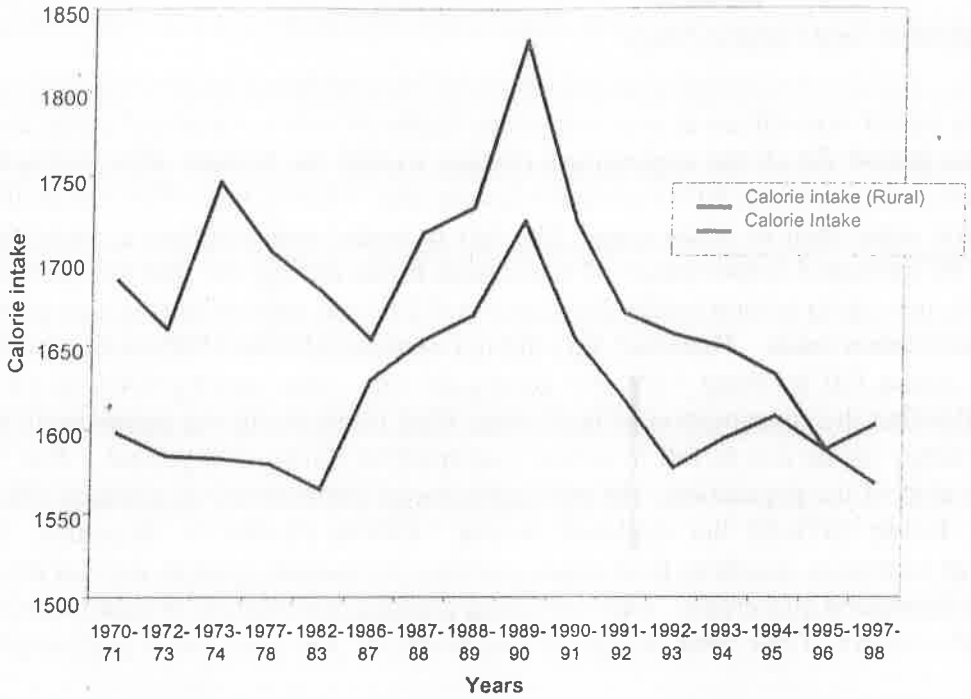
agriculture due to farm mechanization. Rao further observes that a reduction in the intake of food grain on this account should not be taken as a deterioration in human welfare.

Food Consumption, and Calorie Intake

Per capita cereal expenditure at constant prices declined both in rural and urban areas throughout this period for all the expenditure classes, except the bottom 30% during the first two decades and urban top 30% during the last decade. During the 1990s, the decline is more in rural areas than in urban areas. The fall in cereal consumption is more than compensated by increased consumption of non-cereal foods during the first two decades and as a result, per capita calorie intake increased at 0.2% per annum during this period both in rural and urban areas. However, this did not continue during 1990s when the per capita calorie intake fell by about 1.5% per annum in rural areas and by 0.4% in urban areas. It implies that the consumption of non-cereal food items could not compensate the loss of food energy intake due to fall in cereal consumption during this period. For the bottom 30 per cent of the population, the per capita cereal expenditure at constant prices was stagnant during 1970-89 but declined during 1990-98 (Table 1). It seems, the improvement in economic access to food made possible by income growth did not result in a higher consumption of cereals. The declining cereal consumption would not be a major cause of concern if the food energy intake levels of the poor were nutritionally adequate.

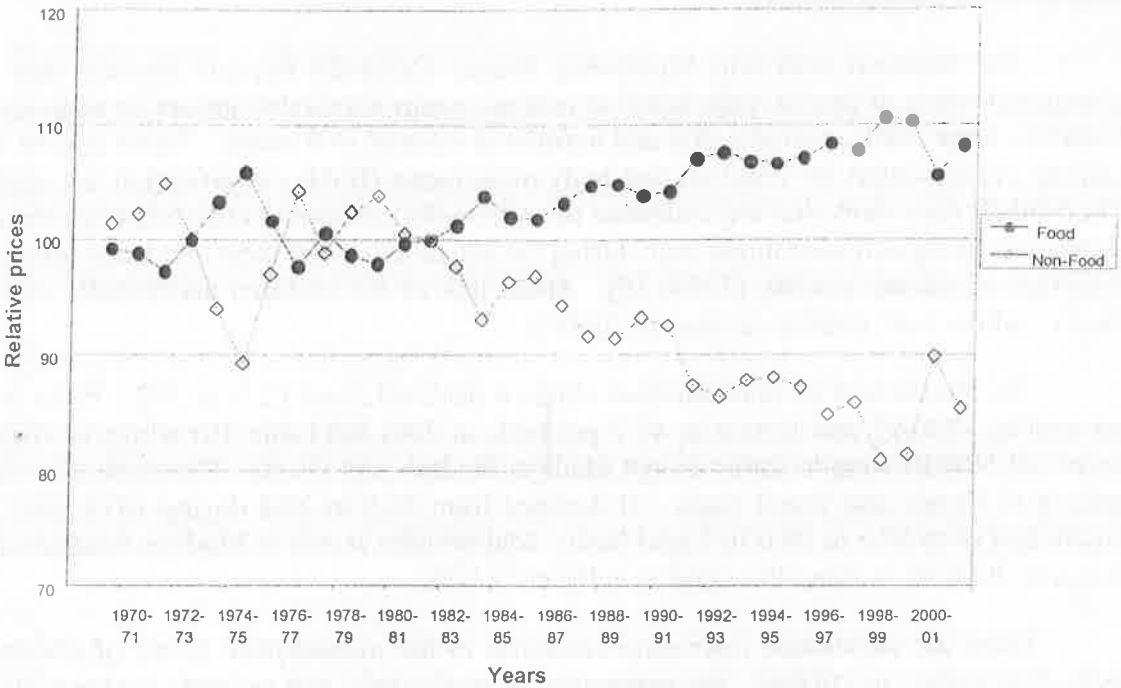
There is substantial variation in energy intake among different expenditure segments of the population. While the top 30% of the population is adequately fed, both in rural and urban areas, the middle 40% is barely close to the nutritional requirement both in rural and urban areas (Table 9). The energy intake of middle group was stagnant though it was close to the norm and the energy intake of the bottom 30% was very deficient both in rural and urban areas. The energy intake of this section increased marginally during 1970-89, but it started declining thereafter (Figure 2).

Fig. 2: Calori Intake of bottom 30%



The per capita calorie intake in 1993-94 was 1,646 kcal per day in rural areas and 1,715 kcal per day in urban areas (Table 9). This section of the population was deprived of an adequate diet that would provide the required food energy of about 2200 kcal/person/day. What is disquieting is the decline in their per capita intake during the 1990s which was due to sharp increase in real food price (Figure 3).

Figure 3: Trends in relative prices of food and non-food in rural India



Historical trends reveal substantial diversification of the consumption basket of the poor in favour of non-cereal items, particularly non-food items. The changes in the composition of diet have increased the cost of calories (Radhakrishna and Ravi, 1992). The per capita non-food expenditure at constant prices has been expanding among all income groups of rural and urban areas throughout but its rate of expansion was higher in the nineties, even among the poor (Ravi, 2000). The budget share of cereals of the bottom 30% declined from 51% in 1970-71 38% in 1990-91 and further to to 33% in 1998 in rural areas and from 36% to 26% and further to 22% in urban areas during the same period. A question of topical interest is: are the poor households not buying food items from a nutritional perspective? Studies suggest that the poor generally suffer from micro-nutrient (iron, vitamin 'A', riboflavin, niacin etc.) deficiencies due to lack of variety in their diet (NNMB reports). It is therefore important to analyse the implications of the changes in dietary preferences on the nutritional and health status of the poor. So long as the diversification of the consumption basket improves nutritional status, even though it may not add calories, it should not be a cause of concern. Another important issue that evokes interest is: what would be the impact of economic reforms and liberalisation on food habits? There is hardly any study which throws light on these issues.

IV Malnutrition

Malnutrition among children

The National Nutrition Monitoring Bureau (NNMB) Reports provide data on nutritional status of general population as well as certain vulnerable groups in rural areas, based on large scale , periodic diet and nutritional surveys in 9 states. These reports use Gomez classification for children and body-mass index (BMI) classification for adults. The NNMB data show that the incidence of under-nutrition among children, even though slowly declining still alarmingly high during the late nineties and their incidence is higher than that of income poverty (Table 10). About half of the children and slightly over a third of adults were undernourished in 2000-01.

The percentage of malnourished children declined from 62.5 in 1975-79 to 56.2 per cent in 1990-91 and further to 47.7 per cent in 2001-02(Table 10) which is visible across all NNMB sample states except Madhya Pradesh and Orissa. The decline is very striking in Kerala and Tamil Nadu – it declined from 56.8 to 28.8 during 1975-2001 in Kerala and from 59.6 to 39.0 in Tamil Nadu. Malnutrition levels in Madhya Pradesh and Orissa in 2000-01 is about the same as in the early '70s.

There are substantial inter-state variations in the malnutrition levels of children under-five years; in 2000-01, the percentage of moderately and severely malnourished children varied between 28.8 in Kerala and 63.9 in Madhya Pradesh. In terms of nutritional status of children, middle-income states such as Kerala, Tamil Nadu and Andhra Pradesh performed better than higher-income states like Maharashtra and Gujarat and West Bengal. Not surprisingly, poorer states such as Madhya Pradesh and Orissa showed worst performance. It is worth noting that with low food energy intake, Kerala and Tamil Nadu could perform better possibly due to the successful midday meal program in latter. National Family health Survey (NFHS) estimates of malnutrition based on standard deviation classification also reveals similar pattern (Table 11).

The background characteristics of malnourished children presented in Table 12 show that malnutrition is higher among children with low birth weight as well as among the children whose mothers suffer from chronic energy deficiency. There is ample empirical evidence which shows that low birth weight is associated with mother's malnutrition. Concerted efforts are required to break the vicious circle (mother-child-mother) of malnutrition among the poor.

Chronic energy deficiency among adults

NNMB data show that 37.4 per cent of adult females and 39.4 of adult males in 2000-01 suffered from Chronic Energy Deficiency (CED) in eight sample states and the extent of malnutrition among the adults was almost as much as that of children (Table 10). The interstate variations in CED are similar to those of malnutrition among the children. CED was found to be lower in Kerala (22.4 percent for males and 18.7 percent for females) and Tamil Nadu (26.7 percent for males and 38.7 percent for

females) and higher in Madhya Pradesh, Maharashtra and West Bengal (above 50 percent). Gender differences seem to exist in some states, particularly in Tamil Nadu.

NFHS-II shows that 36 percent of ever-married women aged 15-49 have chronic energy deficiency (Table 11). It is more pronounced for rural women, illiterate women and women living with a low standard of living (Fred Arnold et.al., 2003). Women who consume milk or curd daily are less prone to CED than other women (ibid). Chronic energy deficiency levels are higher in Maharashtra, Gujarat and West Bengal and they are closer to that of less developed states like Bihar, Madhya Pradesh and Orissa. Punjab, Kerala, Arunachal Pradesh, Manipur and Nagaland have lower incidence of feminine malnutrition.

Targeting:

Estimates of undernourishment show that 20-21 percent of rural children are severely malnourished and another 30-39 percent, mild to moderately malnuourished based on weight-for-age criterion and 25 percent are severely and another 24 percent are mild to moderately malnourished according to height-for-age criterion (Table 13). Eradication of malnutrition should be the first priority of nutrition policy and the feeding programmes should be targeted towards them. Liberal use of growth supplementing, employment oriented food-for-work programmes should be the principal instruments to eradicate mild to moderate malnutrition.

Poverty and malnutrition

What is the impact of poverty reduction on malnutrition? Is the reduction in malnutrition commensurate with poverty reduction? Due to data limitations, the purpose here is only explorative. Rural malnutrition based on weight-for-age NFHS state-wise data is regressed on rural poverty estimates based on NSS 55th round. Semi-log type of specification is chosen to allow for the existence of malnutrition at zero level of poverty. The coefficients are statistically significant, but the goodness of fit is not very high (Table 13). It seems, factors other than income poverty also influence malnutrition. The intercept coefficients are statistically significant indicating the prevalence of malnutrition even when poverty is completely eradicated. The poverty coefficients are positive and significant, indicating that a ten percent reduction in poverty reduces malnutrition by 6 percent and *severe* malnutrition by 5 percent. The malnutrition for 20 quintiles formed on the basis of standard of living index also revealed that malnutrition declines with improvement in standard of living but it persists even among the top quintiles. For example, 10 percent of rural children in the top quintile class, suffer from severe malnutrition and another 18 percent from moderate to mild malnutrition – in all, 28 per cent. And in urban areas 7 per cent of children suffer from severe malnutrition and 14 percent from moderate to mild malnutrition – 21 percent in all.

Determinants of malnutrition

The NFHS data is analyzed to identify the determinants of malnutrition in rural areas by estimating logit regression model using the maximum likelihood method

(Table 14). The dependant variable (malnutrition) assumes one if the child is malnourished and zero otherwise. The model is estimated separately for underweight, stunted and wasted categories of malnutrition. Since the results of the first two categories are similar, the results of underweight logit are presented. The standard of living index, one of the independent variables chosen to serve as a proxy for income level of the household. The other independent variables are: sex of the child, birth order and place of delivery and leafy vegetable consumption are specific to the child; mother's age, mother's body mass index, employment status, education and ante-natal care, are specific to mother; household size, caste and consumption of nutritious food, are specific to household and existence of drainage, fair price shop, *anganawadi, mahilamandal*, health and education facilities, are specific to village.

In the case of child-specific variables, co-efficients are significant for the variables birth order and leafy vegetable consumption. The probability of child malnutrition decreases with the consumption of leafy vegetables and increases with the birth order. It appears, sex of the child has no effect on malnutrition since its co-efficient is not significant. Nutritional status, education, age and working status of mother have significant impact on malnutrition. Probability of a child falling into malnutrition decreases with mother's body mass index. Probability of malnutrition also decreases with age and anti-natal visits but, on the other hand, increases when the mother is working. The adverse effect of the working status may be a characteristic among the poor households.

The coefficient of all the household level variables are statistically significant and are in conformity with our understanding that risk of malnutrition decreases with standard of living of the household and increases with household size. However, contrary to our understanding, scheduled tribes have lower probability of malnutrition which may be due to the low incidence of malnutrition in North-Eastern states/Union territories. Their access to roots, fruits etc., in forest areas could also be one of the reasons. The co-efficient of village level variables with the exception of drainage are not significant. Though the coefficient of underground drainage is significant, it does not possess correct sign. Existence of fair price shops, *anganwadi*, health and education facility have no effect on malnutrition. This is not in conformity with our understanding and needs further analysis.

V Concluding Observations:

Severity of poverty as reflected in the percentage of very poor reduced significantly in a short period of six years and the percentage of very poor was about 8% in rural areas and 9% in urban areas in 1999-00. The incidence of very poor varied between 21% in Orissa and zero in most of North Eastern states and small UTs. *Very low levels of very poor in most of the states of north-east excluding Assam suggest that regions dominated and ruled by tribals (more equitous societies) have addressed this problem effectively. Economically developed states like Punjab and Haryana and socially advanced ones such as Kerala and those earmarking huge amounts for social security as Andhra Pradesh succeeded in containing severity of poverty.* It is also

noticed that states with high levels of poverty are also the ones with high incidence of very poor. In several states the degree of reduction of incidence of very poor was more than that of poverty. Orissa, Assam, Bihar, MP, Bihar and West Bengal experienced high levels of incidence of very poor in rural areas; Orissa, MP, Maharashtra, UP, Bihar, AP and Karnataka in urban areas reported high incidence. *Among resource poor states, Rajasthan performed better in poverty reduction. Perhaps lessons could be drawn from its experience.*

About two-thirds of very poor in rural India are located in six states viz., UP, Bihar, MP, Maharashtra, West Bengal and Orissa. In urban segment over 70% of very poor are in Maharashtra, UP, MP, Tamil Nadu, Karnataka and Andhra Pradesh.

STs and SCs account for about 16% and 22% of total very poor in rural India during 1999-00. Nearly 40% of very poor depend on agriculture for their livelihood. 'Other Backward classess' share in urban very poor worked out to over 23%; and about one quarter of the very poor are casual labour. *Most of the very poor of SC group in rural areas are in Bihar, UP and West Bengal; in urban areas they are in UP, MP, Karnataka, Maharashtra and Tamil Nadu.* These are the states with high incidence of poverty among SCs in India. The performance of states with good concentration of SCs varied considerably. Over 70 per cent of very poor among STs in rural areas are located in Madhya Pradesh, Orissa, Bihar and Maharashtra. In the urban areas, about 85 per cent of very poor from amnong STs are in the states of Bihar, Karnataka, MP, Maharashtra and Orissa.

States with high Per Capita State Domestic Product(with the exception of Maharashtra and West Bengal) have low incidence of very poor and vice versa (both in rural and urban areas). *Greater efforts for elimination of severity of poverty have to be made in states such as Assam, Bihar, MP, Orissa and UP.*

The profiles of very poor reveal that the presence of socially disadvantaged (SCs & STs and women headed households) in very poor is very high. More so, in the socially backward but economically well developed states like Punjab and Haryana. Similarly the landless households mainly dependent upon wage earnings and casual labour (vulnerable to changes in land and labour markets) are found in larger proportions in very poor.

The estimated level of chronic poverty (15 per cent in rural India and 12 per cent in urban India) is higher than the incidence of very poor but lower than even severe malnutrition. However, inter-state variations in chronic poverty is similar to those of above two forms of deprivation. Bihar, Madhya Pradesh, Orissa and Uttar Pradesh are in a league at the bottom and have many common features.

Reduction in poverty would reduce malnutrition. However, malnutrition may persist even if poverty and chronic poverty decline to insignificant levels since a

significant proportion of persons in the top quintile class are found to suffer from malnutrition. Other important causes of malnutrition are high incidence of gastro-intestinal and respiratory infections and behavioural factors such as faulty child feeding and weaning practices, all of which contribute to low absorption of nutrients from food consumed.

While India made considerable progress in poverty and chronic poverty reduction, it has not been very successful in reducing malnutrition as reflected in the low energy intake and consequent high incidence of malnutrition. The overall improvement in nutritional status has also been very slow. About half of the population suffer from various forms of malnutrition and about one-fifth of the population suffer from severe malnutrition. *Eradication of severe malnutrition which affected about one-fifth of the population should be the first priority of the nutrition policy and feeding programmes like ICDS, MDM etc. which should be targeted towards them. Broad based growth supplementing, employment-oriented food-for-work programmes should be the principal instrument to eradicate mild to moderate malnutrition.* Reduction of chronic poverty and malnutrition depends on situation specific combination of nutritional intervention and income improvement programmes. However, efficacy of the programmes depends on targeting, good governance of the delivery system and above all, political commitment.

End Notes:

1. Chronic poverty is measured in terms of consumption expenditure i.e. all those whose per capita expenditure is less than 75 per cent of the poverty line.

2. Ravi has updated his study and shared with us his estimates for 1999-00. Leaving aside the conceptual problems created by changes in methodologies in the 55th NSS round, for checking the robustness of the findings, the analysis has been carried with and without utilizing the 55th round data. The thin samples data have also been utilized in the trend analysis.

References

Fred Arnold, Parveen Nangia and Uma Kapila (2003) "Indicators of Nutrition for Women and Children in India: Current Status and Programme Recommendations", Workshop on National Family Welfare, CESS, Hyderabad.

Radhakrishna , R. (1991) , "Food and Nutrition: Challenges for Policy", Journal of the Indian Society of Agricultural Statistics, Vol. 43, No. 3, pp. 211-227.

------- (1992), "Effects of Growth, Relative Price and Preferences on Food and Nutrition", Indian Economic Review, Vol. 27, Special Number, pp. 303-323.

------ and C. Ravi (1990), Food Demand Projections for India, Centre for Economic and Social Studies, Hyderabad

Rao, C.H.H. and R.Radhakrishna (1997), "National Food Security: A Policy Perspective for India", Plenary paper, 27th International Conference of Agricultural Economists, August 10-16, Sacramento, California and published in G.H. Peter and J.V. Braun (ed.) Food Security, Diversification and Resource Management: Re-focussing the Role of Agriculture, Ashgate, 1999.

Rao C.H.H.(2000), "Declining Demand for Foodgrains in Rural India: Census and Implications", Economic and Political Weekly, January 22.

Ravi, C. (2000); Complete Demand Systems, Welfare and Nutrition: An Analysis of Indian Consumption Data, unpublished Ph.D. thesis.

Table 1
Growth Rates of Total Expenditure, Food Expenditure and the Cereal Expenditure at 1990-91 Prices and Per Capita Calorie Intake

(Per cent per annum)

	Bottom 30%	Middle 40%	Top 30%	All classess
Rural				
Per capita cereal expenditure				
1970-89	0.09	-0.58	-1.28	-0.69
1990-98	-1.38	-2.34	-2.43	-2.14
1990-00*	-1.38	-2.15	-2.15	-2.17
Per capita food expenditure				
1970-89	1.34	0.87	0.74	0.89
1990-98	-0.48	-0.78	-1.12	-0.88
1990-00*	-0.17	-0.40	-0.34	-0.33
Per capita calorie intake				
1970-89	0.16	0.15	0.40	0.23
1990-98	-0.96	-1.63	-1.76	-1.53
1990-00*	-0.41	-0.91	-1.14	-0.88
Per capita total expenditure				
1970-89	1.71	1.40	1.45	1.54
1990-98	1.19	1.11	1.23	1.18
1990-00*	1.49	1.32	1.41	1.40
Urban				
Per capita cereal expenditure				
1970-89	0.07	-0.33	-0.18	-0.18
1990-98	-0.67	-0.55	0.30	-0.28
1990-00*	-1.36	-1.30	-0.73	-1.12
Per capita food expenditure				
1970-89	1.29	1.19	0.69	0.97
1990-98	0.08	0.03	-0.23	-0.08
1990-00*	-0.39	-0.26	-0.32	-0.31
Per capita calorie intake				
1970-89	0.31	0.05	0.32	0.21
1990-98	-0.58	-0.74	-0.05	-0.44
1990-00*	0.08	0.14	0.17	0.14
Per capita total expenditure				
1970-89	1.44	1.50	1.40	1.45
1990-98	1.70	2.27	3.31	2.77
1990-00*	1.49	2.11	2.55	2.27

*Includes NSS 55th round.
Source: **Ravi (2000).**

Table 2: Incidence of Chronic Poverty – State-wise, 1993-94 and 1999-2000 (Rural)

(Percentages)

NSS Code	State/UT	1993-94				1999-2000			
		Extremely Poor	**Very poor**	Moderately poor	Poor (BPL)	Extremely Poor	**Very Poor**	Moderately poor	Poor (BPL)
	All India	2.0	**14.7**	22.1	36.8	0.8	**8.2**	18.3	26.5
2	A.P.	0.6	**4.1**	11.8	15.9	0.4	**2.7**	7.8	10.5
3	Ar.Pradesh	2.5	**16.1**	25.3	41.4	0.0	**6.3**	17.1	23.4
4	Assam	0.7	**12.3**	33.0	45.3	1.9	**14.8**	25.4	40.2
5	Bihar	4.0	**27.6**	30.3	57.9	1.1	**14.1**	29.9	44.0
6	Goa	0.2	**1.9**	3.1	5.0	0.0	**0.0**	0.0	0.0
7	Gujarat	0.5	**6.5**	15.6	22.1	0.2	**3.3**	9.1	12.4
8	Haryana	1.1	**8.8**	19.5	28.3	0.6	**1.5**	5.9	7.4
9	H.P.	0.9	**8.9**	21.4	30.3	0.0	**1.3**	6.2	7.5
10	J & K	0.4	**4.9**	13.3	18.2	0.0	**0.5**	4.2	4.7
11	Karnataka	1.4	**11.2**	19.0	30.2	0.3	**3.3**	13.6	16.9
12	Kerala	1.5	**9.4**	16.0	25.4	0.2	**1.9**	7.5	9.4
13	M.P.	2.6	**16.9**	23.8	40.7	1.2	**12.3**	24.9	37.2
14	Maharashtra	3.2	**16.0**	21.9	37.9	0.7	**6.5**	16.8	23.3
15	Manipur	0.1	**2.3**	16.9	19.2	0.0	**2.4**	11.7	14.1
16	Meghalaya	0.2	**2.9**	21.4	24.3	0.0	**0.2**	5.8	6.0
17	Mizoram	0	**1.3**	4.9	6.2	0.0	**0.1**	2.7	2.8
18	Nagaland	0	**0.0**	1.9	1.9	0.0	**0.0**	0.2	0.2
19	Orissa	3.1	**21.7**	28.1	49.8	2.8	**21.7**	26.1	47.8
20	Punjab	0.1	**3.0**	8.7	11.7	0.0	**1.1**	4.9	6.0
21	Rajasthan	0.7	**8.6**	17.8	26.4	0.1	**2.4**	11.0	13.4
22	Sikkim	0	**8.1**	23.2	31.3	0.2	**3.2**	18.5	21.7
23	TN	1.9	**12.4**	20.6	33.0	0.6	**5.7**	14.4	20.1
24	Tripura	0.9	**8.7**	14.6	23.3	0.2	**3.2**	13.5	16.7
25	U.P.	2.6	**19.4**	23	42.4	0.5	**8.7**	22.3	31.0
26	W.B.	1.4	**13.6**	27.6	41.2	1.1	**10.8**	20.9	31.7
27	A&N Islands	0	**0.0**	1.1	1.1	0.0	**0.0**	0.3	0.3
28	Chandigarh	0	**0.0**	11.8	11.8	0.1	**0.1**	7.6	7.7
29	D&N Haveli	0.1	**18.5**	33.2	51.7	0.0	**4.7**	11.9	16.6
30	Daman&Diu	0	**1.6**	0	1.6	0.0	**0.0**	0.0	0.0
31	Delhi	0	**0.0**	2	2.0	0.0	**0.0**	0.7	0.7
32	Lakshadweep	0	**0.0**	0	0.0	0.0	**0.0**	0.0	0.0
33	Pondicherry	0	**5.3**	13.6	18.9	0.5	**2.9**	8.6	11.5

Source: Computed from NSS 50th and 55th Consumer Expenditure Household Data.

Notes: Extremely Poor: Persons whose per capita total expenditure is less than 50% of State-specific poverty line.

Very poor : All those persons whose per capita total expenditure is less than 75% of the State-specific PL.

M.Poor : Persons whose per capita expenditure lies between 75% and 100% of State-specific poverty lines – moderately poor

Correlation between very poor and poor among Indian States in 1993-94 : **0.95**

Correlation between very poor and Poverty among Indian States in 1999-00 : **0.96**

Correlation between Rural and Urban Chronic Poverty in 1993-94: **0.64**

Correlation between Rural and Urban very poor in 1999-00: **0.71**

Table 2: Incidence of Poverty – State-wise 1993-94 and 1999-2000 (Urban)

(Percentages)

NSS Code	State/UT	Extremely Poor	Very Poor	Moderately poor	Poor (BPL)	Extremely Poor	Very poor	Moderately poor	Poor (BPL)
	All India	2.9	**15.1**	17.7	32.8	1.2	**9.2**	14.8	24.0
2	A.P.	2.2	**16.8**	22.0	38.8	1.2	**9.3**	17.9	27.2
3	Ar.Pradesh	0.4	**1.9**	3.9	5.8	2.2	**4.1**	0.9	5.0
4	Assam	0.2	**1.2**	6.8	8.0	0.2	**2.1**	5.1	7.2
5	Bihar	1.6	**13.9**	20.9	34.8	1.4	**10.5**	23.0	33.5
6	Goa	0.3	**7.6**	20.6	28.2	0.0	**3.8**	2.5	6.3
7	Gujarat	1.2	**10.7**	17.6	28.3	0.4	**3.7**	11.1	14.8
8	Haryana	0.2	**4.9**	11.5	16.4	1.2	**3.6**	6.4	10.0
9	H.P.	0	**1.1**	8.2	9.3	0.0	**0.9**	3.7	4.6
10	J & K	0	**1.9**	3.2	5.1	0.0	**0.0**	2.0	2.0
11	Karnataka	4.9	**21.7**	18.1	39.8	1.9	**9.3**	15.3	24.6
12	Kerala	2.0	**9.8**	14.5	24.3	0.9	**6.2**	13.7	19.9
13	M.P.	5.3	**25.3**	22.8	48.1	2.7	**18.2**	20.4	38.6
14	Maharashtra	5.9	**18.4**	16.6	35.0	2.4	**12.4**	14.4	26.8
15	Manipur	0.2	**0.4**	6.5	6.9	0.0	**0.0**	0.5	0.5
16	Meghalaya	0	**0.1**	1.7	1.8	0.0	**0.0**	0.0	0.0
17	Mizoram	0	**0**	0	0	0.0	**0.0**	0.0	0.0
18	Nagaland	0	**0**	0	0	0.0	**0.0**	0.0	0.0
19	Orissa	4.2	**21.7**	18.9	40.6	3.0	**21.6**	21.9	43.5
20	Punjab	0	**2.2**	8.6	10.8	0.0	**0.9**	4.5	5.4
21	Rajasthan	1.3	**12.7**	18.3	31.0	0.1	**5.6**	13.8	19.4
22	Sikkim	0	**0**	1.0	1.0	0.0	**1.2**	3.6	4.8
23	TN	3.7	**18.2**	21.7	39.9	1.2	**7.9**	14.6	22.5
24	Tripura	0.1	**1.8**	4.2	6.0	0	**0.4**	1.0	1.4
25	U.P.	2.9	**17.0**	18.1	35.1	1.0	**12.3**	18.4	30.7
26	W.B.	0.8	**7.4**	15.6	23	0.2	**4.2**	10.5	14.7
27	A&N Islands	0.1	**1.2**	4.0	5.2	0.0	**0.5**	0.0	0.5
28	Chandigarh	0.2	**0.2**	1.9	2.1	0.0	**0.9**	2.2	3.1
29	D&N Haveli	4.0	**28.3**	10.7	39.0	0.0	**2.0**	10.3	12.3
30	Daman&Diu	0	**2.1**	19.6	21.7	0.0	**1.4**	9.5	10.9
31	Delhi	1	**6.9**	9.2	16.1	0.0	**1.7**	7.5	9.2
32	Lakshadweep	0	**4.7**	11.2	15.9	0.0	**0.1**	3.2	3.3
33	Pondicherry	3.2	**16.1**	20.3	36.4	2.2	**12.7**	9.7	22.4

Source: Computed using NSS 50th and 55th Consumer Expenditure Household Data

Notes:

Extremely Poor: Persons whose per capita total expenditure is less than 50% of the State-specific poverty lines.
Very poor : All those persons whose per capita total expenditure is less than 75% of the State-specific Poverty Line.
M.Poor : Persons whose per capita expenditure lies between 75% and 100% of State-specific poverty lines.

Correlation between very poor and Poor among Indian states in 1993-94 : **0.94**
Correlation between very poor and poor among Indian States in 1999-00: **0.95**

Table 3: Profile of Chronic Poor, Moderate Poor and Non-poor - State-wise, 1993-94 and 1999-00

S. N	All India STATE	SC+ST		LABOUR Ag.+Non-ag.		Land Less		Land Holding Upto 1.0 Ha.		No Irrigated Land		Aviled IRDP Asst.		RURAL Worked in Public-Works		Not got enough food to eat	
		93-94	99-00	93-4	99-0	93-4	99-0	93-4	99-0	93-4	99-0	93-94	99-00	93-94	99-00	93-94	99-00
								Very poor									
1	All India	47.2	50.7	56.5	61.3	47.0	47.8	36.7	47.9	71.9	76.2	7.6	5.9	5.3	4.1	12.0	11.0
2	A.P.	51.6	54.2	62.4	72.9	60.5	65.0	24.6	31.2	85.7	86.1	2.7	2.6	2.1	0.2	4.6	3.1
3	Assam	16.1	22.9	66.8	61.8	64.0	64.9	30.2	32.7	98.0	98.7	5.8	8.6	3.9	3	35.5	15.2
4	Bihar	42.7	44.8	60.6	63.7	50.9	58.8	37.6	40.1	77.9	77.8	6.5	5.3	5.9	4.7	13.3	14.5
5	Gujarat	63.3	54.2	64.9	60.3	41.0	48.6	37.7	49.8	83.4	73.7	19.8	4.6	3.8	10.6	1.2	11.9
6	Har	64.1	69.8	68.0	83.9	79.2	100	16.0	0	78.4	100	9.2	0	3.9	0	4.0	0.0
7	HP	46.0	52.6	31.3	53.8	8.4	39.9	81.1	60.1	78.9	100	5.2	16.8	8.0	0	0.0	0.0
8	Kar	57.2	45.2	70.0	76.1	52.1	35.8	24.3	56.4	94.4	91.6	3.1	16	3.0	4.4	11.0	7.5
9	Ker	19.0	19.3	65.9	73.3	88.2	70.7	11.3	29.3	95.7	97.6	5.2	12.9	1.2	4.1	34.2	14.8
10	MP	68.0	63.2	56.7	63.1	35.1	33.7	27.7	53.1	82.1	81.3	11.8	5	5.6	2.5	8.0	7.5
11	Maha	41.9	60	56.9	75.8	54.3	48.4	18.1	47.6	89.2	94.2	8.6	9.2	10.2	4.4	11.2	6.2
12	Orissa	63.3	71.4	59.7	66.2	38.7	36.5	48.3	57.1	84.9	95.9	6.3	7.4	9.2	6.1	15.3	12.7
13	Punjab	72.9	91.9	77.5	85.2	93.9	100	6.1	0	95.4	100	0.0	3.9	0.0	0.7	0.0	0.0
14	Rajastan	61.9	80.6	51.8	52.7	24.4	21.4	44.7	75.4	65.2	65.7	6.9	7	3.0	12	3.6	3.0
15	TN	38.2	54	72.4	75	65.2	68.3	29.1	30.2	77.8	78.3	9.8	7.5	1.6	0.1	4.8	0.6
16	UP	39.8	42.1	39.6	46.1	33.8	36.6	49.9	60.8	38.0	40.9	6.9	3.4	4.7	3.2	5.8	3.9
17	WB	49.0	43.2	69.6	59	63.0	58.6	35.9	38.4	80.1	83.6	7.4	5.1	2.9	4.4	33.1	27.9
18	Others	56.9	60.4	43.1	55.3	37.6	46.8	42.5	47.7	86.7	87.6	18.6	16.7	19.9	24.5	16.9	10.0
								Moderately poor									
1	All India	39.1	42.1	44.2	51	38.7	42.4	38.5	51.5	65.8	66.9	7.4	5.8	4.9	3.7	7.3	5.4
2	A.P.	45.4	49.3	57.3	67	50.9	51	31.2	44.2	74.9	83.4	3.9	1.3	2.8	1	3.8	3.3
3	Assam	25.0	30.8	35.8	40.5	31.7	43.6	47.7	52.7	91.3	98.2	3.0	4.7	4.3	4.1	13.3	10.5
4	Bihar	31.0	34.1	41.3	47.4	38.4	48.8	42.7	49	62.6	67.9	6.6	6.4	6.0	4.8	6.0	6.9
5	Gujarat	42.8	57.8	55.4	73.4	48.9	46.8	30.4	50.3	73.5	76.7	10.2	2.4	3.4	3.1	4.3	0.2
6	Har	39.6	51.9	43.3	69.7	60.4	85.8	13.3	14.2	60.7	85.8	6.8	4.5	3.2	0	1.1	4.5
7	HP	35.1	42.9	18.0	39.8	9.7	18.3	73.1	76.2	78.1	81.9	9.0	10.5	9.8	11.7	0.0	0.2
8	Kar	34.8	40.6	49.5	60.9	36.9	40.5	29.3	45.5	85.2	86.7	6.6	10.6	4.3	0.7	6.4	2.1
9	Ker	15.8	21.4	53.6	71.7	81.3	75.2	18.5	24.8	92.7	93.4	5.2	8.6	3.5	2	15.0	10.3
10	MP	55.6	56.9	45.4	54.5	25.6	29.4	25.2	53.7	73.4	75.8	11.1	7.3	5.8	4.5	2.1	3.7
11	Maha	38.7	45.3	54.5	68.5	43.2	49.1	25.4	39.2	84.4	83.5	9.8	4.4	8.5	5	4.2	4.3
12	Orissa	47.7	56.7	43.5	54.8	36.2	35.7	42.8	60.5	81.7	87	6.7	4.3	6.5	3.3	20.0	9.7
13	Punjab	75.6	75.7	74.9	74.5	88.7	91.4	7.1	3.9	87.8	91.4	2.7	0.9	1.5	0.2	0.0	0.0
14	Rajastan	51.9	55.6	37.3	35	18.5	20.2	33.7	54.1	53.6	51.3	6.4	4.3	6.7	6.6	1.4	0.0
15	TN	36.8	50	70.0	75	68.0	77.3	25.4	21.8	78.1	83.1	6.2	6.8	2.3	0.6	3.8	1.6
16	UP	29.9	33.4	26.5	33	23.2	26.8	54.1	69.9	29.2	30.6	7.8	5.1	3.7	3	4.1	2.6
17	WB	48.3	39.2	52.0	61.1	49.8	60.5	44.2	37.9	70.7	75.9	7.6	6.9	3.3	2.9	19.3	13.8
18	Others	64.4	51	31.5	40.1	30.3	41.8	53.6	55.7	86.3	84.4	11.8	14.3	10.1	14.1	5.8	7.9
								Non-poor									
1	All India	25.8	25.9	26.6	32.8	34.5	37.1	31.9	49.5	56.6	57.8	6.8	5.3	3.9	2.6	2.9	1.7
2	A.P.	25.1	27	38.7	49.2	46.9	48.3	28.4	42.7	63.9	68.7	4.7	2.8	3.6	1.6	3.0	1.7
3	Assam	24.4	26.4	18.5	18.8	22.2	28.8	44.8	63.2	94.6	96.5	2.2	7.2	3.4	4.5	2.1	2.8
4	Bihar	21.4	20.4	21.6	28.2	28.6	34.8	40.6	58	50.5	48.5	5.2	4.9	3.8	4.3	3.1	2.4
5	Gujarat	30.5	26.5	35.7	40.1	40.6	41.1	22.7	39.4	61.6	60.8	9.4	4.3	3.4	1.3	1.9	0.1
6	Har	21.9	22.1	18.8	26.1	41.8	46.9	17.9	30.8	44.1	49.7	7.7	4	2.0	1.7	0.1	1.3
7	HP	23.6	26.3	11.2	17.5	13.6	16.1	69.2	81.1	70.4	78	5.3	13.8	6.0	4.6	0.4	0.0
8	Kar	23.8	24.6	30.6	40.8	31.9	33.9	28.3	46.9	68.1	68.7	6.2	5.8	2.8	1.3	2.1	0.4
9	Ker	9.6	10.6	36.7	45.2	75.2	53	22.9	45.5	90.2	85.6	4.3	4.2	4.1	2.2	5.2	2.1
10	MP	37.5	32.7	25.2	29.1	18.6	22.2	19.8	48.1	56.6	52.8	9.5	4.9	5.2	2.7	1.2	1.6
11	Maha	22.9	23.7	28.9	43.6	34.9	40.3	24.5	43.7	71.0	71.7	7.5	6.6	6.5	2.8	2.7	0.8
12	Orissa	32.9	33.2	25.6	32.7	32.1	33.3	38.1	58.8	78.9	75.8	6.5	3.9	3.9	2.8	10.5	4.2

13 Punjab	34.5	36.7	27.3	33.1	55.5	56.6	12.4	23.4	55.7	57.2	4.5	12.2	2.4	1.1	0.1	0.2
14 Rajastan	27.6	32.4	17.2	19.4	16.4	17.6	24.0	47.8	44.5	49.5	5.7	4.9	3.8	3.3	1.2	0.2
15 TN	22.8	26.9	44.7	53.7	59.9	66.7	25.5	29.6	66.8	74.2	6.2	5.2	3.9	1.1	2.1	0.5
16 UP	18.0	21.4	15.2	18.3	19.7	23.2	43.9	64.7	23.3	27.3	8.3	5.2	3.5	2.7	2.2	1.2
17 WB	34.6	30.8	27.1	36.4	37.7	48.1	45.0	49.6	54.8	61.1	7.6	5.8	2.5	2.1	7.7	6.4
18 Others	45.1	31.5	16.2	15.6	37.9	40	40.1	55.8	83.0	71.3	8.0	7	7.6	6.6	2.5	1.3

Table 9 : Profile of Chronic Poor, Moderate Poor and Non-poor- State-wise, 1993-94 and 1999-00 (Contd.)

S. N	All India STATE	Fuel for Light- 93-4	Eletrity 99-0	Fuel for Cook- 93-4	GAS 99-0	MPCE (Rs./M) 93-4	99-0	Average HH Size 93-4	99-0	Ave Child 93-4	% Child 99-0	Avail Ration 93-4	Own House 99-0	Stru Kutcha 93-4	Folor Tra 99-0	No Latrine 93-4	RURAL D-Water Safe 99-0	Condi Bad 93-4	HHH F 99-0
											Very poor								
1	All India	15.4	19.2	0.1	0.2	128	210	5.7	6.1	2.7	47.8	70.0	96	43.2	94	93.7	3.9	31.7	6.6
2	A.P.	18.1	42.5	0.0	0	101	163	5.0	5.1	2.5	49.0	80.7	93	55.1	91	98.7	4.8	34.6	8.0
3	Assam	2.4	11	0.0	0	151	228	5.8	6.6	2.8	48.4	84.8	78	76.9	95	35.1	14.7	56.0	10.0
4	Bihar	1.6	1.7	0.1	0.3	131	214	5.6	6.4	2.6	46.8	70.4	99	50.0	99	96.7	1.4	36.9	6.7
5	Gujarat	41.6	43.8	2.3	0.6	130	208	6.6	6.1	3.1	47.1	91.0	99	37.4	94	97.2	6.2	20.6	1.3
6	Har	50.6	54.7	0.0	0	144	213	6.5	6.8	3.6	55.0	91.2	97	21.2	91	97.7	0.0	29.0	5.1
7	HP	75.9	80.9	0.0	0	148	249	6.2	5.8	2.8	45.9	86.9	98	16.2	92	97.0	15.1	38.7	10.6
8	Kar	31.7	70.8	0.1	0	116	198	6.0	6.2	2.8	47.0	74.8	92	25.9	81	95.7	3.9	18.6	9.2
9	Ker	31.2	27.5	0.0	0	149	240	5.5	5.2	2.1	39.0	94.8	96	25.6	62	46.4	2.2	39.3	20.4
10	MP	34.0	51.5	0.2	0.6	118	196	5.8	6.4	2.8	48.6	61.2	97	9.1	98	97.7	6.7	16.4	3.5
11	Maha	30.8	37.4	0.0	0	116	200	5.6	5.6	2.7	48.9	58.8	90	21.2	98	97.5	2.2	26.5	4.5
12	Orissa	4.0	3	0.2	0.1	119	199	5.4	5.2	2.4	43.9	72.1	97	82.4	95	99.5	13.2	50.0	4.8
13	Punjab	68.1	46.1	0.7	0	156	246	6.5	7.4	3.3	50.5	71.2	100	33.4	91	99.3	3.3	56.5	3.7
14	Rajastan	18.8	15.6	0.0	0	136	224	6.4	6.7	3.4	53.1	67.7	99	38.2	87	95.6	7.0	15.7	6.1
15	TN	42.5	58.7	0.0	0.6	119	194	4.7	4.6	2.1	43.5	89.1	94	54.3	68	95.8	3.5	22.4	10.4
16	UP	6.3	9.1	0.1	0.1	131	218	5.9	6.6	2.8	47.8	57.4	98	39.7	97	96.8	1.3	26.3	6.6
17	WB	1.5	5.5	0.0	0.1	140	224	5.7	6.2	3.0	53.3	89.7	95	64.6	97	91.2	1.4	52.6	6.7
18	Others	24.3	26.7	0.0	0.5	145	238	5.7	5.9	2.6	45.1	84.0	94	76.9	99	39.8	28.9	33.3	5.2
											Moderately poor								
1	All India	23.7	29.2	0.2	0.9	182	290	5.4	5.9	2.3	41.9	77.9	96	37.5	89	89.3	4.2	23.9	5.9
2	A.P.	25.7	53.9	0.0	1.2	145	237	5.2	5.1	2.3	44.6	87.1	96	49.8	82	98.6	3.7	29.0	5.9
3	Assam	9.2	12.7	0.1	0.7	204	324	5.6	6.1	2.3	40.8	88.3	89	74.8	97	26.5	11.3	39.3	4.7
4	Bihar	4.1	3.5	0.0	0.3	184	292	5.4	5.9	2.2	41.5	75.6	99	38.3	96	93.3	1.4	26.2	5.3
5	Gujarat	43.7	59.1	1.1	2.6	180	281	5.9	6.3	2.6	43.6	88.4	94	26.3	87	93.4	5.5	22.7	3.9
6	Har	68.3	63.4	0.7	4.1	207	323	6.0	5.9	2.8	46.0	93.2	99	17.1	77	93.1	0.0	17.4	5.1
7	HP	89.3	84.5	0.2	6.9	209	332	6.3	6.1	2.5	40.3	91.9	98	7.3	85	96.9	25.0	17.2	10.3
8	Kar	46.3	70.4	0.0	0.5	166	274	6.0	5.9	2.4	40.7	81.2	94	22.7	70	92.1	6.3	19.1	10.9
9	Ker	42.9	55	0.3	2.2	214	336	5.3	6.2	1.8	33.6	97.2	96	21.2	53	36.9	5.3	28.9	19.5
10	MP	40.6	54.5	0.2	0.4	170	272	5.4	5.8	2.2	40.7	69.4	97	10.9	95	98.6	4.4	16.3	2.4
11	Maha	45.3	63	0.3	2.9	170	281	5.1	5.6	2.1	40.6	69.7	94	20.1	95	98.4	2.0	17.7	6.3
12	Orissa	7.6	9.7	0.3	0.2	169	283	5.0	4.7	1.9	37.4	83.4	98	72.9	90	97.7	8.4	40.1	4.7
13	Punjab	77.4	84.8	1.1	4.4	209	330	5.8	6.8	2.6	44.7	71.5	99	19.6	89	92.5	0.8	30.9	3.4
14	Rajastan	26.8	35.6	1.5	1	191	307	5.8	7	2.7	45.7	58.9	96	33.2	81	94.1	8.4	13.4	4.9
15	TN	46.4	68.1	0.0	0.7	174	271	4.5	4.9	1.6	35.9	91.0	94	47.1	60	94.0	4.0	23.4	12.7
16	UP	12.5	15.6	0.1	1.1	186	296	5.8	6.6	2.6	44.8	65.4	99	32.6	95	94.3	1.7	18.2	5.2
17	WB	3.7	10.5	0.0	0	194	306	5.4	5.7	2.4	43.7	93.9	94	52.9	92	86.8	1.9	31.3	4.3
18	Others	37.5	49.3	0.4	6.6	205	326	5.3	5.8	2.3	43.2	77.3	96	66.0	96	35.6	36.2	19.0	5.8
											Non-poor								
1	All India	49.2	56.5	3.5	10	352	565	4.6	4.8	1.5	33.0	79.4	94	24.9	71	80.3	4.6	14.1	6.6
2	A.P.	57.5	72.4	3.3	9.5	318	481	4.0	4	1.3	31.6	85.0	93	37.6	63	90.9	5.3	18.8	6.9
3	Assam	24.9	33.7	2.1	9.5	315	517	4.7	5.1	1.5	31.2	88.9	94	56.8	91	12.6	10.9	20.8	3.1
4	Bihar	12.6	8.3	0.7	1.2	301	477	4.4	4.8	1.5	33.9	79.2	98	27.6	85	79.0	1.1	17.0	5.9
5	Gujarat	77.2	84.5	8.1	20	343	592	4.8	4.8	1.5	31.8	88.6	94	15.2	67	84.0	3.9	19.0	4.4

6 Har	83.4	84.3	4.7	20	463	747	5.3	5.5	2.0	38.2	91.8	98	9.0	57	86.4	1.7	8.8	6.9
7 HP	95.5	95.6	6.9	24	420	719	4.6	4.5	1.5	32.0	91.3	94	6.6	67	84.0	18.3	6.3	18.8
8 Kar	64.4	78.7	3.3	11	322	548	4.8	4.7	1.5	32.1	79.5	90	12.2	55	87.3	7.9	12.0	8.8
9 Ker	63.7	70.8	6.0	14	459	812	4.3	4.4	1.2	26.9	94.2	96	13.7	30	24.9	3.7	16.6	19.2
10 MP	56.5	73.2	1.1	4.9	323	493	4.8	5	1.6	34.0	73.5	96	10.0	89	95.2	2.5	10.6	3.6
11 Maha	74.2	82.6	8.1	21	349	569	4.4	4.5	1.4	30.8	77.7	91	9.7	79	89.4	3.2	8.0	6.9
12 Orissa	25.7	34.6	1.0	3.1	292	492	4.4	4.4	1.3	29.6	87.1	95	63.4	80	90.9	7.2	25.3	6.4
13 Punjab	91.1	95.5	5.8	21	464	770	5.1	5.4	1.7	32.7	73.0	97	10.1	52	73.6	1.9	11.7	5.6
14 Rajastan	50.0	53.6	2.3	4	376	589	5.0	5.6	1.9	37.5	58.3	96	25.1	61	87.3	8.1	7.6	5.1
15 TN	63.4	78.8	5.6	16	363	580	3.8	3.9	1.0	27.0	90.0	86	30.5	42	83.8	6.5	15.7	9.5
16 UP	27.0	31.1	2.3	6.2	357	553	5.0	5.4	1.9	37.4	66.0	98	21.9	85	87.2	2.0	11.1	5.1
17 WB	18.0	26.4	0.7	3.4	351	536	4.7	4.8	1.5	32.6	92.2	97	37.3	80	68.7	1.2	18.6	4.9
18 Others	69.7	81	7.3	30	424	723	4.5	4.8	1.5	33.4	78.9	91	37.2	75	39.2	23.8	10.2	9.7

Tab. 3A: Profile of Chronic Poor, Moderate Poor and Non-Poor – State-wise, 1993-94 (URBAN)

SN	All India STATE	Caste SC+ST		Casual Labour		Not got enou Food to Eat		Fuel for Light-ELET.		Fuel for Cook -GAS		MPCE (Rs./Month)		Average HH Size	
		93-4	99-0	93-4	99-0	93-4	99-0	93-4	99-0	93-4	99-0	93-4	99-0	93-4	99-0
							Very poor								
	1 All India	29.0	32.0	30.9	40.3	5.4	4.9	59.9	67.4	20.1	24.8	174	292	5.6	6.1
	2 A.P.	16.9	26.2	35.4	43.8	3.9	3.1	55.1	67.6	11.7	14.8	169	289	5.2	5.4
	3 Assam	20.7	12.2	83.1	48.8	50.9	7.2	0.0	0.0	0.0	0.0	137	220	6.4	7.4
	4 Bihar	30.8	37.0	30.0	42.1	9.7	14.7	28.1	30.3	4.9	3.2	146	235	6.6	7.1
	5 Gujarat	24.0	47.2	27.3	40.8	3.0	0.2	76.4	68.0	39.2	43.7	186	308	6.2	6.6
	6 Har	23.7	47.9	26.6	51.7	0.0	12.4	71.6	66.9	12.8	8.1	165	241	6.3	6.1
	7 HP	64.1	0.0	29.6	0.0	0.0	0.0	100.0	100.0	35.9	100.0	167	311	7.0	14.0
	8 Kar	27.7	43.1	32.4	46.2	4.7	0.6	62.7	72.3	17.4	21.9	179	311	6.0	6.3
	9 Ker	7.6	11.7	51.7	64.9	20.2	11.6	53.4	73.8	1.9	6.6	172	304	5.5	6.6
	10 MP	36.9	34.4	27.0	43.1	2.4	5.2	77.5	85.4	18.9	24.8	188	297	6.2	6.5
	11 Maha	33.6	26.4	30.0	38.0	5.3	3.8	69.6	86.2	39.4	46.6	184	324	5.7	6.5
	12 Orissa	38.7	47.2	26.5	40.0	16.0	8.9	30.6	33.6	9.2	10.3	177	290	5.4	5.3
	13 Punjab	62.6	59.5	35.8	2.1	2.1	0.0	71.5	96.5	29.5	70.5	169	269	5.8	7.0
	14 Rajastan	28.1	54.9	12.7	31.9	0.0	1.7	83.5	80.7	16.4	24.2	176	310	6.3	7.4
	15 TN	28.3	34.4	38.6	46.8	5.5	2.7	61.6	69.9	15.7	26.2	175	293	3.9	4.5
	16 UP	23.9	21.3	28.0	32.6	3.0	3.2	42.5	54.5	10.2	16.8	156	269	6.6	6.5
	17 WB	37.6	47.1	31.7	43.7	21.7	12.3	24.6	37.8	3.5	11.9	154	267	5.6	6.0
	18 Others	37.9	37.5	40.1	26.6	0.5	10.1	89.4	85.6	75.3	77.3	182	326	6.0	6.2
							Moderately poor								
	1 All India	22.8	26.6	20.1	26.0	2.5	2.4	73.9	76.9	35.0	39.0	251	408	5.2	5.7
	2 A.P.	10.7	24.7	21.7	38.8	2.1	1.4	74.8	80.8	30.0	41.8	244	403	5.0	4.7
	3 Assam	17.8	40.5	17.6	29.6	13.1	24.5	38.0	25.4	16.2	21.6	197	295	5.9	5.8
	4 Bihar	23.3	21.2	18.4	18.1	3.1	6.3	48.0	48.2	8.0	13.9	211	335	5.9	6.6
	5 Gujarat	23.3	33.6	19.2	42.0	2.7	3.4	82.7	87.4	55.4	67.2	260	427	5.6	5.9
	6 Har	28.6	60.9	25.3	23.2	0.7	4.7	78.7	87.8	26.7	21.7	230	388	5.2	5.7
	7 HP	38.5	27.8	31.1	34.5	0.0	5.6	92.9	99.4	8.2	37.1	227	379	6.1	5.9
	8 Kar	20.7	21.9	24.6	29.9	0.9	2.5	76.4	82.4	35.5	45.0	262	446	5.3	5.6
	9 Ker	8.6	8.0	44.4	46.0	14.2	3.1	63.4	77.1	3.3	6.9	247	418	5.1	6.3
	10 MP	28.0	26.4	14.4	23.1	0.7	1.3	90.9	90.8	36.7	35.9	274	421	5.5	5.7
	11 Maha	22.9	24.0	14.8	19.3	1.9	0.9	86.9	94.3	76.4	73.3	287	473	5.2	5.9
	12 Orissa	26.7	40.7	11.7	20.4	3.6	2.6	56.5	59.0	14.8	19.0	257	415	4.9	5.1
	13 Punjab	53.8	61.7	19.6	43.4	0.0	2.8	88.3	92.2	44.9	41.7	226	359	6.2	6.7
	14 Rajastan	24.9	41.3	14.1	19.6	0.1	0.0	83.6	82.4	33.1	32.9	246	413	5.5	6.2
	15 TN	18.1	21.5	31.4	36.0	2.3	0.8	74.0	80.5	31.8	45.7	259	418	4.4	4.6
	16 UP	22.9	24.0	12.5	17.9	1.7	1.8	63.7	66.7	17.7	23.6	226	366	5.8	6.7
	17 WB	26.4	35.4	22.3	23.6	7.8	8.5	47.9	45.1	6.3	11.1	220	367	5.5	5.4
	18 Others	54.4	37.2	27.4	25.2	0.6	1.3	86.8	97.4	77.1	82.0	267	435	5.0	6.1
							Non-Poor								

1 All India	12.8	14.3	6.7	8.8	1.1	0.8	90.7	93.7	66.1	76.0	577	1010	4.1	4.2
2 A.P.	10.1	12.4	8.7	12.1	0.7	0.7	92.7	95.4	66.1	80.0	534	927	4.0	4.0
3 Assam	10.1	15.0	4.6	8.3	0.7	0.7	78.3	79.6	54.0	66.2	482	856	4.2	4.0
4 Bihar	13.7	14.0	5.5	5.7	1.4	1.2	79.1	78.7	34.7	47.4	443	752	4.3	4.6
5 Gujarat	12.3	15.4	7.1	14.1	0.9	0.4	94.8	97.1	83.4	87.9	542	977	4.1	4.3
6 Har	16.3	18.2	8.4	11.8	0.3	0.2	93.7	94.3	68.0	72.1	526	976	4.2	4.5
7 HP	19.1	18.9	4.2	6.1	0.3	0.2	99.8	98.8	81.3	85.3	801	1285	3.4	3.0
8 Kar	9.6	10.5	7.5	10.6	0.3	0.4	92.7	95.8	70.4	81.4	560	1079	4.2	4.1
9 Ker	6.2	6.5	26.2	23.7	3.3	0.7	83.1	91.0	27.0	44.3	583	1068	4.2	4.1
10 MP	16.6	15.3	4.8	6.8	0.5	1.0	94.1	98.1	63.5	71.9	574	900	4.3	4.6
11 Maha	12.4	13.1	2.6	5.1	0.6	0.2	96.6	98.7	92.5	93.3	689	1181	4.0	4.2
12 Orissa	19.5	16.5	4.4	6.2	1.8	0.7	88.5	86.5	45.8	60.0	531	823	3.9	3.9
13 Punjab	19.3	27.2	6.7	10.4	0.1	0.3	97.9	97.7	78.2	80.1	547	931	4.3	4.2
14 Rajastan	14.2	16.6	4.2	8.0	1.3	0.1	93.2	94.6	60.0	70.8	518	895	4.3	4.8
15 TN	11.0	9.9	11.2	12.7	1.6	0.8	91.0	96.3	64.8	82.2	583	1145	3.7	3.7
16 UP	9.3	13.7	5.4	5.2	1.5	0.8	86.4	89.9	61.1	67.9	495	851	4.7	4.6
17 WB	15.0	16.5	6.3	7.9	2.0	2.7	80.2	85.1	40.1	58.4	556	957	3.7	3.9
18 Others	18.1	17.6	4.3	5.2	1.1	0.8	96.8	97.4	83.5	90.4	804	1328	3.9	4.4

Tab. 3A: Profile of Chronic Poor, Moderate Poor and Non-Poor – State-wise, 1993-94 (URBAN) Contd.

S N	All India STATE	Ave. child 93-4	% Ch. Pers. 93-4	%Own House 93-4	Structure Kutcha 93-4	Floor Trad. 99-0	No Latrine 93-4	D-Water Trad. 93-4	Condition Bad 93-4	SHHH Female 93-4	Availed Ration 93-4
					Chronic Poor						
1	All India	2.5	44.5	76.3	22.4	55.5	61.9	2.5	23.3	9.5	73.9
2	A.P.	2.2	41.5	72.4	38.4	39.9	72.2	1.9	25.6	10.7	78.3
3	Assam	3.2	49.6	90.6	56.0	86.9	29.1	0.0	47.8	16.9	82.3
4	Bihar	3.3	50.6	89.3	24.9	77.2	66.0	2.0	31.2	4.2	70.5
5	Gujarat	2.8	45.9	79.9	10.3	30.0	57.8	2.6	19.8	9.9	86.7
6	Har	3.8	59.9	54.6	6.4	31.2	57.9	0.0	24.5	8.1	86.2
7	HP	3.0	42.6	64.1	0.0	64.1	64.1	0.0	35.9	29.6	100.0
8	Kar	2.6	43.3	71.3	17.7	47.4	69.1	1.3	17.5	15.0	69.4
9	Ker	1.6	29.1	90.5	24.3	42.0	27.0	0.6	28.4	24.4	93.0
10	MP	2.8	45.0	80.8	7.1	62.5	65.9	0.2	11.5	5.3	73.8
11	Maha	2.4	42.0	75.3	14.5	62.5	65.6	1.2	24.8	6.8	62.8
12	Orissa	2.2	41.2	75.6	53.8	68.5	74.8	0.2	42.2	3.2	77.4
13	Punjab	2.8	48.7	88.0	13.4	69.9	68.9	4.2	16.9	15.9	50.4
14	Rajastan	2.9	46.5	87.3	17.5	38.7	61.1	2.3	13.7	5.8	63.5
15	TN	1.6	41.0	56.4	33.9	38.0	62.9	9.1	23.3	15.7	78.8
16	UP	3.3	49.6	91.3	22.2	71.5	48.7	1.7	21.9	7.3	73.8
17	WB	2.6	46.1	76.3	30.7	71.7	56.1	1.3	49.9	9.8	83.2
18	Others	3.4	56.0	44.2	39.4	59.7	46.0	9.6	38.1	19.0	92.9
					Moderate Poor						
1	All India	2.0	38.6	69.1	14.4	37.8	45.3	2.7	15.1	8.2	77.4
2	A.P.	1.9	38.5	66.0	23.2	26.7	59.2	1.1	17.5	7.7	74.2
3	Assam	2.5	42.1	49.4	58.2	82.7	2.6	3.7	43.4	13.6	62.1
4	Bihar	2.6	44.4	76.7	17.6	62.7	48.5	2.4	19.7	4.2	67.1
5	Gujarat	2.2	39.5	66.6	5.7	25.3	51.5	0.9	14.6	6.2	87.7
6	Har	2.1	40.4	68.8	12.0	35.6	48.3	0.0	20.4	5.4	81.1
7	HP	1.9	31.5	87.8	8.5	28.3	75.2	7.1	15.1	18.5	83.8
8	Kar	1.9	36.5	61.4	9.3	28.4	46.4	0.5	12.0	11.7	78.8
9	Ker	1.4	27.7	95.0	14.6	32.0	16.0	0.2	18.6	27.2	96.6
10	MP	2.2	39.7	71.2	4.4	45.0	47.7	1.2	7.9	6.9	76.6
11	Maha	1.9	36.2	66.0	6.0	33.7	36.0	2.4	10.7	7.8	76.1
12	Orissa	1.9	38.1	68.7	32.0	40.5	55.2	1.8	29.4	6.2	76.0
13	Punjab	2.8	45.2	81.3	5.1	34.4	30.0	0.0	10.6	1.1	74.9

14 Rajastan	2.4	42.6	82.3	6.1	23.0	48.8	1.1	9.7	7.9	66.0
15 TN	1.4	32.3	52.8	23.4	23.1	50.0	11.7	12.9	13.3	85.8
16 UP	2.5	43.6	83.0	11.4	54.2	44.0	1.1	12.5	3.1	67.0
17 WB	2.2	39.9	71.9	16.2	47.6	36.4	0.3	29.0	8.9	85.0
18 Others	2.0	39.4	43.9	54.6	65.4	33.3	8.3	29.1	8.9	92.2
				Non-Poor						
1 All India	1.2	29.1	59.2	5.1	14.8	17.4	2.1	5.7	7.1	76.0
2 A.P.	1.2	28.9	53.5	8.8	9.0	26.0	1.5	5.6	7.0	74.9
3 Assam	1.2	27.6	57.1	23.0	42.7	1.2	2.3	12.8	6.1	68.4
4 Bihar	1.4	32.7	60.6	4.5	25.3	19.7	1.8	6.6	4.2	63.4
5 Gujarat	1.2	29.1	63.2	2.4	7.1	19.4	0.7	5.6	6.1	76.0
6 Har	1.5	34.6	64.2	3.7	14.6	25.3	0.2	7.3	6.3	78.3
7 HP	1.0	29.7	43.5	2.5	17.0	21.1	2.1	3.5	8.5	73.3
8 Kar	1.1	27.5	47.7	2.0	7.4	12.6	0.4	2.3	7.7	75.8
9 Ker	1.0	24.4	85.2	9.9	15.9	8.4	1.7	11.5	21.9	90.4
10 MP	1.4	32.2	56.0	2.3	24.0	25.1	1.4	2.7	4.7	71.2
11 Maha	1.1	27.1	54.0	1.9	8.6	11.3	1.3	4.2	7.5	76.0
12 Orissa	1.0	25.9	42.7	12.7	14.5	20.1	1.9	7.7	4.7	71.3
13 Punjab	1.4	31.9	75.4	1.6	14.8	14.9	1.0	3.8	6.5	68.7
14 Rajastan	1.4	33.1	71.5	2.8	10.6	24.4	1.6	2.7	7.3	58.9
15 TN	1.0	25.5	47.0	7.6	8.2	22.6	9.2	4.9	8.6	82.5
16 UP	1.6	34.1	68.0	3.8	22.2	17.8	0.4	4.5	4.6	77.1
17 WB	0.9	24.7	58.7	6.1	18.4	11.4	1.2	12.6	7.7	81.0
18 Others	1.1	28.6	56.8	8.6	18.7	14.4	4.5	5.6	7.1	83.0

Table 4 : Incidence of Poverty among Socio-economic groups

Category	Percentage of			
	Very poor		Poor	
	1993-94	1999-00	1993-94	1999-00
Caste	**Rural**			
ST	22.1	17.0	50.2	44.2
SC	21.7	11.5	48.3	35.3
OBC	NA	7.0	NA	25.5
All Groups	14.7	8.2	36.8	26.5
Occupation				
Ag. Labour	26.2	14.1	54.4	39.7
Non-Ag. Labour	15.2	8.7	42.2	27.2
Caste	**Urban**			
ST	24.0	17.5	43.0	37.5
SC	26.1	16.4	50.9	39.1
OBC	NA	10.7	NA	30.2
All Groups	15.1	9.2	32.4	23.6
Occupation				
Casual Labour	36.6	26.0	64.5	53.0

Notes: SC : Scheduled castes
ST : Scheduled tribes
OBC : Other backward castes

Source: Computed using NSS 50th and 55th round Household Consumer Expenditure data

Table 5: Incidence of Poverty among SCs in Selected States

State	Percentage of				Percentage share in			
	Very poor		Poverty		Very Poor		Poor	
	1993 – 94	1999 - 00	1993 – 94	1999 - 00	1993 - 94	1999 – 00	1993-94	1999-00
Rural								
A.P	7.5	4.1	26.0	16.5	2.5	2.9	3.9	3.9
Bihar	39.5	22.9	70.6	59.1	19.8	23.0	15.9	19.4
M.P.	18.8	13.5	45.3	41.2	6.0	7.2	6.5	7.2
Maharashtra	24.2	8.2	51.4	31.6	6.6	3.6	6.3	4.5
Tamil Nadu	17.3	9.0	44.4	31.7	6.0	6.4	6.9	7.4
U.P.	31.4	14.2	59.4	43.4	30.0	27.7	25.6	27.7
W.B.	16.5	13.1	46.3	34.9	9.8	12.6	12.4	10.9
Rural India	21.7	11.5	48.3	35.3	100	100	100	100
Urban								
A.P.	22.9	16.2	45.8	42.2	4.5	8.1	4.6	8.8
Bihar	27.3	22.9	57.0	51.4	4.3	6.0	4.6	5.7
Karnataka	38.1	24.6	62.8	46.7	7.9	6.5	6.6	5.2
M.P	38.7	27.6	63.9	56.1	14.5	11.8	12.3	10.0
Maharashtra	33.2	19.5	53.8	40.7	18.1	16.3	15.1	14.2
Tamil Nadu	35.3	21.3	61.5	45.7	14.1	10.0	12.6	9.0
U.P	29.7	16.7	59.0	44.3	14.8	15.5	15.1	17.2
W.B	16.1	9.4	38.7	28.3	5.8	4.8	7.2	6.0
Urban India	26.1	16.4	50.9	39.1	100	100	100	100

Source: National Sample Survey

Table 6: Incidence of Poverty among STs in Selected States

State	Percentage of				Percentage share in			
	Very poor		Poor		Very Poor		Poor	
	1993 – 94	1999 –00	1993 –94	1999 –00	1993 – 94	1999 – 00	1993-94	1999 – 00
Rural								
A.P	7.2	7.6	26.4	23.1	2.2	2.3	3.5	2.7
Assam	7.1	11.9	41.9	39.2	1.3	3.2	3.4	3.9
Bihar	37.8	21.6	69.3	58.7	14.0	9.8	11.3	10.2
Gujarat	11.6	7.5	30.5	27.5	4.9	3.5	5.6	4.9
M.P	27.9	20.8	57.0	57.1	28.7	28.3	25.8	29.9
Maharashtra	21.1	16.8	51.8	44.2	9.0	12.5	9.7	12.6
Orissa	39.7	42.1	71.4	73.0	20.1	26.8	15.8	17.8
Rajasthan	16.5	6.5	45.7	24.8	5.9	3.8	7.2	5.6
West Bengal	16.7	16.3	62.1	50.1	4.9	5.1	2.3	6.0
Rural India	22.1	17.0	50.2	44.2	100	100	100	100
Urban								
A.P	31.1	11.7	45.6	47.5	9.5	5.4	7.8	10.3
Bihar	14.9	18.8	35.0	42.9	4.5	9.8	5.9	10.5
Gujarat	10.4	7.8	35.6	38.4	3.9	3.2	7.6	7.4
Karnataka	40.7	30.0	62.8	51.7	11.1	13.0	9.6	10.5
M.P	37.3	33.5	66.4	53.4	25.2	30.0	25.1	22.4
Maharashtra	38.1	21.9	60.5	42.7	26.5	17.0	23.6	15.6
Orissa	44.6	32.7	62.8	59.4	14.6	14.8	11.5	12.6
Rajasthan	3.7	5.7	8.4	21.8	0.4	1.6	0.5	2.8
W.B	4.8	15.9	23.5	33.7	0.12 [0.8]	3.5	2.3	3.4
Urban India	24.0	17.5	43.0	37.5	100	100	100	100

Source: National Sample Survey

Table 7: Percentage distribution of Very across states and state-wise share of very poor in total poor: 1993-94 and 1999-2000

States	1993-94		1999-00	
	%Share (in A.I. very poor)	Ratio (% very Poor to Poor)	%Share (in A.I. very .Poor)	Ratio (% Poor to very Poor)
Rural				
1. All India	100.0	40.1	100.0	30.8
2. A. P.	2.1	25.7	2.5	25.5
3. Assam	2.6	27.1	5.7	36.8
4. Bihar	23.0	47.7	22.0	32.1
5. Gujarat	1.9	29.6	1.7	26.6
6. Haryana	1.2	30.9	0.4	19.8
7. H.P.	0.5	29.5	0.1	16.7
8. Karnataka	3.6	36.9	1.9	19.5
9. Kerala	2.1	37.0	0.8	20.4
10. M.P.	9.3	41.5	12.4	33.0
11. Maharashtra	8.3	42.2	5.9	27.7
12. Orissa	6.3	43.7	11.2	45.3
13. Punjab	0.5	25.4	0.3	18.4
14. Rajasthan	3.2	32.4	1.7	18.1
15. T.N.	4.5	37.6	3.3	28.2
16. U.P.	23.7	45.8	19.9	28.2
17. W.B.	7.2	33.0	10.3	34.1
18. Others	0.9	27.2	0.4	16.8
Urban				
1. All India	100.0	46.1	100.0	38.4
2. A. P.	8.6	43.2	7.4	34.2
3. Assam	0.1	14.6	0.3	29.0
4. Bihar	4.8	40.0	5.9	31.3
5. Gujarat	4.6	37.8	2.7	25.0
6. Haryana	0.6	30.0	0.8	36.4
7. H.P.	0.01	11.9	0.02	18.7
8. Karnataka	9.2	54.5	6.4	37.7
9. Kerala	2.1	40.5	2.0	30.9
10. M.P.	11.9	52.6	14.0	47.1
11. Maharashtra	17.2	52.6	19.3	46.2
12. Orissa	2.8	53.4	4.5	49.6
13. Punjab	0.4	20.8	0.3	17.3
14. Rajasthan	3.9	41.0	2.8	28.8
15. T.N.	11.0	45.6	8.1	35.0
16. U.P.	14.3	48.5	17.2	40.0
17. W.B.	4.1	32.2	3.7	28.7
18. Others	2.6	40.1	1.4	24.0

Table 8

Undernutrition (Height-for-age) among poor and Incidence of Chronic Poverty: 1997-98

State	Rural		Urban	
	Percentage of stunted children among poor	Percentage of chronically poor	Percentage of stunted children among poor	Percentage of chronically poor
Andhra Pradesh	49.6	5.2	34.3	13.5
Assam	52.4	21.1	49.1	3.8
Bihar	57.5	25.3	63.0	19.3
Gujarat	49.5	6.1	51.2	7.3
Haryana	60.5	4.5	64.2	6.1
Himachal Pradesh	58.8	4.4	54.8	2.7
Jammu & Kashmir	59.9	2.8	51.6	1.2
Karnataka	56.5	9.6	49.7	13.9
Kerala	32.4	3.1	30.9	6.5
Madhya Pradesh	57.4	21.4	56.9	22.2
Maharashtra	55.8	13.0	30.9	15.0
Orissa	51.1	24.4	49.1	22.2
Punjab	56.9	3.4	46.4	3.1
Rajasthan	60.1	8.1	57.2	11.7
Tamil Nadu	41.6	8.4	46.5	9.4
West Bengal	60.0	19.0	53.5	8.8
Uttar Pradesh	63.1	19.6	59.6	19.4
Other States	43.1	5.3	46.4	3.9
All India	57.1	15.1	49.6	13.7

Note: Stunted children and chronically poor are estimated by matching NSS and NFHS at unit level.

Table 9

Average Per Capita Calorie Intake and its Growth Rates in India

Expenditure Classes	Rural K. Cal./day				Growth Rate (%)
	1972-73	1977-78	1993-94	1999-2000	1972-2000
Bottom 30%	1504	1630	1678	1696	0.6
Middle 40%	2170	2296	2119	2116	-0.1
Top 30%	3161	3190	2672	2646	-0.8
All groups	2268	2364	2152	2149	-0.3
	Urban				
Bottom 30%	1579	1701	1701	1715	0.4
Middle 40%	2154	2154	2438	2136	-0.0
Top 30%	2572	2979	2405	2622	0.1
All groups	2107	2379	2071	2156	0.1

Source: computed from NSS Report No. 405

Table 10

Under-nutrition among children (Aged 1-5 years) and chronic energy deficiency (CED) among adults in Rural areas of selected states

State	Period	Under-nutrition (%) Children	CED	
			Males	Females
Kerala	1975-79	56.8		
	1991-92	35.6		
	2000-01	28.8	22.4	18.7
Tamil Nadu	1975-79	59.6		
	1991-92	47.4		
	2000-01	39.0	26.7	38.2
Karnataka	1975-79	64.3		
	1991-92	62.8		
	2000-01	47.7	36.2	41.7
Andhra Pradesh	1975-79	61.5		
	1991-92	50.8		
	2000-01	39.9	37.4	42.0
Maharashtra	1975-79	71.4		
	1991-91	62.2		
	2000-01	55.2	41.3	45.1
Gujarat	1975-79	68.1		
	1991-91	62.3		
	2000-01	48.9	37.1	33.3
Madhya Pradesh	1975-79	61.3		
	2000-01	63.9	42.8	41.9
Orissa	1975-79	56.6		
	1991-91	58.8		
	2000-01	54.4	38.6	46.0
West Bengal	1975-79	60.6		
	2000-01	49.6	40.5	45.9
All States *	1975-79	61.5		
	1991-91	56.2		
	2000-01	47.7	37.4	39.4

Notes:Undernutrition (severe plus moderate) estimates are based on Gomez classification and CED is the percentage of adults whose body mass index (BMI) is less than 18.5.

*Pooled estimates for Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Madhya Pradesh and Orissa.

Source: National Nutritional Monitoring Bureau, National Institute of Nutrition, Hyderabad

i) Second Report Survey, 1999 – Rural NNMB Technical Report No.18

ii) Diet Nutritional Status of Rural population, 2002 NNMB Technical Report No.21.

Table 11
NFHS Estimates of Malnutrition among Children (Weight-for-age) and CED among ever married women age 15-49

State	1993 (Children under age four)			1998-99 (Children under age three)	CED among ever married women, age 15-49
	Rural	Urban	All	All (Rural + Urban)	(Rural + Urban)
Andhra Pradesh	52.1	40.2	49.1	37.7	37.8
Bihar	64.1	53.8	62.6	54.4	39.7
Gujarat	45.8	40.5	44.1	45.1	37.6
Haryana	39.4	33.0	37.9	34.6	26.1
Himachal Pradesh	48.3	30.2	47.0	43.6	29.9
Jammu & Kashmir	Na	Na	44.5	34.5	26.6
Karnataka	Na	Na	Na	43.9	39.4
Kerala	30.6	22.9	28.5	26.9	18.9
Madhya Pradesh	59.4	50.1	57.4	55.1	38.6
Maharashtra	57.5	45.5	52.6	49.6	40.2
Orissa	Na	Na	55.3	54.4	48.4
Punjab	47.4	40.0	45.9	28.7	17.0
Rajasthan	41.1	43.9	41.6	50.6	36.6
Tamil Nadu	52.1	32.3	46.6	36.7	29.3
Uttar Pradesh	Na	Na	49.8	51.7	36.2
West Bengal	Na	Na	56.8	48.7	44.4
North East					
Arunachal Pradesh	40.3	36.2	39.7	24.3	11.1
Assam	51.8	37.3	50.4	36.0	27.1
Manipur	31.6	25.9	30.1	27.5	19.3
Meghalaya	47.2	37.5	45.5	37.9	25.7
Mizoram	34.5	22.0	28.1	27.7	22.8
Nagaland	30.5	19.7	28.7	24.1	18.7
Tripura	53.0	31.6	48.8	n.a.	35.7
All-India	59.9	45.2	53.4	47.0	36.2

Notes: Children below 2 SD from the international reference population median are treated as suffering from malnutrition;.

Source: National Family Health Survey (NFHS), 1993 and 1998-99.
CED among ever married women are from Fred et.al., 2003.

Table 12	
Malnutrition of children by background characteristics: NFHS-II	
Background characteristics:	
Residence	
Rural	49.6
Urban	38.4
Sex of child	
Male	45.3
Female	48.8
Birth weight	
Less than 2.5 kg	46.7
2.5 kg. or more	29.8
Not weighed	52.6
Mother's BMI (kg/M^{2*}	
Below 18.5	58.1
18.5 – 25.0	42.4
25.0 – 30.0	23.1
30.0 -	20.7
Mother's education	
Illiterate	55.0
Literate < middle school complete	44.6
Middle school complete	36.5
High school complete	26.6
Level of variety of nutritious food*	
High (> 19)	38.1
Moderately high (17 – 18)	48.6
Low (15-16)	53.3
Very low (7-14)	58.8
Standard of Living	
Low	56.1
Medium	46.8
High	26.8
*Estimated from unit level data for rural areas Source: NFHS-II Report Fred Arnold et.al. (2003).	

* Fred Arnold et. Al. (2003)

Table 13
NNMB (2000-01) and – NFHS –2 Estimates of Undernutrition in Rural Areas based on standard deviation

Severe under-nutrition (< median – 3 SD)

NNMB	:	21%	Weight for age
NFHS	:	20%	Weight for age
NNMB	:	25%	Height for age
NFHS	:	25%	Height for age

Under Nutrition (< Median – 2SD

NNMB.	:	60%	Weight for age
NFHS	:	49.6%	Weight for age
NNMB	:	49%	Height for age
NFHS	:	48.5%	Height for age

Note : NNMB age group 1 - 5 years
NFHS age group < 3 years: Estimated from unit level data.

Table 14
Malutrition and Poverty
(NSS-NFHS)

$$Ln\ m_1 = 2.08 + 0.026P$$
$$t = (13.36) \quad (3.83)$$
$$R^2 = 0.42 \quad \bar{R}^2 = 0.39 \quad df = 20$$

$$Ln\ m_2 = 3.85 + 0.012\ P$$
$$t = (11.37) \quad (3.57)$$
$$R^2 = 0.40 \quad \bar{R}^2 = 0.34 \quad df = 19$$

m_1 = Percentage of children with severe underweight (< Median – 3 SD)

m_2 = Percentage of children with underweight (< Median – 2 SD)

P = Percentge of people below the poverty line.

Table 15: LOGIT FOR UNDERWEIGHT (Moderate and Severe)

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Household Size	0.0151	0.0064	5.5407	1.0000	0.0186	1.0152
Education (Ref: No education)						
Primary	-0.1074	0.0598	3.2236	1.0000	0.0726	0.8982
Secondary	-0.2707	0.0610	19.6738	1.0000	0.0000	0.7628
Higher	-0.5071	0.1179	18.5018	1.0000	0.0000	0.6022
Caste (Ref: Other Caste)			49.3305	3.0000	0.0000	
Scheduled caste	0.2404	0.0650	13.6975	1.0000	0.0002	1.2718
Scheduled tribe	-0.1478	0.0699	4.4680	1.0000	0.0345	0.8626
OBC	0.2591	0.0559	21.4585	1.0000	0.0000	1.2958
Working Status of Mother (Ref: Not working)						
Working	0.0987	0.0488	4.1006	1.0000	0.0429	1.1038
Age of Mother	-0.0350	0.0073	23.1640	1.0000	0.0000	0.9656
Place of Delivery (Ref: Home)						
Institution	-0.1526	0.0517	8.6974	1.0000	0.0032	0.8585
Moth of First Visit for ANC	0.0155	0.0135	1.3169	1.0000	0.2511	1.0156
Number of ANC visits	-0.0252	0.0102	6.1309	1.0000	0.0133	0.9751
Consumption level of Nutritious food	0.0462	0.0091	25.5641	1.0000	0.0000	1.0473
Biomass Index of Mother	-0.0013	0.0001	198.0531	1.0000	0.0000	0.9987
Standard Living Index of Household	-0.0260	0.0031	70.8582	1.0000	0.0000	0.9743
Age of Child	0.0708	0.0025	778.1905	1.0000	0.0000	1.0734
Birth order of Child	0.0041	0.0138	0.0897	1.0000	0.7645	1.0041
Sex of Child (Ref: Female)						
Male	-0.0465	0.0438	1.1275	1.0000	0.2883	0.9545
Gave Green Leafy Vegtables to Child (Ref: no)						
Yes	-0.1130	0.0518	4.7483	1.0000	0.0293	0.8932
Drainage Facilit in the Village (Ref: None)						
Underground drainage	0.3490	0.1716	4.1373	1.0000	0.0419	1.4176
Open drainage	-0.0551	0.0460	1.4366	1.0000	0.2307	0.9464
Health Facility in Village (Ref: No)						
Yes	-0.0166	0.0587	0.0802	1.0000	0.7771	0.9835
Education Vacility in Village (Ref: No)						
Yes	0.1283	0.0900	2.0303	1.0000	0.1542	1.1368
DWACRA beneficieries/1000 population)	-0.0320	0.0302	1.1226	1.0000	0.2894	0.9685
Anganwadi Facility in Village (Ref: No)						
Yes	0.0584	0.0527	1.2306	1.0000	0.2673	1.0602
Mahila Mandal in Village (Ref:no)						
Yes	0.0022	0.0485	0.0020	1.0000	0.9641	1.0022
Fair Price Shop in village (Ref: No)						
Yes	-0.0806	0.0480	2.8156	1.0000	0.0934	0.9226
Constant	1.5474	0.2949	27.5288	1.0000	0.0000	4.6991
Number of Observations	10380					
-2 Loglikelihood	12226.4					
Cox & Snell R square	0.1740					
Nagelkerke R Square	0.2330					

DRAFT

TECHNOLOGICAL CHANGE AND FOOD PRODUCTION: IMPLICATIONS FOR VULNERABLE SECTIONS

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Technological Change in Food Production : Implications for Vulnerable Sections

M S Swaminathan

Introduction:

From the beginning of time, technology has been a key element in the growth and development of societies. Entire eras have been named for the levels of their technological sophistication. Examples are: the stone age, the bronze age, the iron age, the age of sail, the age of steam, the jet age, the computer age, the age of genomics and proteomics and now, the nano-age. Each of these developments has had a profound influence on agriculture and we have now reached the age of biotechnology and precision farming in relation to farming methods.

The spread of technologies has however been uneven throughout history - among and within countries and between agro-ecological zones. Many of the technologies like improved seeds are scale neutral with reference to their relevance to farms of varying sizes but are not resource neutral. Inputs are needed for output and hence those who do not have access to inputs tend to get bypassed by technological transformation. Synergy between technology and public policy has therefore remained a pre-condition for technologies to confer benefit to all sections of the farming community, irrespective of the size of their holdings and their innate capacity to mobilise capital and take risks. Among factors of production, access to irrigation water has been a major determinant of technological change, since without assured irrigation, it is difficult to apply nutrients in quantities essential for high yields, even if genetic strains capable of high productivity are available.

Today, global agriculture is witnessing two opposite trends. In many South Asian countries, farm size is becoming smaller and smaller and farmers suffer serious handicaps with reference to the cost-risk-return structure of agriculture. Farm size in most industrialised countries is becoming larger and larger and farmers are supported by heavy inputs of technology, capital and subsidy. The recent breakdown of the Cancun negotiations of the World Trade Agreement in the field of agriculture reflects the polarisation which has taken place in the basic agrarian structure of industrialised and developing countries. A major technological transformation of agriculture began in Europe in the 19th century with the introduction of mineral fertilizers which helped to negate the law of the diminishing return of the soil. In India, average yields of major food crops remained well below 1 metric ton per hectare for centuries, until the introduction of high yielding varieties in the 1960s. To produce one metric ton of rice the rice plant needs atleast 20 kgs of nitrogen and appropriate quantities of phosphorus, potash and micronutrients. The native soil fertility was often below this level and hence yields tended to remain below a ton.

The steps taken after independence to improve the productivity of food crops fall under the following major categories.

- Package of technology

- Package of services in areas such as input supply and extension
- Package of public policies in areas such as land reforms, rural infrastructure development, investment in irrigation and input and output pricing policies and assured and remunerative marketing.

Improvement of agricultural production through the productivity pathway is essential for both resource poor farmers and consumers. The smaller the farm, the greater is the need for increasing productivity, so that the farm family has a higher marketable surplus. Productivity improvement also tends to reduce the cost of the commodity, thereby benefiting resource poor consumers. Above all productivity improvement is essential for safeguarding the remaining forests, since otherwise forest land will get converted to produce food. Thus, the productivity pathway of agricultural advance helps in strengthening ecological, livelihood security and food security.

As stressed by Swaminathan (1996) what we need is an ever-green revolution which can help to increase productivity in perpetuity without associated ecological harm. The potential problems which may arise from an orthodox green revolution pathway were summarised by Swaminathan in 1968 at the Indian Science Congress in Varanasi in the following words.

"Exploitive agriculture offers great dangers if carried out with only an immediate profit or production motive. The emerging exploitive farming community in India should become aware of this. Intensive cultivation of land without conservation of soil fertility and soil structure would lead, ultimately, to the springing up of deserts. Irrigation without arrangements for drainage would result in soils getting alkaline or saline. Indiscriminate use of pesticides, fungicides and herbicides could cause adverse changes in biological balance as well as lead to an increase in the incidence of cancer and other diseases, through the toxic residues present in the grains or other edible parts. Unscientific tapping of underground water will lead to the rapid exhaustion of this wonderful capital resource left to us through ages of natural farming. The rapid replacement of numerous locally adapted varieties with one or two high-yielding strains in large contiguous areas would result in the spread of serious diseases capable of wiping out entire crops, as happened prior to the Irish potato famine of 1854 and the Bengal rice famine in 1942. Therefore the initiation of exploitive agriculture without a proper understanding of the various consequences of every one of the changes introduced into traditional agriculture, and without first building up a proper scientific and training base to sustain it, may only lead us, in the long run, into an era of agricultural disaster rather than one of agricultural prosperity."

Therefore we need ecotechnologies rooted in the principles of ecology, economics, gender and social equity and employment generation. The vulnerable sections need job-led economic growth and not jobless growth. To understand the technological changes, which have taken place in farming during the past 100 years and their impact on vulnerable sections of rural and urban communities, it would be useful to take two major food crops, rice and wheat, as examples.

Technological Transformation of Productivity, Profitability and Sustainability:

I. Rice:

The role of rice in national and global food security systems will increase, not only because of increases in population and purchasing power, but also because of likely changes in climate and sea level rise due to global warming. An immediate task is bridging the gap between potential and actual yields, widely prevalent in several rice growing countries and particularly in different parts of India. This is possible even at currently available levels of technology, through mutually reinforcing packages of technology, services and public policies. In the decades ahead, more rice will have to be produced under conditions of shrinking per capita arable land and irrigation water availability and expanding biotic and abiotic stresses. Due to breeding efforts based on an appropriate integration of Mendelian and molecular techniques, the ceiling to yield is being raised continuously (Fig.1). Aided by biotechnology, the greatest potential for productivity gains in yield ceiling in the future lies in rainfed environments (Peacock et al., 2002). Integrating genetic efficiency with genetic diversity of diverse gene pool through pre-breeding and participatory breeding should be encouraged (Fig.2). Hybrid rice, "Super rice" and "Super hybrid rice" are likely to dominate the rice world in the future. What is however important is the initiation of research which can lead to the standardisation of methods of feeding the rice plant for higher yields in an ecologically sustainable manner. Research on breeding and feeding for higher yields should proceed concurrently.

We have several simple and elegant tools that enable us to manipulate the rice genome to elicit desirable responses - tolerance to pests and diseases, moisture stress, salinity-alkalinity, heat, increased photosynthetic efficiency, dry mater accumulation, and source sink partitioning. Rice gene sequence information is widely viewed as an invaluable asset for developing products and technologies. Because of advances in molecular mapping and breeding, there are new opportunities for improving the nutritive qualities of rice, with particular reference to iron, vitamin A and other micronutrients. Under an expanding Intellectual Property Rights (IPR) regime, it is important that research for public good receives the needed support at the national and international levels. Farmers have to achieve revolutionary progress in productivity, quality and value addition. The emerging ecological, economic and social challenges have to be met through partnerships among rice researchers and developmental organizations, committed to the cause of improving the productivity, profitability, sustainability and stability of rice farming systems. There is need for organisation of a new global project to usher in an evergreen revolution in rice. This will call for a programme of Integrated Gene Management, involving concurrent attention to genetic resources conservation, sustainable use, and equitable sharing of benefits. A global knowledge system for rice would offer tremendous opportunities to improve the efficiency and effectiveness of networks.

A quantum jump in rice yield was possible using semi-dwarf varieties that responded to increased use of fertilizers, pesticides, weedicides and a host of other chemicals along with water. Rice production increased by 2.3% per year from 1968 to 2001 after the release of IR 8 (Hossain and Narciso, 2002). In India, rice production grew at 1.11 percent during 1994-95 to 2000 – 2001 (Venkataramani, 2002). The slowdown in

productivity growth of irrigated rice is due to decline in the N-supplying capacity of intensively cultivated wetland soils, which is around 30%, over 20-year period, at all N levels (IRRI, 2001). Two other macronutrients demanded by rice are P and K; their deficiencies are becoming widespread across Asia in areas not considered deficient. Balanced use of macronutrients *viz.*, N, P and K along with slow release fertilizers should be encouraged as they improve fertilizer use efficiency over time.

The biological pathways for raising the ceiling to yield included both an increase in total biomass and higher harvest index. It is essential that the capacity of the plant to produce higher biomass per day is enhanced, since the scope for yield improvement through the harvest index pathway has been practically exhausted. Such a trend in yield improvement is continuing, with the commercial exploitation of hybrid vigour providing added opportunities for raising the ceiling to yield further in indica rice (Peng et al., 1999; Swaminathan, 1996). In addition to the morphological and physiological attributes, tolerance or resistance to a wide range of biotic and abiotic stresses will also be necessary. Several donors from tropical germplasm are available in varieties with good genetic background. This will call for pyramiding of genes from diverse genetic material. Several useful traits from wild rice were identified and transferred to cultivated rice using various biotechnological approaches (Khush, 2003).

In a book titled "Asian Rice Bowls: The Returning Crisis?" Pingali et al., (1997) have described in detail the steps needed to increase rice production in Asia to meet future needs. If global warming and the associated changes in temperature, precipitation and sea level rise do occur, the position of rice in national and global food security systems will increase, since rice has the ability to grow under very diverse environmental conditions. Rice is by far the best- adapted crop to lowland soils that are prone to flooding during wet season. They draw attention to the following challenges facing rice research and development agencies:

- Productivity gains from the exploitation of Green Revolution Technologies are close to exhaustion.
- In the absence of further technical change, Asian farmers face increasing costs per tonne of rice produced.
- Adverse agricultural externalities are increasing due to lack of holistic perspective of the farm resource base management.
- Despite an anticipated decline in per capita rice consumption, aggregate Asian demand for rice is expected to increase by 50 to 60 per cent during the 1990-2025 periods both due to population increase and poverty reduction.
- Economic growth and the commercialization of agricultural systems could reduce the competitiveness of rice relative to other crops and other farm enterprises.
- An upward shift in rice yield frontier is necessary to meet future rice requirements and to sustain farm-level profits.

Compounding these problems, there are potential dangers arising from the diminishing investment in research in institutions devoted entirely to national and international public good and the expanding intellectual property rights (IPR) regime. The question now is

how much more improvement can we bring about in productivity without ecological harm? In other words, can we launch an ever-green revolution in rice in the new millennium, marked by sustained advances in productivity, profitability, stability and sustainability of rice farming systems (Swaminathan, 1996; 2000; 2002a). How can we also increase the role of rice in the nutritional security of families dependent on it for their dietary energy supply? How can rice production be insulated from the adverse impact of potential changes in precipitation, temperature and rise in sea level? Above all, how can we maintain and strengthen international cooperation in rice improvement?

Rice for Food and Nutrition Security

i. ***Food based approach to nutrition security:***

Food security was formerly considered essentially in terms of production. It was assumed that adequate food production would ensure adequate availability of food in the market as well as in the household. In the seventies, it became clear that availability alone does not lead to food security. It is becoming evident that even if availability and access are satisfactory, the biological absorption of food in the body is related to the consumption of clean drinking water as well as to environmental hygiene. Finally even if physical and economic access to food is assured, ecological factors will determine the long-term sustainability of food security systems. We have to view food security from the viewpoints of physical, social, economic and environmental access (Swaminathan, 2001). Thus, food security should be defines as physical, economic, social and ecological access to balanced diet and clean drinking water, so the enable every child, woman and man to lead a healthy and productive life. The whole cycle approach described by MSSRF (2001) emphasizes the needs and ways to address all age groups. Such an approach will involve the following steps (Swaminathan, 2002a, 2002b).

ii. ***Food Availability:***

This is a function of both home production and imports. There is no time to relax on the food production front. The present global surplus of food grains is the result of inadequate consumption on the part of the poor, and should not be mistaken as a sign of over-production. Mainstreaming the nutritional dimension in the design of cropping and farming systems is essential. Developing nations should aim to achieve revolutions in five areas to sustain and expand the gains already achieved. These are -- Productivity, Quality, Income and employment, small farm management and enlarging the food basket.

iii. ***Food Access:***

Lack of purchasing power deprives the availability of food even though food is available. Inadequate livelihood opportunities in rural areas are responsible for household nutrition insecurity. For example, India today has over 30 million tonnes of wheat and rice in government godowns; yet poverty induced hunger affects over 200 million persons (Table 2). It is endemic in south Asia and Sub-saharan Africa (Ramalingaswami et al., 1997; WFP, 2001). Macro-economic policies, at the national and global level, should be conducive to fostering job-led economic growth based on micro-enterprises supported by

micro-credit. Where poverty is pervasive, suitable measures to provide the needed entitlement to food should be introduced.

iv. ***Food Absorption:***

Lack of access to clean drinking water, poor environmental hygiene, and health infrastructure, lead to poor assimilation of food consumed. Nutrition security cannot be achieved without environmental hygiene, primary health care and clean drinking water security. Culinary habits also need careful evaluation as some methods of cooking may lead to the loss of vital nutrients.

v. ***Transient hunger:***

Considerable seasonal variation in body weight was observed due to changes in weather (Ferro-Luzzi et al., 1994). Any strategy for nutrition security should provide for steps to meet such transient hunger. The State of Maharashtra introduced nearly 25 years ago an Employment Guarantee Scheme to assist the poor to earn their daily bread during seasons when opportunities for wage employment are low. Similarly there is need for mainstreaming considerations of gender, age and occupation in the national nutrition strategy.

We should accelerate our efforts in improving agricultural production through yield improvement, higher factor productivity and better post-harvest management. Advances in frontier areas of science and technology, as for example in biotechnology, information, communication and space technologies, nuclear and renewable energy technologies and in management science, have opened up uncommon opportunities for achieving an evergreen revolution.

The most important among the internal threats to sustainable food security is the damage to the ecological foundations essential for sustained agricultural advance, like land, water, forests and biodiversity. The external threats include the unequal trade bargain inherent in the WTO agreement of 1994, the rapid expansion of proprietary science and potential adverse changes in temperature, precipitation, sea level and ultra violet ß radiation.

Increasing Production and Productivity:

i. ***Bridging the yield gap:***

The maximum rice yields reported range from 11 – 13 t/ha from India and IRRI. However, The average climate-adjusted yield potential is about 8 t /ha for inbred varieties and 8.8 tons/ ha for hybrids in the intensive double cropping area (IRRI, 2001). The gap between potential and actual yields is higher in most rice farming systems; the present average yield is just 40% of what can be achieved even with technologies currently on the shelf. This is because of imperfect adaptation to local environments, insufficient provision of nutrients and water and incomplete control of pests, diseases and weeds. There is considerable scope for further investment in land improvement through drainage, terracing, control of acidification, etc where these have not already been introduced.

While irrigated areas are making good progress, there is need for more intensive research and development attention in rainfed low land and upland areas. Therefore a massive effort should be made to launch a productivity revolution in farming. An integrated approach is necessary to remove the technological, infrastructure and social and policy constraints responsible for the productivity gap and in some cases, productivity decline. Reducing the cost of production through eco-technologies and improving income through efficient production and post-harvest technologies will help to enhance opportunities for both skilled employment and farm income. Public policies should not only pay attention to agrarian reform and input and output pricing, but also to reaching the unreached in technology dissemination through training, techno infrastructure and trade. A constraints analysis of the type shown in Fig.3 should be undertaken. Public policy research should receive as much attention as agronomic research. Hence, mutually reinforcing packages of technology, services and public policies will be needed. Future agricultural production programmes will have to be based on a three-pronged strategy designed to foster an evergreen revolution, which leads to increased production without associated ecological and social harm. These strategies include, defending the gains already achieved, extending the gains to rainfed areas and making new gains through farming systems diversification and value addition.

ii. ***Defending the gains already achieved:***

There is need for stepping up maintenance research for ensuring that new strains of pests and pathogens do not cause crop losses and prevent the introduction of invasive alien species. Water harvesting, watershed development and economic and efficient water use can help to enhance productivity and income considerably. Where water is scarce, high value but low water requiring crops should be promoted. As pulses and oilseeds are important income earning and soil enriching crops, they should be included in rice farming systems. In areas like Red River delta in Vietnam, where seven crops of rice are grown in two years, pulses should be promoted in crop rotation to enriching soil fertility status.

iii. ***Extending the gains:***

There is need to develop and disseminate ecotechnologies for rain-fed and semiarid, hill and island areas, which have so far been bypassed by modern yield enhancement technologies. Regional imbalances in agricultural development are growing based largely on the availability of assured irrigation on the one hand and assured and remunerative marketing opportunities on the other. The introduction of eco-regional technology missions, aimed to provide appropriate packages of technology, techno-infrastructure, services and input and output pricing and marketing policies will help to include the excluded in agricultural progress. Technologies for elevating and stabilizing yields are available for semiarid and dry farming areas (Ryan and Spencer, 2001). Therefore the emphasis should be on farming systems that can optimize the benefits of natural resources in a sustainable manner and not merely on cropping systems. Dry farming areas are also ideal for the cultivation of low water requiring but high value pulses and oilseeds.

iv. ***Making new gains:***

Farming systems intensification, diversification and value-addition should be promoted. Watershed and Wasteland atlases should be used for developing improved farming systems, which can provide more income and jobs. Value addition to primary products should be done at the village itself. This will call for appropriate institutional structures which can help provide key centralized services to small and marginal farm families and provide them with the power of scale in eco-farming involving techniques like integrated pest management, integrated nutrient supply, scientific water management, precision farming etc as well as in marketing. A quantum leap in sophistication of management of all production factors will be required to sustain yield gains (Swaminathan, 2001) from the present levels to the commercially feasible threshold of about 80% yield potential.

v. ***Hybrids:***

As commercial rice hybrids yield 10 to 15% more yield than pure line varieties. In India yield advantage of hybrids ranged from 1.0 to 1.5 t/ha leading to a profit of Rs. 2781 to 6291 (Mishra 2003). In addition, hybrid rice seed production enhances employment potential also. There is need to identify new sources of male sterility and restorers as about 95% of the male sterile lines used in commercial production in China and other countries have wild abortive (WA) type of cytoplasm. Newly developed CMS line from *Oryza perennis* is different from that of WA. Search for new stable sources of sterile cytoplasm as in *O. Glumaepatula* and for restorers of these CMS sources should continue. Search for linkage between the genes for resistance to biotic and abiotic stresses and molecular markers should continue to facilitate selection for resistance during the transfer of resistance to other elite breeding lines of rice.

vi. ***Photosynthetic efficiency improvement:***

Stimulation of photosynthesis, reduction in photorespiration and enhancing source-sink relationships need to be explored, as they are the major yield determining factors. Increased sink size is the most important trait for increasing rice yield potential. Promising avenues under investigation include incorporating genes that confer C_4 photosynthesis into the rice plant and improving lodging resistance so that higher leaf N concentration can be maintained to improve radiation use efficiency during the most rapid crop growth periods. Modifying plant architecture for better light interception, assimilate partitioning, utilization of solar energy, nutrients and water more efficiently is necessary to improve rice yield.

To improve the photosynthetic efficiency of rice plant, transfer of C_4 traits into C_3 rice is being explored. Ku et al. (1999) used *Agrobacterium*-mediated transformation and introduced into rice a gene for phosphoenolpyruvate carboxylase (PEPC) from maize, which catalyzes the initial fixation of atmospheric CO_2 in C_4 plants. Level of expression of the maize PEPC in transgenic rice plants correlated with the amount of transcript and the copy number of the inserted maize gene. Transgenic rice plants exhibited reduced O_2 inhibition of photosynthesis and higher photosynthetic rates compared to those of

untransformed plants. These findings demonstrate a successful strategy for introducing the key biochemical component of the C_4 pathway of photosynthesis into rice. Work done at MSSRF has shown that genes for sea water tolerance can be transferred from mangrove species to rice, grain legumes and mustard (Ajay Parida). Similarly genes for drought tolerance are being transferred from *prosopus juliflora* to rice and other food crops at MSSRF Transgenic technology thus provides uncommon opportunities for developing varieties resistance to abiotic stress.

Rice researchers and farmers must move speedily to an era of precision farming, which helps to reduce the cost of production and improve productivity on an ecologically sustainable basis. They should launch a movement for achieving an evergreen revolution in rice farming systems based on ecologically sustainable and location specific precision farming technologies. Precision farming methods, which can help to enhance income and yield per drop of water and per units of land and time, need to be standardized, demonstrated and popularized speedily, if a reduction in the cost of production is to be achieved without reduction in yield. A responsive, field-specific management approach will require farmers to monitor crop growth stage, N status, and pest pressure to precisely identify when N topdressings, insecticide or fungicide applications are required. Farmers need to monitor crop growth, and N status, and have access to predictions of growth stage, crop stage, and yield potential from crop simulation models that use real-time weather data and weather projections. This information is crucial for estimating the N fertilizer requirement and the proper timing of N topdressings and prophylactic treatment against endemic diseases when weather conditions are conducive to disease progression. Revolution in information technology should make it feasible for smallholder rice farmers in Asia to access needed information. Without access to this information, it will not be possible to sustain the rate of yield gain needed to meet rice demand. A precise match of genotype to environment is needed while utilizing field-specific tactics to ensure that input requirements are met without deficiency or excess in time and space.

vii. *Small Farm Management:*

Institutional structures, which will confer upon farm families with smallholdings, the advantages of scale at both the production and post-harvest phases of agriculture are urgently needed. For example, thanks to the cooperative method of organisation of milk processing and marketing, India now occupies the first position in the world in milk production. Strategic partnerships with the private sector will help farmers' organisations to have access to assured and remunerative marketing opportunities.

There are great opportunities for achieving higher yields per units of land; water and time provided rice farmers are enabled to shift to precision farming methods. The five vital areas of research, development and extension, which need attention from the point of view of achieving environmentally sustainable advances in rice productivity, are:

- Soil health and fertility management
- Water management
- Integrated plant health management
- Energy management

- Post-harvest management

A. **Soil health and fertility management:**

Several studies have shown that the recovery of applied urea in lowland rice can be as low as 20% during the main growing season. Also, about one-third of applied N is immobilised in the soil. All over South Asia, about one-third to one-half of fertilizer N applied to rice crop is lost by leaching, ammonia volatilization, denitrification and surface run-off. In USA, Global Positioning Satellites (GPS) are being used to measure soil health properties, such as soil salinity. Use of chlorophyll meter in the management of Nitrogen is becoming more widespread. The Silsoe Research Institute in the UK has developed "plant-scale husbandry". This technology involves the use of a high-tech tractor to operate nozzles, which can release precise doses of herbicides, pesticides and fertilizers to plants. Silsoe Researchers feel that this method could help to cut down the use of chemicals by 90%. Nutrient use efficiency in India could be achieved (Mishra, 2003) with he the following methods:

- Significant amount of N could be saved by leaf color chart based application
- One time application of slow releasing N fertilizer was better than 4 splits of urea
- Combined use of inorganic fertilizer and organic manures like FYM and compost (upto 25%) was better than sole mineral fertilizers
- Pre-*Kharif* legume gave 500 kg grain and supplied significant quantities of N to Kharif rice
- Crop residue incorporation under rice-rice cropping system improved yield and soil properties

A responsive, field-specific management approach will require farmers to monitor crop growth stage, N status, and pest pressure to precisely identify when N topdressings, insecticide or fungicide applications are required. They should have access to predictions of growth stage, crop stage, and yield potential from crop simulation models that use real-time weather data and weather projections. This information is crucial for estimating the N fertilizer requirement and the proper timing of N topdressings and prophylactic treatment against endemic diseases when weather conditions are conducive to disease progression. Revolution in information technology should make it feasible for smallholder rice farmers in Asia to access the right information at the right time. Without access to this information, it will not be possible to sustain them rate of yield gain needed to meet rice demand.

C. **Pulses and oil seeds in rice farming systems:**

A minimum of 20 kg of Nitrogen will be needed to enable the rice plant to produce one tonne of rice. At this rate, it will be environmentally disastrous, particularly with reference to ground water quality, if farmers supply all the needed nutrients for high yields through mineral fertilizers. Pulses and oil seeds are very important for their contribution to human and animal nutrition, as components of indigenous cropping systems, and as restorers of soil fertility. Promote them in rice based production systems of South and Southeast Asia and introduce interventions that would lead to increased rice

and legume production (Webster et al., 1997; Johnson et al., 2000). Inclusion of legumes in the system helps in conserving the natural resource base, particularly soil fertility and groundwater. They can play a significant role in enhancing the factor productivity of production system. Substantial increases (Greenland, 1997) in the production of rice and pulses can be achieved by promoting high yielding and short –duration varieties of legumes and fine tuning management aspects and thereby increasing the system productivity and sustainability. There is need to explore the feasibility of endowing rice plant with endosymbiotic nitrogen fixation capacity as it had significant impact on the global economy and help improve the environment (Swaminathan, 1986; Quispel, 1991; Dey and Datta, 2002) reviewed the present status and suggested various options to achieve this.

D. **Evergreen Revolution:**

As earlier mentioned, this implies improvement of productivity in perpetuity without associated ecological harm. Rice Scientists should foster an evergreen revolution in rice through partnerships for the development and dissemination of Precision Farming Technologies. The major goals that were proposed for the FAO sponsored International Network for an Evergreen Revolution in Rice by Swaminathan (2002b) are as follows:

- Initiate an Integrated Gene Management programme
- Improve productivity per unit of input, particularly of nutrients and water and thereby reduce the cost of production.
- Substitute to the extent possible knowledge and farm produced inputs for capital and market-purchased chemicals.
- Enhance the ecological and social sustainability of high-yield technologies.
- Increase farmers' income and opportunities for skilled employment.
- Establish an information grid and farmer-participatory knowledge system for empowering women and men engaged in rice farming with new knowledge and skills, thereby conferring on rice farmers the strengths of Knowledge Societies.

E. **Water management:**

Due to scarcity and competition for water, more research is needed that ties together management of scarce water resources, agronomic practices, and development and selection of suitable rice varieties. New technology and management practices are needed to increase rice productivity in many of the water-stressed areas bypassed by the green revolution. Water management practices for rainfed and drought-prone areas include a combination of breeding for drought tolerance, and managing limited water supplies to ensure that adequate water is available at critical stage of growth such as flowering and grain filling. Through better management practices at the farm level, there appears to be ample scope for increasing the productivity of water. There may be need for systems that produce rice in aerated soil that is saturated with water only when heavy rainfall causes ponding or after intermittent flood irrigation. Flush irrigation to saturate soil and then allow soil moisture depletion until a subsequent irrigation would allow even further increase in water use efficiency. We have no option except to produce more food, feed grain, fibre, fuel wood and other agricultural commodities per units of arable land

and irrigation water, since both arable land and irrigation water will be shrinking resources in per c apita terms. Therefore, we should not lose further time in initiating integrated efforts to develop and master technologies, which can help to usher in an evergreen revolution or sustainable advances in productivity. The System of Rice Intensification (SRI) which helps to enhance productivity and minimise water consumption, originally developed in Madagascar, and later refined by scientists of the University of Cornell led by Norman Uphoff deserves extensive trial.

F. **Integrated plant health management:**

Five diseases (blast, bacterial blight, sheath blight, tungro and grassy stunt) and four insects (brown planthopper, green leafhopper, stem borer and gall midge) are of major importance for rice in tropical and subtropical Asia. Most of the modern varieties contain strong resistance to one or more of these major disease and insect pests. Khush and Brar (2001) successfully transferred three genes for resistance to bacterial blight to new plant type lines via molecular marker assisted backcross breeding. Most of the modern varieties contain strong resistance to a number of major disease and insect pests.

Development of varieties with durable resistance to bacterial blight caused by *Xanthomonas oryzae* pv. *Oryzae* and for blast caused by *Pyricularia oryzae* was possible as resistance genes have been tagged with molecular markers. Several examples of transgenic rice p lants w ith a gronomically i mportant g enes are a vailable (Table 1 0). In several cases, durable resistance to blast is believed to be associated with quantitative or polygenic inheritance. Under these conditions, there is little or no gain in fitness for a pathogen variant to overcome only a fraction of the polygenes. Breeders should aim at incorporating quantitative or polygenic resistance into rice varieties. Rice plants transformed with *Bacillus thuringiensis* (Bt) were found to be highly toxic to striped stemborer and yellow stemborer. Sources of resistance to some diseases have been identified within cultivated rice germplasm. However, sources of resistance to sheath blight are not available and only a few donors for resistance to tungro disease. A coat protein gene for rice stripe virus was introduced into two japonica varieties exhibited a significant level of resistance to virus infection that was inherited to the progenies. Modern biotechnological tools are available to overcome some of the constraints of conventional tools. Several useful elite lines and improved cultivars were developed using different biotechnological tools (Khush 2003)

G. **Energy management:**

Since fossil fuels are not unlimited, alternate sources of energy should be explored. Renewable sources of energy such as solar, wind or organically produced biogases should be promoted. Scope for increasing hydroelectric power from big dams greatly influences the environment and effect biodiversity. Efficient and environmental friendly means of providing energy need to be explored such as blending methanol from sugarcane and others.

H. **Post-harvest Management:**

The scope for reducing post harvest losses remains unclear. Pimentel estimated such losses to be about 20% on a world scale, ranging from 9% in the USA to 40 – 50% in some developing countries. For solving the food supply problems of developing countries, there is need for reducing post harvest losses. It also brings in price stability.

I. Research Strategies and Priorities:

These Strategies include Integrated Gene Management (IGM), Integrated efforts in feeding and breeding rice for high productivity, Information empowerment, Overcoming hidden hunger caused by micronutrient deficiencies and promoting rice as a substrate for oral vaccines.

J. Integrated Gene Management (IGM)

The IGM programme in rice should be based on the following three goals of the Convention on Biological Diversity (CBD):

- Conservation
- Sustainable use
- Equitable sharing of benefits

i. *Conservation:*

In this area, rice research organisations should strive to strengthen the continuum in the following three major methods of conservation of agrobiodiversity.

- in situ
- in situ-on farm
- ex situ

National Rice Research Systems should have well defined plans and programmes in the areas of *ex situ* preservation in gene banks and *in situ* on-farm conservation by farmwomen and men, through participatory breeding and market linkages. The over 100,000 strains available today in rice is the result of the conservation ethics of farm and tribal families. Most of them are from Asian countries. India is the largest contributor to this collection followed by Laos (Appa Rao et al., 2002a). Swaminathan (2002a) is a strong proponent of recognizing and rewarding farm men and women their invaluable contributions to conservation of farmers' varieties that are essential for rice improvement.

ii. *Sustainable use:*

The vast *ex situ* collections in the genebanks are utilized in a limited way. Value addition through participatory breeding and varietal selection, characterization and evaluation could promote their utilization. Farmers' knowledge about the samples collected and conserved would also promote their use. Lao farmers assign names to varieties tht describes the most important traits – maturity, types of endosperm (glutinous or nonglutinous), adaptation (wet lands, dry lands, garden lands) and others (Appa Rao et

al., 2002b). Some of the names like "forgot husband (very tasty), dog stares at it (poor eating quality) and aroma (aromatic flowers) help to identify appropriate accessions from the vast collections. Integrated Mendelian and molecular breeding and distribution of novel genetic combinations to rice breeders for developing location specific varieties designed to promote ecologically desirable agricultural practices. Molecular linkage maps have made it possible to identify and study the effects of the individual loci that control a quantitatively inherited trait. Such quantitative trait loci or QTLs can help to improve characters controlled polygenically (Tanksley and McCouch, 1997)

Prevent nutritious crops becoming "lost crops" through participatory breeding and by creating an economic stake in their conservation and by including them in crop rotations in rice based cropping systems. A distinctive contribution should be in enlarging the composition of the food basket by including minor and under-utilised crops, which are often rich in micronutrients, in rice farming systems. Such crops are often ecologically well adapted and can be of considerable significance to household nutrition security.

iii. ***Equity in sharing benefits:***

- Strengthen steps to prevent misappropriation of germplasm held in trust under agreement with FAO.
- Implement the Farmers' Rights provision in the FAO Treaty on Plant Genetic Resources for Food Security.
- Work with FAO in promoting a multilateral system of exchange of genetic resources in crops of importance to food and nutrition security.
- Intensify efforts in gathering information relevant to the equitable sharing of benefits with the conservers of genetic resources and holders of traditional knowledge, so that the concept of Farmers' Rights becomes a reality.
- Promote the integration of the principles of equity and ethics in the use of genetic resources and information at the international level.

K. **Integrated efforts in feeding and breeding rice for high productivity:**

Recent estimates of rice demand indicate that a compound annual growth rate of 1.25 is needed to meet expected rice consumption in 2020. The projected increase in rice demand must be met entirely by greater output per unit area on existing rice land. Meeting projected rice demand will depend on sustaining an adequate rate of gain in average rice yields on existing irrigated land. With increasing population, global rice production needs to be increased from the 1995 level of 460 million tonnes to 560 million tonnes by 2000 AD and to 980 million tonnes by 2020 AD.

At current levels of nitrogen use efficiency, this will involve a doubling of the 10 million tonnes of nitrogenous fertilizers that are currently being used each year for rice production worldwide. Rice suffers from a mismatch between N used and N supplied as fertilizers, resulting in a heavy loss of applied nitrogenous fertilizers. Improved water management and agronomic practices will help to reduce losses. In addition, three basic approaches have been proposed to solve this problem. One is to regulate the timing of N application based on the need of the plants, thus partly increasing the efficiency of the use

of applied nitrogen. The second is the introduction of integrated nutrient supply systems involving green manures, biofertilizers, compost and other forms of organic manures along with the minimum essential quantities of mineral fertilizers.

L. Increase the ability of rice system to fix its own Nitrogen:

New frontiers of science offer exciting opportunities for investigating the possibilities of incorporating N fixation capacity in rice (Dey and Datta, 2002). It is now well over 100 years since the existence of microorganisms capable of biological fixation of atmospheric nitrogen was experimentally proved and nitrogen fixing capacity of legume-rhizobia symbiosis was established. Since then, this symbiotic system has been well understood and exploited as an effective means of raising the nitrogen status of soil and for providing nitrogen for crops and pastures. Optimism that non-leguminous crops could similarly be benefited was fueled in the 1970s and 1980s, with the discovery of several nitrogen-fixing organisms forming specific association with non-legumes. Several approaches, including the use of molecular mapping and breeding methods have raised fresh hopes that success in this field could be achieved in the foreseeable future. Several discoveries in this area suggest that symbiotic nitrogen fixation can be extended to non-legumes. The transfer of *nif* genes, together with others necessary for functional nitrogen fixation into chloroplasts was believed to be the best strategy to achieve this prospect. But the complexity of gene regulation remains a great hindrance in achieving functional nitrogen fixing transgenic system (Swaminathan 1982, Quispel 1991). Significant advances have been made in recent years in the induction of nodule-like structures in rice roots by rhizobia and establishing endophytic system in rice (Ladha *et al.* 1997). These results along with recent technical advances involving the induction of nodular structures on the roots of cereal crops such as wheat and rice (Bruijin *et al* 1995), offer the prospect that dependable symbiosis with free living diazotrophs, such as azospirillum or with rhizobia can eventually be achieved. Ultimately, we should package all such opportunities into an integrated soil health care and fertility system. This is a vital component of an evergreen revolution. Longping Yuan (1998) has described the opportunities for the spread of hybrid rice. Research on feeding for high yield should proceed concurrently with breeding for high yield. Otherwise to realise the yield potential of "super-rices", large doses of mineral fertilizers will have to be applied, with harmful long-term ecological consequences.

M. Overcoming hidden hunger caused by micronutrient deficiencies:

The challenge of micronutrient deficiencies in diet is becoming great. Iodine, Vitamin A and iron deficiencies are serious in many parts of the developing world. Worldwide, iron deficiency affects over one billion children and adults. Recent analyses from the United States Institute of Medicine (Earl and Woteki, 1998; Potrykus, 1997; Swaminathan, 1999, 2002a) highlight the effect of severe anaemia in accounting up to one in five maternal deaths. Maternal anaemia is pandemic and is associated with high MMR; anaemia during infancy, compounded by maternal under-nutrition, leads to poor brain development. Iron deficiency is also a major cause of permanent brain damage and death in children and limits the work capacity of adults (Smith and Haddad, 2000; Swaminathan, 2002b). There is not enough appreciation of the serious adverse implications to future generations

arising from the high incidence of low birth weight (LBW) among newborn babies. LBW is a major contributor to stunting and affects brain development in the child. The new millennium will be a knowledge century, with agriculture and industry becoming more knowledge intensive. Denial of opportunities for the full expression of the innate genetic potential for mental development even at birth is the cruelest form of inequity that can prevail in any society (Smith and Haddad, 2000). We must take steps to eliminate as soon as possible such inequity at birth leading to a denial of opportunities to nearly one out of every three children born in South Asia for performing their legitimate role in the emerging knowledge century.

Wherever rice is the staple, a multi-pronged strategy for the elimination of hidden hunger should be developed by rice scientists. IRRI has undertaken research on enriching rice genetically with iron and other micronutrients. Fortification, promotion of balanced diets, new semi-processed foods involving an appropriate blend of rice and micro-nutrient rich millets (Swaminathan, 1999a) as well as genetic improvement, could all form part of an integrated strategy to combat the following major nutritional problems in predominantly rice eating families.

- Protein-energy Malnutrition
- Nutritional anaemia (Iron deficiency)
- Vitamin A deficiency
- Iodine deficiency
- Dietary deficiencies of thiamin, riboflavin, fat, calcium, vitamin C and zinc

Swaminathan (2002a) suggested that the International Rice Commission could include nutrition security aspect as an integral part of the International Network. We must fight the serious threat to the intellectual capital of developing countries caused by low birth weight children and hidden hunger. Some of the research areas worthy of attention in this context are described below:

N. Breeding for Nutritional Quality:

Nutritive quality is as important as cooking quality for countries in tropical Asia, where rice is the principal source of dietary protein, vitamins (B_1) and minerals (Fe, Ca) (Juliano and Villareal, 1993). Rice provides about 40% of the protein in the Asian diet. Among the cereal proteins, rice protein is considered to be biologically the richest by virtue of its high digestibility (88%), high lysine content ($\pm$ 4%) and relatively better net protein utilization. Yet, it is nutritionally handicapped on account of two factors *viz.*, (i) its inherently low protein content (6-8%) and (ii) inevitable milling loss of as much as 15-20%. Unlike in other cereals, increased protein content in rice does not result in decreased protein quality as all of its fractions (glutelin 65%, globulin and albumin 15% and lysine-cysteine rich prolamin 14%) are rich in lysine and other essential amino acids. Even a marginal increase of 2 percentage points of protein, therefore, would mean 10-15% increase in the nutritionally rich protein intake in our diet.

Evaluation of germplasm (Juliano and Villareal, 1993) reveals a wide variability for protein content with several valuable donor sources being available for high protein content (14-16%). Screening of breeding lines/improved varieties, as early as in the seventies, led to the identification of a few genotypes combining high yields with moderately high protein content. Among the high yielding varieties 'Improved Sabarmati" developed at the Indian Agricultural Research Institute, New Delhi, has been found to contain 10.5 to 11.0% protein (Sood and Siddiq, 1986). Breeding for high protein content undertaken at IRRI, India and other countries has so far met with limited success. Complex mode of inheritance, proneness to profound environmental influence and non-linear relationship between yield and protein content are attributable to this slow progress. With low protein content remaining partially dominant over high protein content, additive and non-additive components of gene action have been found to govern this trait. Studies on the extent of genotype x environment interaction reveal considerable variation among high protein genotypes over diverse environments (Eija Pehu and Siddiq, 1986).

Milling, essential for improving palatability, digestibility, storage life and cooking quality, removes considerable quantity of not only protein but also vitamin (B_1) and minerals (Fe, Ca), which are largely located in the outer layers of the endosperm. There are two ways to minimize their loss *viz.*, (i) exploiting genetic variation in the distribution pattern of protein bodies, and (ii) differential resistance of outer layers to scrapping. Microscopic screening of transverse section of endosperm of rice germplasm reveals wide variation in the distribution pattern of protein bodies (Vilawan and Siddiq, 1973). As against the general notion that higher the protein content, better and deeper would be the distribution pattern, genotypes with protein bodies located deep in the core of the endosperm have been identified in strains with low protein content. Further the finding that percentage of protein loss was irrespective of the distribution pattern adds another dimension to the problem. High protein content in milled samples of some of the varieties, for instance, appears to be due to higher resistance of the outer layers of endosperm to milling. Among several factors, thickness and texture of aleurone layer seem to determine the level of milling loss (Eija Pehu and Siddiq, 1986). Once their genetics and response to selection are established, breeding for 'low protein loss' may become feasible.

O. Genetic Engineering approaches for correcting micronutrient deficiencies:

Breeding for Nutritional Improvement was recommended at the 19th Session of the International Rice Commission, which called for an increase in focus on strategies to combat malnutrition (Swaminathan, 1999; Philip James et al., 2000; Gopalan, 2001). There are four categories of direct interventions believed to be successful in reducing micronutrients malnutrition; supplementation, fortification, dietary diversification and genetic enhancement. Nutritional status of populations will focus on the potential for improving malnutrition, primarily micronutrient malnutrition through genetic improvement.

P. Golden rice:

About 250 million people worldwide are deficient in vitamin A. Over five million children in South and Southeast Asia are reported to suffer from the serious eye disease 'xerophthalmia' every year and about 500,000 of them eventually become partially or totally blind due to deficiency of vitamin-A. Besides affecting vision, vitamin-A deficiency predisposes children to varied respiratory and intestinal diseases resulting in high mortality. Researchers from Swiss Federal Institute of Technology inserted these genes from daffodil and a bacterium into temperate rice plants to produce a modified grain, which has sufficient β carotene (precursor of vitamin A) to meet total vitamin A requirements in a typical Asian diet (Ye et al., 2000). Golden rice technology was made available to developing nations for research. If this technology can be moved to the production stage, it could represent an important contribution to improved human nutrition. In particular, rice fortified genetically with Vitamin A and iron will be very useful to improve the nutritional status of pregnant women and nursing.

Q. Iron deficiency:

Iron deficiency anaemia (IDA) is the world's most common nutritional deficiency. It affects pregnant and nursing women and young children most commonly. IDA in mothers predisposes to still births; neonatal mortality, anaemia and low birth weight in infants, and increase the risk of maternal mortality (Swaminathan, 2002; Earl and Woteki 1994). Regular intake of iron or administration of iron prevents anaemia. Daily supplementation with iron-folic acid tablets is a low-cost and effective intervention. A research team led by Toshihiro Yoshishra in Japan employed the gene for ferritin, an iron rich soybean storage protein, under the control of an endosperm specific promoter. Grains from transgenic rice plants contained three times more iron than normal rice plants. Another group led by Ingo Potrykus at the Institute of Plant Sciences in Zurich have developed similar transgenic rice with Ferritin gene from beans. There are new opportunities for the genetic enrichment of rice with iron. Such research should form an important component of the Integrated Gene Management programme described earlier

R. Rice as a substrate for oral vaccines:

Scientists at the Biotech Foundation, Thomas Jefferson University headed by Prof. Hillary Koprowski has extensively studied the use of tobacco plants with genetically engineered plant viruses for production of agents against HIV, rabies virus, color0ectal cancer and bovine viral diarrhoea. Studies conducted in animals show that these tobacco plant produced agents protect animals against infections by other diseases (Yusibov et al 1997, Modelaska et al 1998). Significant progress was made in developing oral vaccines for bacterial and viral diarrhoea, cholera and malaria using genetically engineered banana and potato (Arntzen and Mason 1997; Chakraborty et al., 2000). Rice offers several advantages for being an ideal system for oral vaccine production. With universal agronomic production technology, relatively easy and established transformation and transgenic system, available information on gene expression and specific promoters, expected higher level of recombinant proteins and with no reported toxic substance being produced by it, rice could be a viable and acceptable crop species for production of oral vaccines. If such research is undertaken and results in the desired result, several diseases can be controlled in regions where rice is basic food for young children.

S. Rice Genome:

The publication of draft genome sequences for the two major subspecies of rice is a major milestone for rice research. Scientists are already using the rice genome sequence to improve productivity and resistance to biotic and abiotic stress factors (Jum Yu et al., 2002). Having one of the smallest genomes among food crops rice is the first crop to be completely sequenced. With the availability of information from rice genome sequencing research from multinational organizations and international rice genome research program, it is possible to identify new yield genes in landraces. It is providing new approaches to identify the structure and functions of genes and that useful genetic characters can be accessed through increased use of genes from wild relatives and other species for rice improvement. Knowing the identity and location of each gene in the rice genome is of immense value to all aspects of rice science. We may now be in a position to unlock the genetic potential of these germplasm resources. Exotic germplasm is a likely source of new and valuable genes capable of increasing yield and other complex traits important to rice production.

T. Isolation and Characterisation of Salt tolerant genes:

Coastal ecosystem suffers from the twin problem of low productivity and uncertain yield is an important part of the natural resource base of our country. Growing population pressure, increasing soil erosion and water pollution caused by intensive farm practices, seawater intrusion and attendant soil and water quality problems caused by ground water depletion have rendered various forms of stresses on the coastal ecosystem. MSSRF's anticipatory research programme aims at developing characterised pre-breeding genetic material capable of offering resistance/ tolerance to coastal stress for grass-root level breeders for developing location specific crop varieties.

Identification of novel genes from the mangrove species was undertaken through developing gene libraries enriched with stress induced genes and screening for potential genes conferring stress tolerance (Parida, 2003). Four cDNA libraries have been constructed from the salt treated *Avicennia marina*. By screening with heterologous probes from other organisms or through RT-PCR probes, few potential stress tolerant genes were isolated from the cDNA libraries and fully sequenced. A number of full-length genes of practical importance to abiotic stress tolerance have been identified, sequenced and characterised.

Transformation vectors have already been constructed for dicots with 35S promoter (pGA643 series) and for monocots with ubiquitin promoter (pCAMBIA series) incorporating BADH, SOD 1, LTP 1 and Gly I from the mangrove species. Transformation with constructs containing SOD1, LTP1 and GlyI in rice; *Brassica* and tobacco are at different stages of development. Putative transformed plants were identified using PCR and Southern techniques. Subsequent generations are being raised to study the efficacy of these transgenics and also raising pure lines.
Using the cDNA library constructed from *Avicennia marina*, MSSRF has been able sequence over 1600 ESTs (Parida, 2003). Sequences of these clones were deposited in

the worldwide databases at NCBI. This is the first ever bulk submission from any laboratory in India. Having identified full length or novel genes, sequencing is being undertaken at the 3' extremity. In order to characterize the rest of the insert, subcloning of these clones onto a plasmid vector are being carried out for functional analysis and DNA sequencing.

As many as 2000 partial gene sequences from mangroves have been deposited in worldwide databases, and this has been the first ever bulk submission from any laboratory in India (MSSRF, 2002). Biotechnology - tissue culture, gene mapping, gene transfer and other techniques have now become an important avenue for advances in rice breeding. Owing to the advent of molecular mapping and the ability to scan the genomes of wild species for new and useful genes, we may now be in a position to unlock the genetic potential of these germplasm resources. Exotic germplasm is a likely source of new and valuable genes capable of increasing yield and other complex traits important to agriculture.

II. Wheat:

The rediscovery of Mendel's laws of genetics in 1900 opened up a new era in crop breeding in general, and wheat breeding in particular. Although the art of plant breeding is as old as the beginning of agriculture nearly 12000 years ago, systematic research in the areas of genetics and cytogenetics, which commenced in the early part of the 20th century, created uncommon opportunities for improving the productivity, profitability, stability and sustainability of wheat production. Even before Mendel (1822-1884), plant hybridizers like Kolreuter, Knight, Gartner and Burbank were able to produce improved varieties of crops through careful observation and selection. Even the concept of sustainability to which we now attach great importance was recognised long ago as essential for sustained agricultural progress.

During the past 100 years, Mendelian genetics has helped not only to exploit naturally occurring genetic variability but has also accelerated the process of generation, manipulation and combination of new variability. For example, H J Muller, the pioneer in induced mutagenesis, wrote in 1935,

"Organisms are found to be far more plastic in their hereditary basis than has been believed, and we may confidently look forward to a future in which the surface of the earth will be over laid with luxurious crops, at once easy to raise and to gather, resistant to natural enemies and climate, and readily useful in all their parts".

Muller's prediction has since come true. The term "green revolution" coined in 1968 by Dr William Gaud was triggered by the quantum jump in wheat productivity and production brought about by the semi-dwarf wheat varieties originating from the wheat breeding programme of the International Maize and Wheat Improvement Centre (CIMMYT) in Mexico, headed by the Nobel Laureate Norman Borlaug. In India, a special stamp titled "Wheat Revolution" was released in July, 1968, by the then Prime Minister of India, Mrs Indira Gandhi. This stamp helped to raise public awareness of the role of science in bringing about revolutionary progress in wheat production. In India,

while there was a decline in per acre yield during the period 1905-1950, a linear positive increase in wheat yield has been observed between 1955-99.

We are now in a state of transition from Mendelian to Molecular breeding. However, it is clear that for success in crop improvement, we will always depend upon an appropriate blend of Mendelian and molecular breeding. Breeder's eye for selection and for spotting the winner will continue to play an important part in successful plant breeding.

During the period 1900 to 2000, the following significant developments took place with reference to the application of Mendelian genetics to wheat improvement.

- Selection from naturally occurring genetic diversity.
- Collection, conservation, evaluation and utilisation of wheat genetic resources.
- Introduction of new varieties from other countries.
- Hybridization and selection for a wide range of biotic and abiotic stresses and for grain quality.
- Induced mutagenesis and mutation breeding.
- Monosomic and aneuploid analysis
- Wide hybridization and alien gene transfer
- Exploitation of Heterosis, using genetic and chemical methods of male sterility.
- Apomixis and fixation of heterosis
- DNA marker assisted selection and breeding
- Functional genomics and molecular breeding

It should be recorded that in the early part of the 20th century, the first major success in achieving an yield revolution in crops was through the exploitation of hybrid vigour in maize. It is said that hybrid maize helped not only to revolutionaise maize production, but also helped to improve the efficiency of farm management in the United States of America. This is because of the fact that farmers who learnt the value of good agronomic management of soil health and water use in maize also began to adopt good farm management practices in other crops.

This is also true in India. The areas where the wheat revolution began, such as the Punjab, Haryana and Western Uttar Pradesh, also became the centres of origin of the rice, potato, milk and other forms of agricultural revolution. The radiating impact of the wheat revolution, which began with the breeding of semi-dwarf strains, has been immense, since improved genetic strains triggered a farm management revolution.

To quote Dr Normal Borlaug "there is no time to relax". It is projected that global demand for wheat will increase by 40% by the year 2020. Also, 67% of the world's wheat consumption will be in developing countries. Between 1961 and 1990, yield increases accounted for 92% of the additional cereal production in developing countries. In the years ahead, there is no option except to produce more from less per capita land and water resources. Can we sustain the yield revolution in wheat? It will be useful to consider this issue in the context of the genetic pathways which led to the wheat revolution of the 20th century.

A. Progress in Yield Improvement:

Wheat is a crop of great antiquity. The ancestry of the cultivated bread wheat, *Triticum aestivum* (2n = 6x = 42) has been studied in detail. Synthetic hexaploids have also been produced by crossing *Triticum turgidum* (2 n = 4x = 28) and *Triticum tauschii* (2n = 2x = 14). Wheat is the first major cereal where extensive cytogenetic analysis by several scientists like E R Sears, Ralph Riley, Hitoshi Kihara, Otto Frankel and James McKey led to important advances in crop improvement. The development of a complete set of monosomics in the wheat variety, Chinese Spring, by E R Sears and his colleagues, helped breeders to plan their work based on the location of genes in different chromosomes. A nalysis o f i nduced m utations f urther h elped i n u nderstanding genetic relationships among *Triticum* species (Swaminathan, M S, 1965).

We can identify atleast 4 major phases in the evolution of wheat breeding during the 20th century.

i. *Phase I (1900 – 1930) : Early Days of Mendelian Genetics:*

Soon after the re-discovery of Mendel's laws of genetics in 1900, systematic work on the genetics of resistance to stem, leaf and stripe rusts started. Selection from naturally occurring genetic variability also began. For example, in India an early improved wheat variety, NP 4, originated through simple selection. Soon, hybridization work started involving the use of land races. The CIMMYT publication titled, "World Wheat Facts and Trends (1995)" gives data on the extensive use of land races in the breeding programmes of all wheat growing countries. In recent years, the contributions of land races to the pedigrees of successful varieties has increased.

According to CIMMYT (1995), the more widely used land races are : Yaroslav Emmer (an emmer wheat from the former Soviet Union), Turkey (a land race grown in the Crimea by Turkish Farmers), Fife (believed to have originated in Poland), Daruma (source of dwarfing genes and believed to have originated in Korea), Rieti (an early maturing Italian land race) and Zeeuwse White (a Dutch land race). Some of the frequently used landraces from developing countries are: Hard Red Calcutta, Etawah, Indian G(all from India), and Alfredo Chaves and Polyssu (from Brazil).

During the early part of the 20th century, the major breeding challenges were in the area of resistance to rusts and grain quality improvement. A study of the yield improvement achieved between 1900 to 1930 in USA shows only limited progress. The emphasis was more on stability of production through disease resistance than on achieving quantum jumps in yield.

ii. *Phase II (1930 – 1960) : Enlarging the base of theory and its application:*

This period was marked by the introduction of cytogenetic knowledge and tools in wheat improvement. The search for genes for yield improvement started. The first breakthrough came when Japanese scientists developed the Norin 10 semi-dwarf wheat, with Daruma as the donor of the semi-dwarf character. The Norin semi-dwarf wheats

brought into the United States from Japan by Dr S D Salmon led to the breeding of the semi-dwarf winter wheat variety, Gaines, by Dr Orville Vogel in the late fifties. The same material was used by Dr Norman Borlaug in Mexico for developing semi-dwarf spring wheat (Borlaug, 1989). Other important concepts introduced during this period were shuttle breeding and international testing nurseries. The shuttle breeding programme developed by Dr N E Borlaug in Mexico involved growing alternate generations under two diverse environments. The locations were:

- The Yaqui Valley located at 27° N latitude and 49 meters elevation located in the state of Sonora in northwest Mexico
- Toluca, located at 18° N latitude and 2600 meters elevation in the state of Mexico.

These locations differed in soil type, temperature, rainfall and photoperiod. The shuttle breeding procedure led to the selection of strains possessing relative insensitivity to photoperiod as well as a broad spectrum resistance to stem rust. In addition, it helped to reduce considerably the time needed to breed a new variety.

Another important feature of this era was accelerated breeding and testing for resistance to rusts and other diseases. As early as in 1898, Farrer in Australia recognised the importance of general resistance to rust in wheat. With the discovery of physiological specialization in rust by Stakman et al (1962) and the clarification of the genetic basis of resistance (Biffen 1905, Flor 1956) the hypersensitive type of resistance was incorporated in many wheat varieties. Van der Plank (1963) defined clearly the theoretical basis of genetic resistance to rusts. Thus, this phase of wheat improvement was characterised by widening the gene pool used by breeders, incorporation of genes for the semi-dwarf plant type, shuttle breeding and breeding to meet the challenge of physiologic specialisation in pathogens.

iii. ***Phase III (1960-1980) : The Green Revolution Phase:***

This phase is also generally referred to as the **green revolution** era. It was characterised by revolutionary progress in improving wheat production and productivity in several developing countries like India and Pakistan. The introduction of the semi-dwarf plant type enabled the wheat plant to yield well under conditions of good soil fertility and irrigation water management. Farmers who were used to harvesting 1 to 2 tonnes of wheat per hectare started harvesting over 5 tonnes per ha. The various steps involved in this revolution in India have been chronicled (Swaminathan, 1993). In view of the widespread interest in this remarkable transformation in India's agricultural destiny, it will be useful to summarise some of the highlights.

The Food and Agriculture Organization of the United Nations(FAO) was established even before the end of World War II, since combating food insecurity was recognised as a major challenge of the post World War II era. During 1942-43, the Indian sub-continent witnessed a severe famine in Bengal resulting in the death of nearly three million children, women and men. This prompted Jawaharlal Nehru, the first Prime Minister of Independent India to remark in 1948, "everything else can wait, but not agriculture". Priority to agriculture was reflected in the form of land reform, expansion of irrigation facilities and greater support to research, extension and the production of

inputs, particularly seeds and fertilizer. Fertilizer trials with varieties of wheat and rice in the fifties revealed that the then cultivated varieties lodged even when about 20 kg. of nitrogen were applied per hectare.

The quest for the breeding of crop varieties capable of responding to higher levels of plant nutrition started in 1952 when, at the instance of the late Dr K Ramiah , a programme for incorporating genes for fertilizer response from *japonica* rice varieties into *indica* strains was initiated at the Central Rice Research Institute (CRRI), Cuttack, under the sponsorship of FAO and the Indian Council of Agricultural Research(ICAR). The major aim of this project was to select from segregating populations of *indica x japonica* crosses, lines which showed the ability to utilise effectively about 100 kg of N per hectare. With this quantity of nutrient supply, about five tonnes of rice per ha can be produced. This programme led to varieties like ADT 27 in Tamil Nadu and Mashuri in Malaysia. Several genetic problems like semi-sterility arose, rendering the speedy selection of high-yielding rice varieties from *indica x japonica* crosses difficult. With the advent, in the early sixties, of the semi-dwarf, non-lodging, relatively photo-insensitive varieties based on the Dee-gee-woo-gen dwarfing gene identified in China, interest in transferring genes for fertilizer response from *japonica* varieties waned. Semi-dwarf *indica* rices like Taichung Native-1, IR 8 and Jaya provided the initial material for the breeding of a wide range of high yielding rice varieties.

When I joined the Indian Agricultural Research Institute (IARI), New Delhi in late 1954, I started a research programme for developing non-lodging and fertilizer responsive varieties of wheat, on the lines of the *indica-japonica* hybridization programme in which I was earlier involved at CRRI, Cuttack. At that time, the research strategy adopted had three components. First, crosses were made between cultivated bread wheat varieties and the semi-dwarf, stiff straw *compactum* and *sphaerococcum* sub-species of T.*aestivum* as well as with the naturally occurring dwarf, Tom Thumb. Second, attempts were made to induce *erectoides* mutants in commercial wheat varieties through the use of radiations and chemical mutagens. Third, studies on the potential for increasing straw stiffness through different chemical treatments were initiated. Unfortunately, in all these three approaches, short and stiff straw was always associated with short panicles with fewer grains. The reason why straw stiffness became such an essential prerequisite for favourable response to water and fertilizer was the tendency, among the then cultivated tall wheat varieties, to lodge when mineral fertilizer was applied. Also, such lodging made it difficult to give irrigation during the grain development phase, when the crop will benefit much from water availability. Thus, with the earlier tall varieties, it was difficult to get economic response to the application of mineral fertilizers and adequate irrigation water. Average yield stagnated at less than one tonne per ha. This is why the breeding of non-lodging varieties was accorded such high priority during the fifties, when India had taken to the path of expanding the area under irrigation and manufacturing mineral fertilizers (Swaminathan, 1993).

During the late fifties, scientific publications on the work done under the leadership of Dr Orville Vogel in Washington State of the United States of America, on the transfer of dwarfing genes from the Norin-10 wheat variety to North American winter wheats, started appearing. When requested, Dr Vogel was kind enough to send seeds of Gaines, a

semi-dwarf winter wheat variety with red grains. He further indicated that Dr N E Borlaug in Mexico had semi-dwarf varieties in a spring wheat background, which will grow better under the short day conditions prevailing in India during winter months. I hence wrote to Dr Borlaug seeking his help.

In March 1962, a few dwarf spring wheat strains entered by Dr Borlaug in the International Wheat Rust Nursery and sent by the U S Department of Agriculture were grown in the fields of the Indian Agricultural Research Institute (IARI). Their phenotype was most impressive. They had reduced height and long panicles, unlike the earlier hybrids between *aestivum* and *compactum* and *sphaerococcum* and the induced *erectoides* mutants which had short height and small panicles. In 1963, Dr Borlaug visited India and sent a wide range of semi-dwarf material which provided the initial material for achieving an accelerated advance in wheat productivity and production.

In 1964, a National Demonstration Programme was started in farmers' fields, both to verify the results obtained in research plots and to introduce farmers to the new opportunities opened up by semi-dwarf varieties for improving very considerably the productivity of wheat. When small farmers, who with the help of scientists organised the National Demonstration Programme, harvested over five tonnes of wheat per hectare, its impact on the minds of other farmers was electric. The clamour for seeds began and the area under high yielding varieties of wheat rose from four ha in 1963-64 to over four million ha in 1971-72. A small Government programme became a mass movement. The rest of the history is recorded in a book on the Wheat Revolution (Swaminathan, 1993).

I anticipated in 1967, a tendency among farmers in north-west India with relatively large holdings to use high doses of fertilizers and to grow in large and contiguous areas a single genetic strain. As mentioned earlier, in my Presidential Address to the Agricultural Sciences Section of the fifty fifth Science Congress held at Varanasi in January 1968, I stressed the need for adding the dimension of ecological sustainability in programmes designed to achieve high yields per ha. My analysis led to the intensification of research on integrated pest management and integrated nutrient supply and to the development of a gene deployment strategy in wheat with reference to resistance to stem, leaf and stripe rusts.

The remarkable speed with which the high-yielding varieties were identified from the initial Mexican material and later developed within the country was the result of the multi-location testing and inter-disciplinary research organised under the All India Co-ordinated Wheat Research Project of the Indian Council of Agricultural Research. Wheat production in India rose from 10 million tonnes in 1964 to 17 million tonnes in 1968. In 1999, Indian farmers harvested about 72 million tonnes of wheat, taking India to the second position in the World in wheat production.

Rajaram (1995) has chronicled the various steps taken at CIMMYT during the green revolution period to internationalize wheat breeding. Some of the significant steps were:

- Exploitation of the spring x winter gene pool through a cooperative venture between CIMMYT and Oregon State University in the USA.

- Septoria leafspot resistance in semi-dwarf wheats through a cooperative venture between CIMMYT, Tel Aviv University in Israel and IPO, Wageningen, Holland.
- Slow rusting genes to leaf rust were identified, quantified, and bred with initial guidance from Dr Caldwell at Purdue University, USA.
- Industrial quality characters were emphasized.
- Breeding for resistance to aluminium toxicity was initiated through a cooperative venture between CIMMYT and several Brazilian Agricultural Research Institutes.
- Breeding programmes for *durum* wheat and triticale were initiated.
- Germplasm dissemination through formalized International Nurseries for bread wheat, durum wheat, and triticale were established.

Emphasis on productivity improvement was coupled with attention to stability of production. Breeding for slow rusting received particular attention. Also, the sources of resistance were kept very diverse. This helped in developing effective gene deployment strategies to ensure that widespread epidemics do not occur. For example, a high degree of stability of performance in relation to leaf rust (*Puccinia recondita f.sp. tritici*) was achieved through introduction of genes from the Brazilian variety, Frontana .

In the case of stem rust (*Puccinia graminis* f.sp *tritici*) the variety Hope has been the mainstay. The Sr-2 gene complex actually consists of Sr.2 plus 8 to 10 genes pyramided in 3 to 4 gene combinations (Rajaram, 1995). Sr-2, referred to as the **backbone gene** in stem rust resistance breeding is a slow ruster and has conferred in wheat varieties an impressive level of durability of resistance.

For resistance to stripe must (*Puccinia striliformis*), more than 8 genes have been identified and gene pyramiding has been the major pathway in resistance breeding. During the green revolution era, Karnal bunt caused by *Tilletia indica* assumed importance. Several winter x spring wheat crosses showed wide adaptation and stability. A major factor for such wide adaptation was the 1 BL/ 1RS translocation. The 1B/IR translocation carried several resistance genes, such as Lr 26, Sr 31, Yr 9 and Pm 8 (McIntosh, 1983).

During this period, crosses with *Secale cereale, Triticum dicoccoides, Triticum tauschi* and other alien species transfers were intensified. CIMMYT rendered very valuable service in spreading diverse genetic material through international screening nurseries and trials (Rajaram and Hettel, 1995).

Thus during 1900 to 1980, the Mendelian methods of selection from segregating populations, recombination through inter-varietal and inter-specific crosses and induced mutations helped to breed both *durum* and *aestivum* wheat varieties, adapted to different photoperiods and climatic conditions. Wheat productivity and production went up all over the world.

Greater interdisciplinary collaboration among breeders, plant pathologists, agronomists, physiologists, soil scientists, entomologists, nemotalogists, economists and other social scientists, climatologists and policy makers was the principal factor responsible for the

success of the green revolution. The green revolution era can also be terms **the golden age in interdisciplinary and international collaboration** in wheat improvement for sustainable food security. The concept of shuttle breeding transcenceled continental boundaries and a global college of wheat scientists emerged. Above all, the green revolution showed how to generate synergy between technology and public policy.

iv. *Phase IV (1980 – 2000) : Transition from Mendelian to Molecular Breeding:*

The last 20 years have witnessed great progress in using sophisticated approaches to wheat breeding. Hybrid wheat is reaching the possibility of large scale commercial cultivation. The use of genetic-cytoplasmic male sterility and of chemical hybridizing agents (CBA) are responsible for progress in the commercial exploitation of hybrid wheat. Different management practices such as lower seed rate, raised bed planting, split nitrogen application and different row width are being tried to enhance the expression of hybrid superiority. The cultivation of hybrid wheat is slowly gaining in momentum in South Africa, Australia (New South Wales), China, Argentina and France. The use of wild relatives in genetic engineering is growing (Khush and Baenziger, 1996). The global average yield of wheat is 2.5 t/ha; the low average yield of wheat is because of large areas of wheat being under rainfed conditions. Progress in improving yield is however steady, as is clear from the data of yield and area in Hungary. The factors governing wheat yields in Australia have been summarised by Donald (1982). Some of the critical issues in yield improvement in wheat have recently been discussed in a book edited by Satorre, EH and G A Slafer (1999). The explosive progress being witnessed in the areas of functional genomics and molecular manipulation will influence very much future trends in wheat breeding in the 21st century. (Briggs, 1998; Susan McCough, 1998), Qualset etal (1999) have stressed the value of expressed sequence tags (ESTs). Several thousand RFLP markers, in addition to AFLP, SSR, morphological and isozyme markers have been mapped. Close to one hundred QTLs have been identified. This should help to accelerate the pace of breeding for yield . So far, advances in yield improvement have been associated with increases in harvest index (i.e. grain - straw ratio). Further advances will depend upon greater biomass production and not merely on partitioning the phytosynthates.

B. **Challenges Ahead:**

At the dawn of the 21st century, we can look back with pride and satisfaction on the revolution which farm men and women have brought about in our agricultural history during the 20th century. Writing about the role of Indian farm families in initiating the Wheat Revolution, I wrote in the Illustrated Weekly of India in 1969 and I quote:

"Brimming with enthusiasm, hard-working, skilled and determined, the Punjab farmer has been the backbone of the revolution. Revolutions are usually associated with the young, but in this revolution, age has been no obstacle to participation. Farmers, young and old, educated and uneducated, have easily taken to the new agronomy. It has been heart-warming to see young college graduates, retired officials, ex-armymen, illiterate peasants and small farmers queuing up to get the new seeds. At least in the Punjab, the

divorce between intellect and labour, which has been the bane of Indian agriculture, is vanishing".

While we can and should rejoice about the past achievements of farmers, scientists, extension workers and policy makers, there is no room for complacency. We will face several new problems, of which the following are important.

- First, increasing population leads to increased demand for food and reduced per capita availability of arable land and irrigation water.
- Second, improved purchasing power and increased urbanisation lead to higher per capita food grain requirements due to an increased consumption of animal products.
- Third, marine fish production is tending to become stagnant and coastal aquaculture has resulted in ecological and social problems.
- Four, there is increasing damage to the ecological foundations of agriculture, such as land, water, forests, biodiversity and the atmosphere and there are distinct possibilities for adverse changes in climate and sea level.
- Five, while dramatic new technological developments are taking place, particularly in the field of biotechnology, their environmental, food safety and social implications are still being debated.
- Finally, gross capital formation in agriculture is tending to decline in both public and private sectors during the present decade. The rate of growth in rural non-farm employment has been poor

Since land and water will be shrinking resources for agriculture, there is no option in the future except to produce more food and other agricultural commodities from less per capita arable land and irrigation water. In other words, the need for more food has to be met through higher yields per units of land, water, energy and time. It would therefore be useful to examine how science can be mobilised for raising further the ceiling to biological productivity without associated ecological harm. It will be appropriate to refer to the emerging scientific progress on the farms as an "*ever-green revolution*", to emphasise that the productivity advance is sustainable overtime since it is rooted in the principles of ecology, economics, social and gender equity and employment generation.

The green revolution based on Mendelian genetics has so far helped to keep the rate of growth in food production above population growth rate. The green revolution, was however, the result of public good research, supported by public funds. The technologies of the emerging gene revolution based on molecular genetics in contrast, are spearheaded by proprietary science and can come under monopolistic control. How can we take the fruits of the gene revolution to the unreached? This is a challenge which this Congress should address.

I would like to list 5 major challenges which will confront the wheat scientists during this century.

i. *Ecology:*

Ecological sustainability of high productivity will be an important determinant in relation to the choice of technologies. For example, if hybrid wheat can enable us to produce 8 to 10 t/ha, over 300 kg. of nitrogen will be needed by the crop. It is obvious that if the nutrient needs of hybrid or other high-yielding wheat varieties are to be met entirely through mineral fertilizers, there will be serious environmental problems including nitrate pollution of ground water. Hence, success in achieving high productivity on a sustained basis will depend upon our ability to develop new methods of feeding the plant. Research on breeding and feeding should be carried out concurrently by a team of breeders, physiologists, agronomists and soil scientists.

ii. *Equity:*

The Convention on Biological Diversity (CBD) stipulates that plant exploration, collection and introduction should be based on the principles of prior informed consent and equity in benefit sharing. Therefore exchange of wheat genetic resources in the future will be possible only on the basis of Material and Knowledge Transfer Agreements.

iii. *Concerns relating to genetically modified organisms (GMOs):*

There are growing public and political concerns relating to GMOs. The concerns relate to food and environmental safety and bioethics. It is essential that these concerns are carefully addressed through a mechanism for risk-benefit analysis which inspires public confidence. An integrated disease management strategy should be developed to ensure that GMO's with novel genetic combinations for disease resistance do not break down due to the emergence of new physiological strains of pathogens. Also, regulatory procedures should be transparent and should inspire public confidence. There is also need for integrating molecular breeding with organic farming methods.

iv. *Expansion of Proprietary Science:*

The world is witnessing an expansion of proprietary science governed by Intellectual Property Rights (IPR). Public good research supported from public funds, in contrast, is shrinking. What will be the impact of such a situation on international varietal or other trials organised by CIMMYT? Is the golden age of cooperative research coming to an end? How can we find a balance between public good and private profit?

v. *Climate change and safeguarding Genetic Diversity:*

Will molecular breeding resulting in "super wheats" lead to a high degree of genetic homogeneity in farmers' fields? We know that genetic homogeneity will enhance genetic vulnerability to biotic and abiotic stresses. Hence, we should foster an integrated programme of pre-breeding and participatory breeding. Pre-breeding will help to generate novel genetic combinations, while participatory breeding with farm families will help to combine genetic efficiency with genetic diversity. Numerous location specific varieties can be developed in this manner. This will be the most effective of meeting challenges arising from potential changes in temperature, precipitation and sea level as a

result of global warming arising from the growing imbalance between carbon emissions and absorption.

C. Bridging the Technological Divide:

Technological divide has been an important factor in enlarging the rich-poor divide both among and within nations since the onset of the Industrial Revolution in Europe. With explosive progress in many areas of technology, like information, space, bio- and nano-technology, this divide is increasing. The challenge now is to enlist technology as an ally in the movement for economic, social and gender equity. Therefore, MSSRF chose the imparting of a pro-nature, pro-poor and pro-women orientation to technology development and dissemination as its main mandate when it started functioning in Chennai in 1989. In order to assist in the articulation of concepts, opportunities and operational strategies which can help to reach the unreached in knowledge, skill and technological empowerment, an annual inter-disciplinary dialogue is being organised since 1990, under the generic title, "New Technologies : Reaching the Unreached". The first in this series related to Biotechnology. The recommendations made at this Dialogue resulted in the organisation of Biovillages.

The 1992 Dialogue was on Information Technology, the proceedings of which were published by MacMillan India Ltd early in 1993. This dialogue gave birth to the Information Village project in the Union Territory of Pondicherry, with financial support from the International Development Research Centre (IDRC) of Canada. Since information to be of value to rural women and men, should be location and time specific, the term Knowledge Centre was used to stress the need for converting generic into location specific information and for training local women and men for adding value to information. Value-added information is appropriately referred to as knowledge and hence the title "Knowledge Centre".

MSSRF's experience in bridging the digital divide in rural India has provided the following guidelines for harnessing this powerful tool for alleviating poverty and for ensuring sustainable ecological food and nutrition security.

- Connectivity and content should receive concurrent attention
- Constraints must be removed on the basis of a malady-remedy analysis; for example, wired and wireless technologies could be used where telephone connections are not adequate or satisfactory. Similarly solar power can be harnessed where the regular supply of power is irregular. The principle should be that there is a solution for every problem.
- The information provided should be demand driven and should be relevant to the day-to-day life and work of rural women and men.
- The Knowledge Centres should operate on the principle of social inclusion, thereby presenting a win-win situation for all.
- The programmes designed to empower rural families with new knowledge and skills should be designed on the **antyodaya** model, where the empowerment starts with the poorest and most underprivileged women and men.

- The local population should have a sense of ownership of the Knowledge Centre. It should be client managed and controlled, so that the information provided is demand and user driven.
- The local population should be willing to make contributions towards the expenses of the Knowledge Centre, so that the long term economic sustainability of the programme is ensured. Financial contribution generates a sense of ownership and pride.
- To be effective, the following linkages will have to be developed

  a. **Lab to Lab** : This will involve organising a consortium of scientific institutions and data providers.
  b. **Lab to Land** : This will involve symbiotic linkages between the providers of information and the users, so that the information disseminated is relevant to the life and work of rural families.
  c. **Land to Lab** : There is considerable traditional knowledge and wisdom concerning the sustainable management of natural resources, particularly water. Therefore, the technical experts should not only learn from traditional knowledge and experience, but also take steps to conserve for posterity dying wisdom and dying crops.
  d. **Land to Land** : There is much scope for lateral learning among rural families; such learning has high credibility because the knowledge is coming from a fellow farm woman or man who would have subjected the information to an impact analysis from the point of view of its economic and social relevance to the population.

The movement for establishing Rural Knowledge Centres based on an integrated application of new and conventional communication technologies, like the internet, cable TV, community radio and the local language press, can become an effective tool for harnessing the power of partnership among professionals, political leaders and public policy makers, the general public and the rural families.

Based on the above "learning" by MSSRF scientists, the application of ICT techniques to meet the food and water security as well as livelihood needs of the rural families is being intensified and extended through a Virtual Academy for Food Security and Rural Prosperity (abbreviated as VARP). Agriculture, comprising crop and animal husbandry, fisheries, forestry and agro-processing, is the backbone of the livelihood security system of rural areas, where more than 70% of India's population live. A considerable proportion of this population have no assets like land, livestock, fish pond or any commercially viable enterprise. The poor are also often illiterate. Therefore the Virtual University will give particular emphasis to fostering sustainable livelihood options both in the farm and non-farm sectors. In addition to location specific weather information, the five foundations of sustainable development identified at the World Summit on Sustainable Development held at Johannesburg in 2002, viz., water, energy, health, agriculture, biodiversity and ecosystem management (WEHAB) will receive particular attention.

IV. Conclusion:

The on-going technological change in agriculture has opened up new opportunities for farming families with small holdings to improve concurrently productivity, profitability and sustainability. More efforts are needed in the area of blending traditional technologies and ecological prudence with frontier technologies like biotechnology, information and communication technologies, space, nuclear and renewable energy technologies. Also, there is need for more action research for standardising methods of reaching the unreached and including the excluded in terms of knowledge and skill empowerment.

The following case studies presented in Boxes 1 to 3 provide insights into methods of ensuring that new technologies benefit to vulnerable section.

a. Community Gene, Seed, Water, Food Banks in the Koraput district of Orissa.
b. Biovillages in Pondicherry and
c. Virtual Academy for Food Security and Rural Prosperity.

Al these examples involve a holistic approach to the technological empowerment of the poor. We need to replicate them on a wide scale, so that unique achievements become more universal.

Advances in technology, particularly in the area of genetic modification, are proceeding at a pace faster than the public understanding of their potential risks and benefits. In the United Kingdom, a series of 670 public meetings were organized during the summer of 2003 to discuss the pros and cons relating to GM crops. About 20,000 participants attended these debates. The results of this unique National debate reveal a British public uneasy with the potential environmental, health and socio-economic effects of transgenic crops. More than half the participants who returned feed back forms after the debate said they never wanted to see GM crops in Britain, according to a report released by the UK Government of 24 September, 2003 (Nature, 25 September 2003). This underlines the need for transparent at participatory systems of conducting risk-benefit analysis. Above all, there is need to ensure that there is no mismatch between progress in science and the public understanding of its implications.

Box 1

Community Food and Water Security Programme

Tribal families in the Koraput District of Orissa have initiated a Community Food and Water Security System consisting of the following four components.

A. Field Gene Bank

This involves the *in situ* on farm conservation of land races and local varieties of crops, through the revitalisation of the conservation traditions of rural and tribal families, particularly women.

B. Village Seed Bank:

The rural families often lose their seed stocks due to drought, flood and other natural calamities. Therefore, in each village a Community Seed Bank will be established through a seed security self-help group, supported by micro credit.

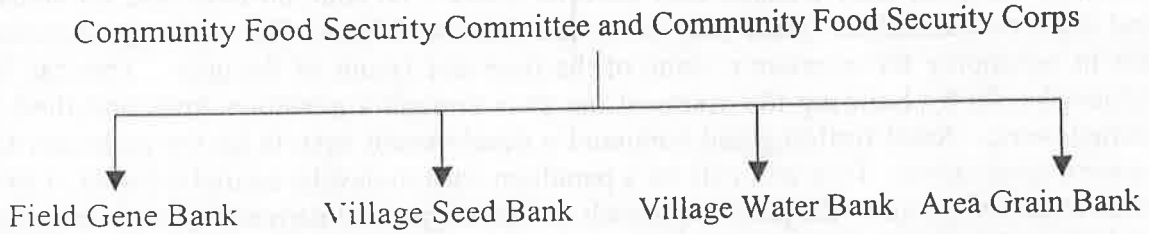
C. Village Water Bank:

Through community partnership, the village community conserves rain water, use groundwater sustainably and adopt conjunctive use of rain, surface, ground and recycled waste water. The village Water Bank System is managed by the Gram Sabha.

D. Block Grain Bank:

It is important to maintain grain reserves of local staples to meet emergencies like drought and natural calamities. For this purpose, a Community Grain Bank has been established at a suitable location, each to serve about 25,000 families. Thus the Community Food Security System fosters a sustainable people-centred and people-controlled method of ending food insecurity at the level of each individual.

Community Food and Water Security System



Such a system pays concurrent and adequate attention to all the links in the conservation - cultivation - consumption chain. It helps the conservation of both genetic diversity and food and water security. This work won the Equator Initiative Award at the World Summit on Sustainable Development at the Johannesburg in September 2002.

Box 2

Biovillages : Ecotechnology in Action

The 20th century ended with spectacular achievements in every field of human endeavour – culture, sports, science, technology and the spread of democratic systems of governance. At the same time, it ended with nearly a billion people going to bed partially hungry and with the universal goals of "food, health, literacy and work for all" still remaining distant dreams. The uneven progress in taking the benefits of modern science and technology to the poor, particularly in the areas of medicine, agriculture, informatics and biotechnology have led to increasing rich-poor divides in the following areas of relevance to human well-being.

- Demographic divide
- Digital divide
- Technological divide
- Economic divide

Thus, an objective balance sheet of human achievements during the 20th century reveals both "bright" spots in relation to technology–triggered prosperity, and "hot spots" in relation to poverty, deprivation and gender inequity.

The M S Swaminathan Research Foundation was established in Chennai in India in 1990 to address the issues of environmental degradation, population explosion, poverty and gender injustice at the micro-level in a few social "hot spot" locations in India. The Foundation's mandate is to impart a pro-nature, pro-poor and pro-women orientation to a job-led economic growth strategy in rural areas. The emphasis on jobs or livelihoods is because of the fact that jobless economic growth is joyless growth. Further, inadequate purchasing power is the principal cause of household food insecurity.

The Union Territory of Pondicherry was chosen for initiating an adventure in the technological, skill and information empowerment of women and men living in poverty. The poor are poor only because they have no assets – no land, no livestock, no houses and often no education. Their only assets are time and labour. The challenge therefore lies in enhancing the economic value of the time and labour of the poor. This can be achieved only by building the assets of the poor through a transition from unskilled to skilled work. Asset building and community development have to be the pathways for poverty eradication. This will call for a paradigm shift in developmental mindset, a shift from a patronage and "do good" approach to one of genuine partnership with the poor. Mahatma Gandhi in India deprecated the approach of "poor feeding" and wanted Governments and Community to enable everyone **to earn** his or her daily bread.

The above considerations led to the birth of the **Biovillage** movement in Pondicherry. The term "biovillage" is derived from the Greek word **bios** which means living. This is another term for human centred development. Poverty persists under conditions where the human resource is undervalued and land and material resources are over valued.

Therefore, the Biovillage model of rural and agricultural development is based on the foundation of sustainable human development. It pays concurrent attention to:

- Natural resources conservation and enhancement
- Poverty eradication
- Womens' empowerment

The Biovillage programme was initiated in 1992 in 3 villages with initial support from the Asian Development Bank and the International Fund for Agricultural Development (IFAD). This programme was expanded in 1996 to cover 19 villages in Pondicherry with support from UNDP as well as the Hunger Projects of Japan, Sweden and India. The principal components of the programme are:

- Eco-farming leading to the substitution of chemical and capital with knowledge and biological inputs like vermiculture, bio-fertilizers and bio-pesticides; this in turn creates new eco-jobs in villages.
- Increased avenues for rural non-farm employment based on opportunities for remunerative marketing.

Thus, integrated attention is paid to on-farm and non-farm employment. The new livelihood opportunities are based on an analysis of the resources available to the family. Thus, landless labour families take to household mushroom cultivation, ornamental fish rearing, coir rope making, rearing small ruminants under stall fed conditions and other enterprises which are within their resource capability. Those with a small plot of land take to hybrid seed production, floriculture, dairying, poultry and other high value enterprises. Groups of assetless women take to aquaculture in community ponds. The asset building exercise is based on micro-level planning, and micro-enterprises supported by micro-credit.

Multiple livelihood opportunities help to enhance total income and minimize risks. The key inputs are education and training, social mobilization and producer oriented marketing. The self-help groups operate a Community Banking system, which makes available credit to its members on terms decided by themselves. The system involves low transaction costs and a high percentage of loan recovery. Over a period of time, the training is done by local women or men. The pedagogic methodology is learning by doing and hence formal literacy is not a pre-requisite for admission to the training courses. A fundamental principle guiding the biovillage movement is **inclusion** and not **exclusion**. The women and men who become trainers are inducted into a **Biovillage Corps of Rural Professionals**. Most of the nearly 100 Biovillage corps members inducted so far, are either semi-literate or even illiterate. They are the prime-movers and doers of the biovillage movement. They have demonstrated that the rural poor can take to new technologies like fish to water, provided they are enabled to learn through practical work experience and not through class room lectures.

How can such a biovillage movement become self-replicating? With the help of the Pondicherry administration, it is proposed to convert all the 270 villages in the Territory into Biovillages by August 15, 2007, which marks the 60th anniversary of our

Independence.. Accelerating the pace of spread of the movement has been facilitated by the following institutional structures.

- A Biovillage Council comprising two members from each village (one female and one male) provides the overall policy oversight and undertakes the strategic planning.
- A Biocentre serves as a single stop resource center, providing the needed inputs, information and training. The Biocentre is the hub of the biovillage movement.
- A computer aided and internet connected rural knowledge center provides the information needed by the rural families in the areas of health, education, entitlements, ecotechnologies and marketing. At the Knowledge Center, owned and operated by the local village community, trained women help to convert generic into location specific information.

The knowledge centers also provide information on the population supporting capacity of the village ecosystem and on culturally and socially compatible family planning methods.

Thus, the Biovillage model of sustainable human development helps to bridge at the same time the demographic, digital, economic and technological divides. It promotes harmony with nature and with each other. It is based on ecotechnologies which are environmentally benign, economically viable and socially equitable. It shows the path to an ever-green revolution in agriculture, where productivity advances can take place in perpetuity without associated ecological or social harm. The choice of technologies is flexible depending on local desires, capabilities and opportunities. While the concept has certain ground rules like "a pro-nature, pro-poor and pro-women" orientation to technology dissemination and a partnership and not a patronage approach to poverty eradication, the precise action plan is developed by the people of the village in partnership with professionals. The virtual colleges linking scientists and rural families help to hasten the spread of such symbiotic partnerships. Under UNESCO's Asian Ecotechnology Network, the biovillage paradigm of sustainable human development is now being spread to other parts of India and to other nations. The Biovillage programme has led to the emergence of many new voices and leaders in the villages. They take over the leadership and ensure the replicability and sustainability of the programme.

Box 3

MSSRF Computer-aided Rural Knowledge Centres, Pondicherry

Empowering the Weakest

Gender concerns are central to the project and we believe that incorporating this concern is essential for project success. Due to a deliberate decision, more than half the volunteers operating the KCs are women. This has positively reflected on the increase in the number of women users. In the evenings, some KCs provide counseling to women. Most of them form self-help groups and use the loans to educate their children and start cottage industries. KCs help women obtain training related to new economic opportunities such as incensestick manufacturing or mushroom production. By handling computers and answering questions posed by men, women are able to gain new confidence and status within the community. In the fishing village, there are fewer women users who get news through the public address system. Many women report that they do not have enough time to visit the centre due to the demands of housework and labour. Some women obtain information from other women who have visited the KC (see box 1).

In the village of Embalam, the century-old temple has two doors. Through one lies tradition. People from the lowest castes and menstruating women cannot pass its threshold. Inside, the devout perform daily pujas, offering prayers. Through the second door lies the Information Age, and anyone may enter. In a rare social experiment, the village elders have allowed one side of the temple to house two solarpowered computers that give this poor village a wealth of data, from the price of rice to the day's most auspicious hours.

Here "anyone" includes the Dalits (socially underprivileged sections of the community). Caste-based division is still a problem in southern India despite the enforcement of strict laws. Our knowledge centre at Embalam has made a minor dent in the problem. A new knowledge centre in Thirukanchipet, a village of Dalits, has led to another minor social revolution. Although the village KC is located in a Dalit locality, upper caste men and women visit the centre to obtain information.

Information from the computers in this area, where people live in thatched mud huts, has saved the life of a milk cow named Jayalakshmi, prevented the blindness of an old woman named Minakshi, and routinely warned fishermen of stormy weather that can claim lives. Some months back, Subrayan Panjaili...who cannot read or write, sat in the courtyard of her small home in the village of Kizhur, in Pondicherry, with the family's only milk cow. For five days and nights, the cow moaned while in labour. Something had gone wrong and she was unable to deliver her calf. Mrs. Panjaili grew ever more fearful that the cow would die. "This is the only good income we have," she said, explaining that the four gallons of milk the cow produced each day paid the bills. Word of Mrs. Panjaili's cow soon spread to Govindaswami, a public-spirited farmer. The village's computer, obtained through the MSSRF, is in the anteroom of his home. The computer is operated full time and for no pay by his 23-year-old, collegeeducated daughter, Ezhilarasi, who used it to call up a list of area veterinarians. One doctor arrived

that night and, by the light of a bare electric bulb, stuck his arm into Jayalakshmi, pulled out the calf's spindly leg and tied a rope to it, then dragged the calf into the world.

No special efforts are made to promote access to ICTs among the poor. Our goal is to empower them to improve their standards of living through better access to useful and relevant information. Many "telecentre" projects, in our opinion, make the cardinal mistake of putting the technology ahead of the people. For us, the people, their context, and their needs come first. Then comes the content that can satisfy those needs. Technology is just an enabler to deliver the content in a cost-effective manner.

Building Social Capital

In the beginning, we selected two private houses in which to set up the knowledge centres. After six months, we realized that the private houses were not allowing socially underprivileged people inside. The owners shared the information only with their friends and relatives. In one private house, they operated the centre at irregular hours. Noticeable damage to equipment was also discovered.

In Embalam, a washerwoman, who collected clothes from her clients is now a volunteer operating computers and dispensing information. In Thirukanchipet, the *Dalit* landless labourers used to get their tea at the local tea stall served in glasses meant only for their caste. After some of the *Dalits* started working in the Thirukanchipet KC, they became emboldened to challenge this practice. They started to write poems of Bharati condemning caste-based discrimination on KC notice boards. Today, there is only one set of glasses in the tea stall. In yet another development, landless labourers who received part of their wages in kind now get the correct amount of wages, fixed by the Department of Labour.

We now have a close relationship with government departments. The Department of Science and Technology, Government of Pondicherry, sanctioned the cost of wireless technology for five KCs. The Department of Agriculture hopes to link its farm clinics to our hub. The Department of Statistics uses our network to disseminate agriculture-related information to villagers. Now field supervisors use our KCs to transmit statistical data collected in the field to their head office. We plan to charge for this service after six months. The payment will go directly to the KCs from the Department of Statistics.

The police and fisheries departments already share their contents with our hub. The Department of Education has also shown interest in linking its adult education programme with the KCs. They have also requested us to guide them to frame a curriculum for the Early Childhood Education Programme (Sarva Shiksha Abigyan), a Government of India Programme. We have already submitted some publications produced by our foundation. The District Rural Development Agency (DRDA) also hopes to link more than 500 women's self-help groups (SHGs) (micro credit and savings groups) to rural KCs to increase their knowledge and income.

We provide content for many All-India Radio (AIR) programmes relevant to rural communities. AIR Pondicherry, has broadcast the series "Silicon Valley" in which people are interviewed who benefited from the KCs. Today, government departments aim to set up information kiosks in other villages. They have already started to implement ICT applications in their work from the impact of our village KC programme.

CULTURAL CHANGE

Coping with Cultural Change

ICTs solve health problems resulting from cultural attitudes. Women's groups in Embalam and Kizhoor made it clear that cultural attitudes prevented them from discussing their health problems, especially diseases and disorders of the reproductive tract, with male doctors and younger females. Because they are in need of such information, arrangements were made with a senior professor of the Gynecology Department in Jipmer Hospital in Pondicherry to interact with around thirty women from Kizhoor and Embalam. We developed a multimedia presentation with rich graphics as a result of this meeting. The gynecology department has prepared information on prevention of many related disorders. We developed multimedia flash cards with relevant information for use by women showing minimum guidance.

Procurement of paddy seeds. Panchali lives in Kizhoor village, just opposite the local KC. When asked about the impacts of the KC, she explained the benefits derived from the information obtained from the centre. During the rice season, she obtained information on procuring paddy seeds for her land. Volunteers at the KC guided the female farmer to approach Ariyur PASIC depot where the government was selling seeds to farmers at a subsidized rate. She recalled that only five years previously she utilized the government subsidy with the help of the information obtained from the *gramsevika* (rural social worker). Since then, she has been able to secure government benefits with the help of the volunteers in the KC. Without much difficulty, she can procure paddy seeds in time for sowing. Due to the availability of timely information, she was able to save both time and money.

Paddy price information. Ms. Rengalakshmi is an agricultural labourer who lives in Kizhoor. She was of the view that the prevailing market prices of paddy in Pondicherry were only known to landlords and not to labourers. Labourers who do paddy harvest work are given wages in kind. Paddy price information is therefore vital but agricultural labourers do not have access to such price information. Landlords used to exploit labourers by paying lower quantities of paddy in lieu of wages. Today, paddy price information is available through the KC.

All-female management of a KC in a temple - Embalam. Sundary is one of the four women volunteers who manage the KC located in Amman Temple. She commented that many people in the village and even from neighbouring villages visited her KC for information regarding agricultural prices, government schemes, and the list of people below the poverty line. Around twenty women took out a Janatha insurance policy after finding out about the scheme from the KC. People frequently asked for women- and

childrelated health information. Free medical check-ups for eye problems and free eye operations arranged by this KC have been well received. During the general election, the KCs explained to people how to record their votes in the electronic voting machine through the use of visual information. Sundary observed that after taking up voluntary work, she was given the chance to visit Chennai and Pondicherry for training and met many visitors while acquiring useful knowledge and providing information to villagers. She added that the workshops on gender issues and training gave her additional confidence. Initially, those who made unfavourable comments have now started to visit the KC for information - so that all four volunteers can now operate the personal computer (PC) and other equipment without fear. She noted that they also felt confident to speak at public meetings. Rukmani, another volunteer, gave the following account:

The siren kept in the KC is useful to agricultural coolies (workers), particularly for women who go to the field and come back on time. Previously, some landlords used to cheat the coolies by telling them that their working time is not yet over. Another impact is that schoolchildren and teachers come to use our computers. The teacher who is giving tuition to some students comes to the KC with his students and uses the centre's computer, and CDs related to plants and animals.

Furthermore, she adds:

..... the VVV Club for Embalam women regularly conducts meetings in the KC. Members gather information from the KC... the local milk cooperative society has asked us to lead their savings groups and two of our KC volunteers agreed to it... we feel equal when we are asked to decide about the location for the site, to organize the MoU signing ceremony between the temple trust and MSSRF, and everyday we are acquiring new knowledge and our children also benefit by coming to the Centre.

Leadership. The Embalam KC was established in January 1999 with the signing of a memorandum of understanding (MoU) with the temple trust. The temple trust is one of the formal village institutions consisting of five members with the government appointing the members. Supporters of the ruling party are usually appointed. There are around thirteen women's self-help groups in the village. The trust gave the space and the women's groups agreed to manage the centre by nominating four volunteers, all of whom are high school graduates and married.

In the year 2000 the then ruling *Dravida Munnetra Kazhagam* (DMK) state government was dismissed and the Congress party formed the new government with support from regional parties. This created problems in the village institution. The ruling party tried to appoint its own party cadres as temple trustees, for which there was resistance from the opposition party. Congress wanted to have control over the KC. This resulted in conflict between the two parties and four rounds of discussions were held in an attempt to resolve the conflict. Finally, male members agreed to hand over the KC management to the women's groups in the village. They took this decision based on the assumption that the women were apolitical. Since women are not actively aligned to political parties, the arrangement is working smoothly.

Women-run KCs attract 12 per cent more female users than others. The female members seek additional information on vegetable prices, pre- and post-natal care, employment opportunities, and micro-enterprises. The centre also provides information on agriculture, training, weather forecasting, and so forth. Volunteers also said that many female members are also visiting the KC to discuss personal family problems. The women members feel that separate counseling centres for women do not exist in the villages. In future, they expect this kind of service through the KC. This is an unexpected outcome. This KC can be termed women-responsive and women-oriented.

Women volunteers who are running the KCs and managing the ICTs feel that they are looked upon as information providers. They feel proud of their new status despite initial adverse comments from the community. Volunteers have also started collecting information on indigenous knowledge systems and developing some useful brochures in Tamil for display in the news bulletins.

DRAFT

CHRONIC POVERTY IN RURAL AREAS: THE ROLE OF GOVERNMENT POLICY

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DRAFT

CHRONIC POVERTY IN RURAL AREAS: THE ROLE OF GOVERNMENT POLICY

P.V. Thomas

Backdrop

The socio-economic transformation of the rural hinterland has been the central theme of planned development in India from inception. In fact, even during the struggle for freedom, Indian nationalism had a strong flavour of economic philosophy and social reform. Freedom was considered the indispensable means to overcome mass poverty and reconstruct the entire fabric of the country's economic and social milieu. Dadabhai Naoroji's paper on "The Poverty of India" published way back in 1876, was the curtain raiser for poverty-centred concerns which culminated with Mahatma Gandhi's call for the emancipation of the depressed and underprivileged. Planning in the post independence era, therefore, entailed not merely development for economic progress but had revolved around the axis of social justice. In December 1954, the Indian Parliament adopted " socialist pattern of society as the objective of social and economic policy. This implied that economic development should encompass the less privileged classes of the society and there should be progressive reduction in the concentration of incomes and wealth. Although, there has been a paradigm shift in the last decade or so in favour of a greater role for market forces, issues relating to poverty form the warp and weft of planning. The recognition of the need for a safety net strategy in the new economic policy underscores the fact that economic efficiency considerations has to accommodate social justice as well.

Concepts & Measurement of Poverty

While poverty in common parlance is understood to be a state of deprivation, the conceptualisation of poverty and its measurement has been a phenomenon of the post-colonial era with the emergence of nascent economies struggling to break the vicious circle of poverty through the intervention of the government and the recognition for providing aid for anti-poverty programmes by international donor agencies. Although both economists and sociologists have dwelt on poverty, the issues relating to poverty were brought centre- stage in the distribution theory, which has developed into a distinct school of thought. While terms such as 'standard of living', 'income', and 'income distribution' are mainly used in Economics, those of 'class' 'stratification' and 'marginality' are expressed exclusively in sociology. This was the harbinger of the rise of two distinct and opposing blocs in the last century giving a further impetus to the concern for removal of poverty.

The concept of poverty is both absolute and relative and its definition is bound to be in some degree arbitrary. In general terms it can be described as a condition which falls below the minimum standard of living consistent with human dignity as expressed by the

International Development Strategy. In more precise terms a poverty line income is determined in the light of the Government's best estimate of the cost of a minimum 'basket' of necessities (Franklin, 1967). Numerically the poor are seen as a residuary category comprising the unemployed, under-employed and those working for long hours at low wages. While the income level is a popular perspective on poverty, basic needs provides yet another outlook of poverty as deprivation of material requirements for minimal acceptable fulfillment of human needs . Apart from food it includes basic health, education, housing, nutrition and so on. Poverty is also seen as absence of some basic capabilities to achieve some minimum acceptable level of living such as being well nourished, adequately clothed, a comfortable dwelling place, access to safe drinking water and sanitation and such other needs Income distribution inequalities have traditionally been gauged in terms of differences between the relative shares of various groups in total population and in total income. This type of measure attempts to survey income inequalities for the entire population and as such may be criticised for its insensitivity to inequalities in the lower segments of the distribution (Ahluwalia, 1974). Poverty can also be expressed in terms of absolute levels of nutrition, calorie intake, health standards, educational attainment and so on. The most simple and commonly used measures of the incidence of absolute poverty consists of establishing minimum income or calorie standards called the "poverty line". The group of individuals or families below this line constitutes the main target of redistribution policies (Sen, 1976). Estimates of poverty are being used not only for evaluating development efforts but overtime has become an important tool for allocation of resources for poverty alleviation programme among various states. It is, therefore, imperative that a commonly acceptable and representative quantitative index for poverty should be constructed.

Definition of Poverty Line

A poverty line dividing the poor from the non-poor is used by putting a price on the minimum required consumption levels of food, clothing, shelter, fuel, health care etc. The definition of poverty line in the Indian context was attempted for the first time in 1962 by a working group of eminent economist and social thinkers. Based on the recommendations of the Nutrition Advisory Committee of the Indian Council of Medical Research (ICMR 1958) regarding balanced diet the working group set up by the Seminar on Some Aspects of Planning (1962), after considerable discussion on minimum standard of living recommended that :

1. The National minimum of each rural household of 5 persons should not be less than Rs.100 per month in terms of 1960-61 prices or Rs.20 per capita. For urban areas the figure will have to be raised to Rs.125 per month per household or Rs.25 per capita to cover the higher prices of the physical volumes of commodities on which the National Minimum is calculated.

2. This National minimum, excludes expenditure on health and education both of which are expected to be provided by the State.

3. An element of subsidy in urban housing will have to be included after taking Rs. 1 0 per month or 1 0% as the rent element payable on the proposed National Minimum of Rs. 100 per month.

Dandekar and Rath (1 97 1) in their seminal work on poverty used an average norm of 2250 calories per capita per day for both rural and urban areas as a criterion to define the poverty line. On the basis of National Sample Survey Data on consumer expenditure this translated into an annual per capita expenditure of Rs. 14.20 per month at 1960-61 prices in rural areas and Rs.22.60 correspondingly for urban areas. The poverty norm proposed by the Working Group was used by the Planning Commission's paper on "Perspectives of Development" (1974) to derive the target rate of growth required under assumptions of invariant income distribution to ensure the minimum level of living in the time horizon of 1961-76.

With the aid of later data availability, increasing methodological sophistication and emerging concerns and insights, the "Task Force on Projections of Minimum Needs & Effective Consumption Demand" (1979) redefined the poverty line. The methodology as formulated by the Task Force has since been used in estimating the incidence of poverty in Planning commission. The Task Force used the age-sex-activity specific calorie allowances recommended by the Nutrition Expert Group (1 968) to estimate the average daily per capita requirements for rural and urban areas using the age-sex-occupational structure of the respective population as projected for 1982-83. For reasons of convenience the calorie norms were rounded off to 2400 calories per capita per day for rural areas and 2100 calories per day for urban areas. In order to work out the monetary equivalence of the poverty lines norms, the 28th round (1973-74) NSS data relating to house hold consumption both in quantitative and value terms were used. The concept of poverty line used was partly normative and partly behavioural. It focuses on the purchasing power needed to meet the specific calorie standard with some margin for non-food consumption.

The Task Force (1979) defined the poverty line as the per capita expenditure level at which calorie norms were met on the basis of All India consumption basket for 1973-74. It was equivalent to Rs.49.09 and Rs.54.64 per capita per month for rural and urban areas respectively at 1973-74 prices. Poverty estimates are being made by Planning Commission based on the recommendations of the Task Force using the NSS data on house hold expenditure collected at an interval of five years. However, adjustments are made by Planning Commission in the NSS data on distribution of house holds by consumption expenditure levels. Although, the price structure of the consumption basket and the price trends across the States are identical there are important inter-state differences in terms of population structures, activity status, climatic and topographical considerations which should be reflected in calorie requirements. On practical considerations the Planning Commission had adopted the all India calorie norm and used a common deflator for all the states for estimating the incidences of poverty.

EXPERT GROUP METHOD

The poverty line defined by the Task Force at 1973-74 prices was being updated for the reference year using the implicit CSO Private Consumption deflator, which is obtained from the CSO's National Accounts Statistics. The Task Force methodology for estimating poverty at national and state level was considered inappropriate and inadequate in giving a representative picture of the incidence of poverty in India due to a variety of reasons such as the adjustment procedure, the choice of deflators, uniform application of the same poverty line across the States, fixed consumption basket over time and uniform consumption basket for all the States.

Therefore, in September, 1989 the Planning Commission constituted the Expert Group on Estimation of Proportion and Number of Poor to look into the methodology for estimation of poverty and to redefine the poverty line, if necessary. The Expert Group popularly known as the Lakadawala Committee submitted its Report in July, 1993. The Expert Group adopted the poverty line norms as defined by the Task Force based on monthly per capita total expenditure of Rs. 49.09 for the rural areas and Rs. 56.64 for the urban areas at 1973-74 prices. This was anchored on the recommended per capita daily intake of 2400 calories in rural areas and 2100 calories in urban areas with reference to the consumption pattern as obtained in 1973-74. The Expert Group recommended the use of a State Specific Line as against the National Poverty Line for rural and urban areas. The Group also suggested the use of State specific cost of living analysis for estimating and updating the poverty line separately for rural and the urban areas.

According to the Expert Group methodology for obtaining the rural poverty line, the National level poverty line of Rs. 49.09 (73-74 prices) is desegregated into the State specific poverty lines on the basis of State Specific Consumer Price Index of Agricultural Labours (CPIAL) adjusted by Inter-State price differential. The State Specific poverty lines are updated by State Specific CPIAL for use in later years. The State Specific Poverty Ratio is worked out from State Specific Poverty line and distribution of persons by Expenditure Groups obtained from the NSSO data on consumer expenditure. The aggregate poverty ratio is worked out by combining the rural and urban poverty ratio. The estimates of poverty at National level is worked out as an average of State-wise poverty. The Expert Group also suggested the use of State Specific Cost of living indices for estimating and updating the poverty lines separately for rural and urban areas.

The Planning Commission has devised two sets of poverty ratios from the 55th round of NSSO Survey, one using 7 days recall and the other using 30 days recall. The rural poverty ratios based on these two recall periods is given at Annexure I & II. The poverty ratios based on the 30 day recall have been accepted as the official poverty estimates. The State Specific rural poverty lines for 1999-2000 used for computing the poverty estimates are given at Annexure-III

Alternative Estimates

There are alternative estimates of poverty in India by private Research Organisations and individual researchers. The Study by Bardhan (1974) for the years 1960-61, 1967-68 and 1968-69 used two alternative poverty norms viz., a poverty line of Rs.20 per capita per month at 1960-61 prices and the nutritional norm based on the diet formula drawn up by the Central Government Employees Pay Commission 1957-58. There is not much discrepancy between the two sets of poverty lines. Using Bardhan's poverty line Aluhwhalia (1978) estimated rural poverty for the period 1956-57 to 1973-74. All the studies in the sixties and early seventies which have attempted to measure the incidence of poverty in India have adopted either the Planning Commission's old norms or used a nutritional norm in terms of minimum calorie intake necessary for subsistence.

According to A.K. Sen, (1976) the head count measure of poverty does not satisfy the monotonicity axiom i.e. given other things a reduction in the income of the person below the poverty line must increase the poverty measure. The poverty gap measure which is the difference between the income of the poor and the income level necessary to raise them upto the poverty line satisfies the monotoncity axiom. The poverty gap measure supplements the incidence measure in various ways (Beckerman, 1979). In making comparison over time and space it serves a useful purpose. It is further argued that both incidence measure and the poverty gap measure must form part of a composite poverty index. However, neither is sensitive to the distribution of the income among the poor. According to Sen, "given other things a pure transfer of income from a person below the poverty line to anyone who is richer must increase the poverty measure"., this he calls his transfer axiom.

Sen's P measure is one which incorporates all these aspects – namely the proportion of the poor in the population, the amount by which the income of the poor fall below the poverty line and the inequality in the distribution of income among the poor – into a single composite index. The incidence measure and the poverty gap measure together provide useful information from the view point of allocation of resources for the alleviation of poverty (Beckerman 1979). Rural poverty in India has been estimated by using alternative poverty lines based on nutritional norm of 2000 calories and 2200 (Rohini Nayyar 1991). The Report of the Expert Group on the criterion for Allocation of Funds under Major Poverty Alleviation Programmes gives a detailed treatment on alternative poverty estimates. This includes poverty gap ratio, squared poverty gap, poverty estimates from the Employment and Unemployment surveys, Market Information Survey of Households and Econometric model results by Gaurav Datt, Valini Kozel and Martin Ravallion.

The latest estimates of poverty has been computed by Planning Commission based on headcount ratio from 1999-2000 and this ratio is used as a criterion for allocation of funds. The official estimates of poverty are subjected to severe criticism particularly on the following grounds:

- The changes in the design adopted by the NSSO had resulted in two sets of estimates which are not consistent.
- The use of inappropriate price indices by the Planning Commission for construction of State Specific poverty lines.
- The definition of the poverty line based on the caloric norm and
- The use of published tables rather than unit data by the Planning Commission in computing poverty estimates.

Although there are a number of alternative estimates of the incidence of poverty for all practical purposes the official estimates are widely used despite the above limitations, in particular for devising policies and programmes for the rural poor. The Expert Group Report explains in detail the limitations of using the official estimate particularly for allocation of resources for rural poverty alleviation programmes.

Changes in poverty Ratio:

There has been a marked change in the composition of the poverty ratio since 1973-74 when the first official estimates of poverty were made. At that time the poverty profile presented a dismal picture with 54.88%of the population shown as living below the poverty level according to estimates worked out by the Planning Commission. The ratio for rural areas was slightly higher at 56.44%. Recent estimates reveal a sharp decline in the ratio as would be evident from the following table:

	1973-74	1993-94	1999-00
Rural	56.44	37.27	27.09
Urban	49.01	32.36	23.62
All-India	54.88	35.97	26.10

It is interesting to observe that the proportion of poor has been substantially reduced over this period, from 54% in 1973-74 to a little over 26% in 1999-2000. The reduction in rural poverty was sharper from 56 per cent to 27 per cent during this period. The overall improvement in the poverty ratio, however, conceals certain inter- state differentiation. The reduction in poverty has not been uniform and continues to be quite high. The North Eastern States including Sikkim presents a dismal picture with the ratio of rural poverty generally at over 40% in 1999-00.The other States continuing with inflexible poverty ratios are Bihar (44.04%), Madhya Pradesh (37.06%, Orissa (48.01%), UP(31.22%) and W. Bengal(31.85%). The details of State level poverty ratio can be seen from the following table:

Poverty Ratio at the State Level *

		Combined			Rural			Urban		
S. No.	State	1973-74	1993-94	1999-00	1973-74	1993-94	1999-00	1973-73	1993-94	1999-00

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Andhra PR.	48.41	15.92	11.05	50.61	38.33	26.63	48.86	22.19	15.77
2.	Arunachal PR	52.67	45.01	40.04	36.92	7.73	7.47	51.93	39.35	33.47
3.	Assam	52.67	45.01	40.04	36.92	7.73	7.47	51.21	40.86	36.09
4.	Bihar	62.99	58.21	44.30	52.96	34.50	32.91	61.91	54.96	42.60
5.	Goa	46.85	5.34	1.35	37.69	27.03	7.52	44.26	14.92	4.40
6.	Gujarat	46.35	22.18	13.17	52.57	27.89	15.59	48.15	24.21	14.07
7.	Haryana	34.23	28.02	8.27	40.18	16.38	9.99	35.36	25.05	8.74
8.	Himachal PR	27.42	30.34	7.94	13.17	9.18	4.63	26.39	28.44	7.63
9.	J & K	45.51	30.34	3.97	21.32	9.18	1.98	40.83	25.17	3.48
10.	Karnataka	55.14	29.88	17.38	52.53	40.14	25.25	54.47	33.16	20.04
11.	Kerala	59.19	25.76	9.38	62.74	24.55	20.27	59.79	25.43	12.72
12.	Madhya PR,	62.66	40.64	37.06	57.65	48.38	38.44	61.78	42.52	37.43
13.	Maharashtra	57.71	37.93	23.72	43.87	35.15	26.81	53.24	36.86	25.02
14.	Manipur	52.67	45.01	40.04	36.92	7.73	7.47	49.96	33.78	28.54
15.	Meghalaya	52.67	45.01	40.04	36.92	7.73	7.47	50.20	37.92	33.87
16.	Mizoram	52.67	45.01	40.04	36.92	7.73	7.47	50.32	25.66	19.47
17.	Nagaland	52.67	45.01	40.04	36.92	7.73	7.47	50.81	37.92	32.67
18.	Orissa	67.28	49.72	48.01	55.62	41.64	42.83	66.18	48.56	47.15
19.	Punjab	28.21	11.95	6.35	27.96	11.35	5.75	28.15	11.77	6.16
20.	Rajasthan	44.76	26.46	13.74	52.13	30.49	19.85	46.14	27.41	15.28
21.	Sikkim	52.67	45.01	40.04	36.92	7.73	7.47	50.86	41.43	36.55
22.	Tamil Nadu	57.43	32.48	20.55	49.40	39.77	22.11	54.94	35.03	21.12
23.	Tripura	52.67	45.01	40.04	36.92	7.73	7.47	51.00	39.01	34.44
24.	Uttar PR,	56.53	42.28	31.22	60.09	35.39	30.89	57.07	40.85	31.15

25.	West Bengal	73.16	40.80	31.85	34.67	22.41	14.86	63.43	35.66	27.02
26.	A& N Islands	57.43	32.48	20.55	49.40	39.77	22.11	55.56	34.47	20.99
27.	Chandigarh	27.96	11.35	5.75	27.96	11.35	5.75	27.96	11.35	5.75
28.	D&N Haveli	46.85	51.95	17.57	37.69	39.93	13.52	46.55	50.84	17.14
29.	Daman & Diu	NA	5.34	1.35	NA	27.03	7.52	NA	15.80	4.44
30.	Delhi	24.44	1.90	0.40	52.23	16.03	9.42	49.61	14.69	8.23
31.	Lakshadweep	59.19	25.76	9.38	62.74	24.55	20.27	59.68	25.04	15.60
32.	Pondicherry	57.43	32.48	20.55	49.40	39.77	22.11	53.82	37.40	21.67
	Total	56.44	37.27	27.09	49.01	32.36	23.62	54.88	35.97	26.10

Source: Planning Commission

N.A. – Not Available

One feature of the society which has a direct bearing on development is its stratification system. The degree of freedom, the equality of opportunity and the facility for social interaction which the individual enjoys is determined by the individual's placement in a particular strata. The Scheduled Caste and Scheduled Tribes are a legacy of an ancient social stratification system which has kept them in the margin of existence. Gender inequality is also embedded in poverty with women suffering the consequences of poverty in greater measure within the same household. Of late, there is a greater sensitivity towards the disabled who are doubly handicapped by the poverty syndrome. Poverty is thus multi-dimensional and has to be tackled from several fronts. While the trickle down-effect of development has generally been discredited as a panacea for eradication of poverty, yet it is an incontrovertible fact that the economy has to keep growing not only for overall development but also to provide economic space for the poor. Empirical studies on regional disparities of growth brings home this point forcibly. For instance, an average child in Kerala has a greater chance (25%) to attend school than in Bihar. The poverty ratio in Kerala for 1999-00 is 9.38% as against 44.30% for Bihar. Likewise the better health status of the poor in Kerala is largely explained by Kerala's better education, water, and sanitation and basic infrastructure services. (Reducing Poverty In India,World Bank Country Study, 1998)

Chronic Poverty

Experience with anti-poverty programmes have revealed the existence of a category of people among the poor who are likely to have benefited the least and suffered most from contemporary development efforts and for whom emergence from poverty is therefore most difficult. Such people are likely to be chronically poor, i.e. they will have been poor over a long period and/or since birth. Chronic poverty poses a challenge to development planners as it is more intense due to its long duration and multi-dimensionality. This group also represents those who are most difficult to include, reach, or provide for. It is hypothesised that duration, multi-dimensionality and severity of poverty build upon each other. Thus, while those in severe income poverty at any given time are not necessarily chronically poor, the chronically poor are likely to be experiencing severe and multi-dimensional poverty. (Hulme, Moore and Shepherd, 2001).

The incidence of chronic poverty can be measured through a threefold classification. 1) spatial distribution of those estimated to be earning incomes that are less than or equal to three-fourths of the poverty line so as to try to identify the states that have high incidence of people severely below the poverty line and the regions within these states that are spatial poverty traps 2) those who are unable to access even two square meals a day as the starkest of indicators of chronic poverty indicative of severe deprivation 3) those vulnerable to extreme poverty due to inability to absorb the impact of shocks.(Chronic Poverty in India: Overview study- Aasha Kapur Mehta).

A Study by Planning Commission using 1993-94 NSS estimates has shown that the incidence of severe rural poverty was higher than average in 5 out of 7 income poverty states. 27.67% of the rural population in Bihar, 21.77% in Orissa, 19.55% in Uttar Pradesh, 17% in Madhya Pradesh and 16% in Maharashtra were severely below the poverty line. These five states have had both the highest levels of severe rural poverty and the lowest rates of poverty reduction, with the exception of Assam, which is not far behind on the severe poverty headcount. The other states where the incidence of severe poverty is greater than 10% of the population are Karnataka and Tamilnadu (for both urban and rural), West Bengal (rural) and Kerala and Rajasthan (urban).

Estimates of Very Poor and Poor in Rural and Urban Areas in the States: 1993-94(%)

	Rural		Urban	
State/Region	Very Poor	Poor	Very Poor	Poor
Andhra Pradesh	4.18	15.89	16.78	38.34
Assam	13.12	45.00	1.16	7.74
Bihar	27.67	58.17	14.14	34.65

Gujarat	6.67	22.29	11.18	27.93
Haryana	9.32	28.02	5.02	16.37
Karnataka	11.11	29.89	22.13	40.18
Kerala	9.42	25.68	10.08	24.50
Madhya Pradesh	17.11	40.72	25.69	48.35
Maharashtra	16.17	37.90	18.72	35.08
Orissa	21.77	49.79	22.99	41.72
Punjab	3.12	11.85	2.22	11.40
Rajasthan	8.66	26.48	12.98	30.53
Tamilnadu	12.67	32.55	18.67	39.78
Uttar Pradesh	19.55	42.31	16.91	35.34
West Bengal	13.62	40.87	7.51	22.38
All India	15.26	37.23	14.85	32.28

Source: K.L. Datta and Savita Sharma, Level of Living in India, Planning Commission, 2000.

Severe Poverty: Spatial Poverty Traps

While some States exhibit a greater incidence of chronic poverty, there are poverty traps at the regional level even in more developed states.

Rural poverty was most severe in South Western Madhya Pradesh, Southern Uttar Pradesh, Southern Orissa, Inland Central Maharashtra, Southern Bihar, Northern Bihar and Central Uttar Pradesh. These seven regions had between 26% and 42% of their population in severe poverty and had a squared poverty gap ranging from 5 to 9.7.

Regions with very high incidence of Very Poor and Poor in Rural Areas: 1993-94

State/Regions	Very Poor	Poor	SPG
South Western M.P	42.24	68.2	9.678
Southern UP	39.7	66.74	7.9559
Sothern Orissa	34.08	69.02	6.8299
Inland Central Maharashtra	28.91	50.02	6.6877
Sothern Bihar	31.57	62.44	5.0692
Central U.P.	26.79	50.2	4.9439

Source: K.L.Datta and Savita Sharma, Level of Living in India, Planning Commission, 2000.

Hunger and lack of availability of two square meals a day

Mal- nourishment is a serious problem with India accounting for40% of world's malnourished children while containing less than 20 % of the global child population. Poverty and gender inequality are among the most important factors responsible for the high level of undernourishment. The NSS 50th round (1993-94) provides data regarding distribution of rural-urban households on the basis of availability of two square meals a day. It was seen that hunger was more widespread in rural than in urban areas

Percentage distribution of households by availability of two square meals a day at the National Level *

Households getting two square meals a day

	Throughout the year	Only in some months of the year	Not even in some months of the year	All
Rural India				
Less than Rs 120 MPCE	84.2	11.8	3.4	100
All Classes	98.5	4.2	0.9	100
Urban India				
Less than Rs 160MPCE	91.9	4.5	3.3	100
All Classes	98.1	1.1	0.5	100

Source: NSS 50th Round91993-94) Report No. 415

The NSS findings revealed that inadequacy of food intake was especially severe in rural households in Kerala, Orissa, West Bengal and Assam Hunger is especially acute in Assam and Kerala. In rural areas non- availability of two square meals peaked in the months of June, July, August and Septemeber.

Evolution of Government Policy on Poverty Related Concerns

While the concern for removal of poverty has been a central and a persistent theme from the First Five Year Plan onwards, the approach has undergone several refinements. During the First Plan, the approach to tackle poverty was through community development. Community development was the method and rural extension the agency through which the process of transformation of social and economic life of the villages was to be initiated. Each community project comprised three Development Blocks and each Block consisted of about 100 villages. The Development Block was divided into groups of 5 villages each which was looked after by a village level officer. The activities in the CD Blocks included 1) agriculture and related matters 2)irrigation

3)communication 4)education 5)health 6)supplementary employment 7)housing 8)trainingand9) social welfare. A key assumption was that local efforts for local development can be harnessed and the community would be enthused to participate in the development programmes. There was a feeling that once the initial impulse is given the programme would gain its own momentum.

The Community Development programme initiated during the First Plan was continued in the subsequent plans as well. The Second Plan was the harbinger of industrialisation with the public sector poised to take the commanding heights. This plan also gave a big push for development of small scale industries which were seen as a key to resolving the widespread problem of unemployment especially in the rural areas. The Third Plan envisaged undertaking a comprehensive programme of rural works not only for creating additional employment opportunities but also as a means for harnessing the large manpower resources in rural areas for the rapid economic development of the country. The plan document noted that a lasting solution to the problem of under-employment will also require diversification and strengthening of the rural economic structures.

Another important initiative in the early plan period was the abolition of intermediary institution and systems of land holdings like Zamindari, Jagirdari etc., which were highly exploitative and a root cause of poverty. Buttressed by a comprehensive Land Reform policy , it was felt that ownership of land would ameliorate the conditions of the indigent rural population. Raising the level of food grain production was the main focus in the First Plan and the efforts during the Third Plan resulted in a very successful Green Revolution. Furthermore., the 'trickle-down ' effect of macro economic development through rapid industrialisation and increase in food grain production through introduction of new technology in agriculture was not uniform with the hiatus widening among the regions.

The nascent economy's efforts at tackling the problem of unemployment /underemployment which is a primary cause of poverty via the Community Development programme and other measures did not bring the desired results. In respect of the Community Development programme on which the government had set great store, it was soon realised that the programme was dependent not only on government's initiative but government funding as well. Wherever funds were lacking the programmes languished as local contribution was not forthcoming.

It was apparent that the gains of economic development under planning had somehow by-passed the poor. The profile of poverty remained unchanged characterised by subsistence standard of living, weak bargaining power, inadequate employment opportunities often resulting in distress migration to urban areas. Realising the need for re-formulating the strategy to combat unemployment and its attendant pernicious consequences, the idea that a direct attack on poverty was necessary germinated during the Fourth Plan.

The rural areas became the laboratory for several experiments on alleviating poverty. The 1970's mark a watershed in the introduction of a series of new programmes to combat poverty. A three-fold approach to attack poverty was envisaged which included

1) creating an income generating asset base for self-employment of the rural poor 2) opportunities for wage employment 3) area development programmes in backward regions like dryland,' rain-fed, draught -prone, tribal , hill and desert areas. As a result programmes like Rural Works Programme (RWP), the Drought Prone Areas Programme(DPAP), Programmes for Small and &Marginal Farmers(Small Farmers Development Agency-(SFDA), Marginal Farmers & Agricultural Labourers Agency-(MFAL) were focussed on the rural areas. Since industrial development was considered to provide opportunity for large-scale labour absorption, Rural Industrialisation ProgrammeR1P) and Rural Artisans Programme(RAP) were also undertaken. These programmes underwent several refinements and were supplemented by other programmes for providing basic infrastructure for improved quality of life in the rural areas and also programmes for social security of the poor and destitute. A logical extension of such comprehensive beneficiary oriented programmes was policy prescriptions and statutory provisions for empowerment of the people for their participation in the development process.

Government Policy for Rural Poverty Reduction in Retrospect
(An appraisal of performance during the 7th to 9th plan)

From the above it is clear that Poverty alleviation programmes have been central to planned development. The experience gained from the implementation of these programmes were used in successive plan periods for modification or reformulation based on evaluation studies. Considering the diversity of the rural population and the regional differences, the approach was tailor-made to suit various needs ranging from wage employment to self-employment and social welfare schemes besides area/land development programmes. A large number of these programmes were in operation prior to the seventh plan either in the present or similar form.

Thus the strategy adopted by the Government for chronic poverty reduction in the rural areas include a package of programmes of direct poverty alleviation, employment generation rural infrastructure development, habitat development, area development, social assistance besides provision of basic amenities. Huge amount of resources have been allocated for poverty reduction programmes strategies. Increasing concern of the Government towards this direction is evident from the following Table which indicates the central plan allocation for Rural Development Programmes from the Sixth to the Tenth Plan period.

Central Plan outlay for RD Programmes	(Rs. in crores)
6th Plan (1980-85)	5363.00
7th Plan (1985-90)	10149.00
8th Plan (1992-97)	30254.00
9th Plan (1997-2002)	42873.80
10th Plan (2002-07)	76774.00

Source : MoRD

It is interesting to note from the above Table that there has been substantial step up in the Central Fund allocation for Rural Development Programmes particularly from the Eighth Five Year Plan onwards. The Annual Plan outlays for the Ninth Five Year Plan and the first few years of the Tenth Plan are given below.

Annual Plan Outlay for RD Programmes (Rs. in crores)

Year	Amount
1997-98	9001
1998-99	9912
1999-2000	9751
2000-01	12260
2001-02	12265
2002-03	13670
2003-04	14070

Source: MoRD

It is pertinent to mention that during the first two years of the 10th Five Year Plan, in addition to the allocation indicated in the above table, additional funds to the extent of Rs. 5000 crores has been accessed for meeting the cost of the foodgrain supplied to the rural poor under the wage employment programme of Sampoorna Gramin Rozgar Yojana (SGRY). In addition to the Central Plan allocation, the State Governments are also contributing their share which in most cases is about 25% of the Central Allocation. Considering that the absolute number of rural poor is estimated at 193.4 million as per 1999-2000 survey results the average per capita Central expenditure on poverty reduction programmes works out to Rs. 728.26 crores.

Integrated Rural Development Programme (IRDP)

The Integrated Rural Development Programme (IRDP)was the flag -ship scheme for promoting self-employment. Directly targeting the beneficiaries, living below the poverty line, the programme had a component of government subsidy for providing bank credit to enable the rural poor to acquire durable assets which would yield income on a sustained basis. The programme was outlined in the budget speech of the Finance Minister in 1976. Initially implemented as a pilot project in 20 selected district, it was extended to all the 2300 blocks of the country in October 1980. In order to further strengthen the IRDP a few more supportive programmes were also introduced to assist the rural youth, rural artisans besides women and children in rural areas which comprise vulnerable sections of the rural society. Thus the scheme for Training of Rural Youth for Self-Employment TTRYSEM) was intended to provide training to those receiving assistance under the IRDP. This scheme which was introduced in August 1979 was followed by a scheme for Development of Women & Children in Rural Areas (DWACRA) in 1982-83. In order to improve the efficiency and productivity of the rural

artisans a sub-scheme known as Supply of Improved Toolkits to Rural Artisans (SITRA) was started.

A review of the IRDP along with the related programmes by the Planning Commission in February 1997 revealed lack of synergy in IRDP and the supplementary programmes. The supplementary schemes instead of getting dovetailed with IRDP were operating as independent schemes. There was a lack of convergence among the various agencies implementing the different schemes. As a result,' loans sanctioned were without proper project appraisal thus obfuscating the chances of sustained income generation. Due to the weak monitoring mechanism there was leakage in the assistance thus defeating the objective for which this programme was conceived. While the earlier Community Development programme could not take --off because the beneficiary was not directly targetted, the IRDP got grounded due to the absence of community support.

It was assumed that those households with income levels between Rs 4800 and Rs 6400 would be able to rise above the poverty line in the process of growth itself. It was targetted that 20 million families would be assisted under IRDP during the Seventh Plan of which 10 million were new households and 10 million old beneficiaries who had been unable to cross the poverty line and required a second dose. The actual achievement of about 18 million households fell short of the target of 20 million but exceeded the cumulative target which was only 16 million families. A concurrent evaluation of the IRDP revealed that it was quite successful in terms of providing incremental income to poor families. However, the number of households able to cross the poverty line was relatively small. This could be attributed to the low levels of initial investment owing to the per capita assistance from the banks not being adequate. Reviewing the performance of the IRDP the Eighth Plan document noted that it is necessary to integrate the IRDP with the development plans of an area so that select activities become viable.

The lack of convergence among the programmes also became evident. During the Seventh Plan about 10 lakh youth were trained under TRYSEM of which 47% took self-employment and 12% wage employment. At the same time the a sizeable number of IRDP beneficiaries who needed training could not receive it. Only about 6-7 percent of IRDP beneficiaries were trained under TRYSEM. Similarly, in respect of DWCRA while the scheme in principle was sound, in operationalising it the impact was inadequate. Lack of cohesion among women groups formed under DWCRA and their inability to identify activities that could generate sustained incomes were contributory factors. In this context it was felt that voluntary organisations can play a crucial role to act as a catalyst to assist in the formation of self-help groups.

During the course of the Seventh Plan two wage employment programmes, the National Rural Employment Programme (NREP) and the Rural Landless Employment Guarantee Programme were merged into a single rural wage employment programme called the Jawahar Rozgar Yojana(JRY). While NREP was jointly financed by the Centre and States on a 50:50 basis the RLEGP was totally centrally financed. The JRY which intended to provide additional employment on productive works which would either be of sustained benefit to the poor or contribute to the creation of rural infrastructure was to be

funded with 80 percent contribution from the centre with 20% as the share of the states. The needs of the chronic poor were sought to be addressed by ensuring that 15% of the annual allocation is spent on works directly beneficial to SCs/STs. 30 percent reservation for women was also stipulated. While in the earlier wage- employment programmes, part of the wage payment had to be in kind, in terms of certain quantity of foodgrains, under JRY this was made optional. Road construction was the primary activity accounting for about 30 percent of the expenditure while minor irrigation, housing, construction of school and community buildings, wells and social forestry were the other sectors which benefited from JRY. The expenditure on housing and wells increased between 1989-90 and 1990-91 as 6 percent of allocation was earmarked for the Indira Awaas Yojana(IAY) and 20 percent for the Million Wells Scheme (MWS).

In so far as area development programmes were concerned the DPAP had been in operation since 1973. Yet at the end of the Seventh Plan in spite of their implementation for nearly two decades there was no evidence that draught proofing had been achieved in any of the DPAP blocks. At the same time voluntary efforts had succeeded in achieving this objective at the micro level. This was a pointer to the need for a more concerted and coordinated effort with greater use of scientific data, detailed working of cost norms for different activities and efficient planning along micro watershed lines. It was realised that there has to be emphasis on training of project staff at the district/ watershed level for preparation of plans and creating awareness among the people of the project area. The importance of linkage between agricultural research agencies and implementing agencies for effective transfer of technology was another area requiring attention .

During the 8th Plan period efforts were directed at overcoming the major constraint in the implementation of IRDP on account of the sub-critical investments which adversely affected the incremental capital output ratio (ICOR) levels and thereby undermine the viability of the projects. Though the average per family investment was rising in monetary terms, in real terms the increase has been inadequate and in some cases sub-critical due to inflationary trends and the increase in the cost of assets. An important step taken to enhance the efficacy of the programme was the abolition of the cut off line to enable all families below the poverty line to be assisted under the programme, targeting the investment per family at progressively higher level each year, extension of the family credit plan to 213 districts of the country, enhancing the ceiling limit of collateral free loans to a uniform limit of Rs.50,000 with a view to easing the constraints faced by the poor beneficiaries while taking loans from the banks, extension of the cash disbursement, scheme to 50% blocks in the country, decentralisation of the sanctioning powers for infrastructural projects below Rs.25 lakh and entrusting the banks with the task of identification of beneficiaries in about 50 districts on a pilot basis. These interventions had an impact on the average per family investment which rose from Rs.7889 in 1992-93 to Rs.15036 in 1996-97.

Following the recommendations of a High Powered Committee's recommendations for the first time in 1995-96 credit targets were fixed there have been a continuous increase in the volume of credit mobilised by the banks during the successive years of the 8th Plan period. Correspondingly, the subsidy credit ratio which average 1:1.77 in the first three

years of the 8th Plan rose to 1:1.96 in the 4th year and further to 1:2.17 in 1996-97. At the same time it needs to be remembered that there were genuine reasons for the banks' inability to meet the full credit requirements of IRDP beneficiaries. These include poor recovery of IRDP loans, lack of adequate rural banking infrastructure in certain areas and the weak financial performance of Regional Rural Banks and Cooperative Banks.

During the 8th Plan period there was considerable diversification of activities under IRDP. Initially the sectoral composition of IRDP was heavily biased towards the primary sector. For instance, in 1980-81, 93.56% of sponsorship was in the primary sector while the secondary and tertiary sectors shares were 2.32% and 4.12%. At the end of the 8th Plan the share of primary sectors had declined to around 55% while the shares of the secondary and tertiary sectors increased to 15% and 30% respectively. The significant effort during the 8th Plan was the filling up of critical infrastructural gaps and strengthening the linkages and market facilities under IRDP. By increasing allocation for the development of infrastructure from 10% to 20% in all the states and to 25% in the North Eastern States. Simultaneously, decentralization in the sanctioning powers for infrastructural projects was also effected. Nevertheless, actual expenditure on infrastrutural development at the All India level was a meagre 5 to 7% of the total allocation under the programme.

With a view to strengthening the TRYSEM programme several initiatives were taken during the 8th Plan which included, an increase in the stipend and honorarium rates, emphasis on professionalised training through the established and recognised institutes like ITIs , Community Polytechnic, Krishi Vigyan Kendras etc., exploring the possibility of setting up production group from amongst TRYSEM trainees for undertaking ancillary activities like manufacture and assembling of modern items of production, utilisation of TRYSEM infrastructure funds for strengthening of Rural Building Centres sponsored by HUDCO for training of youth under TRYSEM in the trades of low cost housing and the setting up of mini ITIs at the block level to strengthen the training infrastructure for the rural youth. The TRYSEM programme was evaluated for the first time in 1993. The study highlighted serious lacuna in the implementation of the programme. The study revealed that area skill service were not carried out in most of the districts to assess the potential skill requirements resulting in a mismatch of job skills. 63% of the beneficiaries reported that there was no improvement in their socio-economic conditions as a result of TRYSEM training. 47.19% of beneficiaries continue to remain unemployed. This study underline the earlier finding of the lack of convergence of TRYSEM with IRDP.

The implementation of DWCRA continued to exhibit several shortcomings which stymide its successful and effective execution in some states. The reasons for these include (a) improper selection of groups (b) lack of homogeneity among the group members (c) selection of non-viable economic activities which are mostly traditional and yield low income (d) poor linkages for supply of raw material and marketing of final produce. Some states like Andhra Pradesh, Kerala, Tripura and Gujarat performed well, while the performance and the impact of this scheme in other states left much as to be desired.

A comprehensive restructuring of the wage employment programme was effected in January 1996 when JRY was streamlined. In the revised strategy the First Stream of JRY was continued in its existing form but the Indira Awaas Yojna (IAY) and Million Wells Scheme (MWS) which were till then sub schemes of JRY were made independent schemes. The Second Stream of JRY which was being implemented in 120 backward districts in the country was merged with the Employment Assurance Scheme (EAS) introduced in 1775 selected backward blocks in the country in 1993-94 in view of the similarities of these programmes. The Third Stream of JRY with its thrust of innovative projects was continued. A Concurrent Evaluation of JRY brought into focus certain inadequacies in the programme. It was reported that 57.44% of the elected Panchayat head had not been imparted any training for the implementation of JRY works. The share of women in employment generated under the programme was only 16.59% and 49.47% of the works could not be completed on time on account of shortage of funds. Other shortcomings observed were differentials in the wages paid to male and female workers, non utilisation of locally available material in a large number of JRY works undertaken by Panchayats and lack of discussion of the annual action plans in the Gram Sabha meetings etc.

The Employment Assurance Scheme was launched as a centrally sponsored scheme in October 1993 in 1775 identified backward blocks situated in drought prone, desert, tribal and hill areas in which the revamped public distribution system was in operation. Subsequently, the scheme was extended to additional blocks which includes the newely identified Drought Prone Area Programme (DPAP)/Desert Development Programme (DDP) blocks, Modified Area Development Approach (MADA) blocks having a larger concentration of tribals and blocks in flood prone areas of Uttar Pradesh, Bihar, Assam and Jammu & Kashmir. The EAS has since been universalised to cover all the rural blocks in the country w.e.f. April 1997. The EAS was a demand driven scheme with the objective to provide about 100 days of assured casual manual employment during the lean agricultural season at statutory minimum wages to all persons between the age of 18 to 60 who need and seek employment on economically productive and labour intensive social and community works.

The Million Wells Scheme (MWS) was delinked from JRY and made into an independent scheme from January 1996. This programme was reported to have achieved considerable success in the districts falling in the Chotanagpur region of South Bihar, large parts of Orissa, many districts of Gujarat besides the Eastern and Southern region of Rajasthan . In these areas the MWS played a significant role in transforming single cropped dry land areas into double cropped lands, leading to increase in agricultural output and income. Yet, such successes have not been uniformly reported across the country. For instance, in Kerala the small size of the land holding of the small and marginal farmers was an impediment in implementing MWS.

The National Social Assistance Programme (NSAP) came into effect from August 1995 as a centrally sponsored scheme with 100% central assistance to states/UTs. This programme has three components (1) National Old Age Pension Scheme (NOAPS) (2) National Family Benefit Scheme (NFBS) and (3) National Maternity Benefit Scheme

(NMBS) which are targeted at people living below the poverty line. Of these three programme the performance under NOAPS was relatively better because the administrative machinery for the implementation of this programme was already in place in most of the states.

Under JRY 73, 764.83 lakh mandays of employment were generated till 1988-89. Employment generation progressively declined over the years partly due to lower central allocation in the Ninth Plan and partly due to the increasing cost of creating employment. A major proportion of JRY funds was spent on roads and buildings. Over 47% of the employment generated benefited SCs/STs the share of landless labourers among the beneficiaries was 36%. The village community found the assets created under the programme useful. However, against 40% of population in a village Panachayat who sought work, only 15% were actually employed.

In April 1999 the revamped Jawahar Gram Samridhi Yojana (JGSY) replaced JRY with the objective of creating rural economic infrastructure with employment generation as a secondary objective. The 60:40 wage labour/material ratio in the JRY was relaxed. The programme is implemented by the village Panchayats and provides for specific benefits to SCs/STs, the disabled and the maintenance of community assets created in the past. Since inception it has generated 27 crore mandays of employment each year, a substantial drop from the 103 crore mandays generated under JRY in the year 1993-94. Inadequacy of funds is one of the serious constraints in the implementation of this scheme. Since every village Panachayat has to be covered by the scheme mini Panchayat less than Rs.10,000 per annum. The Panchayats are left with very little money to take up meaningful infrastructure projects. Under the Employment Assusrance Scheme 10,719.59 lakh mandays of employment were generated during the 8th Plan and 4717.74 lakh mandays of employment were generated in the first year of the 9th Plan. Employment generation went down in subsequent years. The allocations between 1999-2000 and 2001-02 were also lower than the first two years of the 9th Plan because watershed projects taken up for implementation under the EAS before April 1999 were transferred to Integrated Waste Land Development Programme (IWDP).

Though the creation of community assets has important spin offs for rural poverty and development, the impact of these programmes on employment and income has been limited. The universalisation of the scheme severely eroded its basic objective of providing assured employment in areas of extreme poverty and chronic unemployment. The regionally differentiated means were not taken into account which led to the thin spread of resources across the country. As a result even in the poorer regions employment provided was not adequate. The efficacy of the programme was also affected by faulty project selection and the absence of a coherent plan which integrated EAS projects in a long term development strategy.

Despite these shortcomings the programme succeeded in creating the much needed rural infrastructure. The programmes are self targeting in nature since only the poor come to work at minimum wage rates. The various works undertaken created demand for unskilled labour and exerted upward presssure on wage rates. The programme was useful

in safeguarding consumption patterns of the rural poor during natural calamities. The study conducted in four drought affected districts in Rajasthan found that the consumption of foodgrains was higher in the drought years compared to normal years due to wage employment programmes.

In September 2001 the JGSY, EAS and Food for Work Programme were merged under the new Sampoorna Gramin Rozgar Yojana (SGRY) in view of the complementarily of these schemes. The revamped programme has similar objectives such as generation of wage employment, creation of durable economic infrastructure in rural areas and provision of food and nutrition security to the poor. The amalgamation of the schemes has led to an augmentation of resources for this programme. The works taken up under the porgramme are labour intensive and the workers are paid the minimum wages notified by the states. The centre and the states share the cost of cash component of the scheme in the ratio of 75:25. Payment of wages is done partly in cash and partly in kind.

The IAY was launched in 1985-86 for providing free housing to BPL families in rural areas and targeted SC/ST households and freed bonded labourers. It was merged with JRY in 1989 and then implemented as a separate housing scheme for the rural poor in 1996. The IAY sought to fulfill the National Housing and Habitat Policy 1998, which aimed at providing shelter for all by the end of the Ninth Plan. In spite of higher allocations during the Ninth Plan the IAY could not reach this target. As against a requirement of 109.53 lakh new and upgraded houses between 1997-98 to 2201-02, the actual construction during the period was only 45 lakh houses. Still this represents a steep increase over the achievement during the Eighth Plan period of 26 lakh houses.

Field studies have revealed that while under the IAY many BPL families were able to acquire pucca houses, the coverage of the beneficiaries is limited given the resource constraints. A more worrisome feature has been the leakages on account of ineligible persons getting the assistance. Since the houses are provided virtually free of cost, the other components of the scheme such as credit-cum-subsidy scheme for rural housing did not register much progress.

A noteworthy addition to the social security programmes during the Ninth Plan was the introduction of the Annapurna scheme from April 2000 to provide food security to senior citizens who were eligible for pension under NOAPS but could not receive it due to budgetary constraints. The scheme seeks to cover 20 percent of persons eligible for NOAPS. The beneficiaries are given 10 kg of foodgrains every month free of cost. The implementation of this programme was blocked due to the resistance from some states.
(This review is based on the Eighth Five Year Plan (1992-97), Ninth Five Year Plan (1997-2002) and Tenth Five Year Plan (2002-07) documents.

Poverty Alleviation Programmes in the Tenth Plan

The approach paper to the Tenth Plan adopted a set of quatifiable and monitorable targets which would enable to focus on accelerating growth not only as an end in itself but also as the means to achieve success in other dimensions such as poverty reduction,

employment creation and improvement in quality of life. These include health, environment and education indicators. The Tenth Plan recognised that the growth process alone will not be able to provide adequate employment for the emerging work force, let alone reduce the backlog of unemployment. Even at an average growth rate of 8% the economy is estimated to generate 30 million work opportunities during the 10th plan period as against 35 million addition to the work force. Creation of 100 million employment opportunities over the next ten years is taken as the basis for targeting the creation of 50 million employment opportunities during the next five years. If this target is achieved, the unemployment rate is likely to decline significantly to 5% by the end of the Tenth Plan.

The monitorable targets for the Tenth Plan and beyond includes reduction of poverty ratio by 5 percentage points by 2007 and by 15 per centage points by 2012 and providing gainful and high quality employment to the additional labour force. Increasing literacy rate, reduction of infant mortality rate, maternal mortality ratio and gender gaps in literacy rate are other targets. The targets also include coverage of all villages with access to sustainable portable drinking water within the plan period. The mandatory reduction in the poverty rate of 5 percentage points during the 10th Plan and another 10 percentage points during the 11th Plan will still leave more than 11% of the population, or about 130 million people below the poverty line in 2012. Every effort, therefore, needs to be made to reduce the poverty rate even faster.

During the Tenth Five Year Plan, the strategy of rural development continues to be through a set of programmes for poverty alleviation, employment generation, area development and infrastructure development. A brief outline of these programmes is given below.

Sampoorna Gramin Rozgar Yojana (SGRY)

The SGRY is the revamped and restructured wage employment programme. It was launched in September 2001 with an annual outlay of Rs. 10,000 crores. The programme is an amalgamated version of the Employment Assurance Scheme (EAS), the Food for Work Programme (FFW) and the Jawahar Gram Smridhi Yojana (JGSY). The EAS was basically meant for creation of additional employment opportunities during the period of acute shortage of wage employment through manual work for the rural poor living below the poverty line while the JGSY was aimed at creation of needbased rural infrastructure at a village level. These programmes have made considerable contribution in reducing rural poverty and in improving the quality of rural life. The restructured SGRY which is the only wage employment programme currently in operation, is expected to provide food security, additional wage employment and village infrastructure. Under the Scheme, 50 lakh tonnes of food grains amounting to Rs. 5000 crores (at economic cost) will be provided every year free of cost to the State Governments. The remaining funds will be utilised to meet the cash component of wages and material cost. About 100 crores mandays of wage employment are envisaged to be generated every year under the programme. The programme is self targeted in nature with special emphasis to provide

wage employment to women, SCs, STs and parents of children withdrawn from hazardous occupations.

The first stream of the programme is being implemented at the District and intermediate level Panchayats. The second stream is being implemented at the village Panchayat level but the entire funds are to be released to the village Panchayats through the DRDAs.

There is a provision of special component under SGRY for augmenting food security through additional wage employment in the calamity affected rural areas. Special component is demand driven and allocated to the States on the basis of the requirements to deal with the calamities such as drought, earth quake, cyclone , flood etc. Under this component only food grains are provided free of cost to the States to take up employment oriented works. Cash component for the scheme is provided by the State Governments either from the state sector schemes or centrally sponsored schemes. Under SGRY, 5 kg. of foodgrain will be made available per manday as part of wages. Should a state government wish to give more than 5 kg. of foodgrains per manday, it is permitted to do so within the existing state allocation. The state governments will be free to calculate the cost of foodgrains paid as part of wages, at either BPL rates or APL rates or anywhere between the two rates. The workers will be paid the balance of wages in cash such that they are assured of the notified minimum wages.

Swarnjayanti Gram Swarozgar Yojana (SGSY)

The SGSY is again a restructured and reformulated self-employment programme after merging with the erstwhile IRDP, TRYSEM, DWCRA, SITRA, GKY and MWS. The basic objective of the SGSY is to bring the assisted poor families above the Poverty Line by providing them income generating asset through a mix of bank credit and government subsidy. The programme aims at establishing a large number of micro-enterprises in rural areas based on the ability of the poor and potential of each area. The programme has been conceived as a holistic self employment programme covering all aspects of Self Employment of the rural poor such as organization of the poor in the SHGs, their capacity building, training, selection of key activities, planning of activity clusters, infrastructure build-up, technology and marketing support. The programme focuses on organization of the poor at the grassroot level through a process of social mobilisation for poverty reduction. Social mobilisation enables the poor to build their own organizations of SHGs, in which they participate fully and directly and take decisions on all issues that will enable them to cross the poverty line. An SHG may consist of 10 to 20 persons belonging to household below the poverty line and a person should not be a member of more than one group. In the case of minor irrigation schemes, disabled persons, and in difficult areas the number of persons in a group may range from 5 to 20. If felt necessary, 20% and in exceptional cases upto 30% of the members in Group may be from the APL, if agreed to by BPL members of the Group. Assistance under the SGSY is given in the form of subsidy by Government and credit by the Banks.

Credit is a critical component of the SGSY and subsidy being a minor and enabling element. Therefore, the SGSY envisages greater involvements of the banks in planning and preparation of project reports, identification of activity clusters, choice of activities of SHGs, selection of individual beneficiaries and post credit monitoring including loan recovery.

For the implementation of this programme, interface with a a net work of agencies viz., the District Rural Development Agencies (DRDAs), the line departments of state governments, banks, NGOs and panchayat raj institutions (PRIs). The programme has in-built safeguards for the weaker sections. It is stipulated that 50 percent of the self-help groups must be formed exclusively by women and that 50 percent of the benefits should flow to SCs/STs. There is also a provision for disabled beneficiaries. The programme is credit driven and subsidy is back ended. The credit and subsidy ratio is pegged at 3:1. The subsidy is fixed at 30 percent of the cost of the project subject to a maximum of Rs 7500 per individual beneficiary for those in the general category and 50 percent of the project cost subject to a maximum of Rs 10,000 in the case of SCs/STs. In the case of group projects, the subsidy is 50 percent of the project cost subject to a ceiling of Rs 1.25 lakhs. Funds under the scheme are shared between the Centre and the States in the ratio of 75:25. The new approach to self-employment has made significant contribution to the empowerment of beneficiaries as evidenced from the experience in Tamil Nadu, Andhra Pradesh, Kerala, Himachal Pradesh, Assam and a few other States.

Rural Housing

The National Housing and Habitat Policy aims at providing housing for all and facilitating construction of 20 lakh additional housing units (of which 13 lakhs are in rural areas) annually with an emphasis on extending benefits to the poor and the deprived.

The Indira Awaas Yojana (IAY), the flagship housing scheme, for the rural poor launched in 1985-86, continues to be in operation during the 10th Plan. From the year 1993-94, the scope of IAY has been extended to cover non-SC/ST rural poor. The ceiling on construction assistance under the scheme is Rs. 20000 per unit for plain areas and Rs. 22,000 for hilly/difficult areas. The ceiling for upgradation of the houses is Rs. 10,000. Beneficiaries are selected by the Gram Sabha under the scheme. The houses should be allotted in the name of female members of the Beneficiary household or in the name of both husband and wife. Sanitary latrine and smokeless chullah are integral part of an IAY house. The individual beneficiary will construct the house under the scheme and external agencies such as Government Departments, NGOs and Contractors are banned from construction of such houses. Since inception of the Scheme, till December, 2002 abut 92 lakh houses have been constructed under IAY by incurring an expenditure of Rs. 15840 crores.

Other Rural Housing Schemes include Credit cum Subsidy Scheme, Innovative Stream for Rural Housing and Habitat Development, setting up of Rural Buildings Centres, Samagra Awaas Yojana, Pradhan Mantri Gramodya Yojana (Grameen Awwas) and equity support to HUDCO. The credit cum subsidy scheme targets rural families

having annual income upto Rs. 32000. While subsidy is restricted to Rs. 10,000, the maximum loan amount is Rs. 40,000. The innovative stream for Rural Housing and Habitat Development was launched with the objective of promoting and propagating the cost effective and environment friendly construction technologies, materials and design for suitable rural human settlements consistent with agro-climatic variations and natural disaster proneness. The scheme is being implemented on a project basis. Samagra Awaas Yojana is a comprehensive housing scheme to ensure integrated provision of shelter, sanitation and drinking water. Special central assistance of Rs. 25 lakhs is provided for each Block for undertaking the overall habitat development and IEC activities with the 10% contribution coming from the people. The Pradhan Mantri Gramodya Yojana "Gramin Awaas" was launched from the year 2000-2001. However, the Planning Commission has desired to directly manage the programme as was done under the BMS programme.

A National Mission for Rural Housing and Habitat has been set up by the Ministry of Rural Development to facilitate the interaction of Science & Technology inputs, on a continuous basis, in the sector and to provide convergence to technology, habitat and energy related issues in order to provide affordable shelter for all in the rural areas within a specified time frame and through community participation.

Pradhan Mantri Gram Sadak Yojana

Providing connectivity to the rural areas has been a prime concern of the Government. Therefore, in December, 2000 a 100% central sponsored Scheme called the Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched with the objective of providing connectivity by all weather roads to abut 1.60 lakh unconnected habitations with a population of 500 persons or more in the rural areas by the end of the 10th Plan Period (2007) at an estimated cost of about Rs. 60,000 crores. In the last two years clearance was given to the project proposals amounting to Rs. 7554 crores pertaining to all 28 States and 6 Union Territories. Over 37 000 habitations are likely to be benefited and over 56,000 Km. of roads will be constructed on completion of the roads works already cleared under the PMGSY. Keeping in view the results and requirements of the programme external funding Agencies such as the World Bank and the Asian Development Bank have agreed to fund the programme. The road network under the programme will not only provide connectivity to the villages but also will help reduce rural poverty by providing employment and additional income. The forward and backward linkages of an important infrastructure like road connectivity and its potential for poverty reduction is well recognised.

Drinking Water Supply and Sanitation

The Ministry of Rural Development is mandated to provide safe drinking water in all rural habitations by 2004. To achieve this objective, the Department of Drinking Water Supply is implementing certain programmes like Accelerated Rural Water Supply Programme, to resolve the drinking water crisis in the rural areas. The programme also gives importance to rain water harvesting, sustainability of resources and community

participation. Considerable progress has been made in meeting drinking water needs of the rural population over the years. Out of a total number of 14.22 lakh rural habitations in the country, during the last three years, 1.65 lakh habitations were fully covered with 40 litres of drinking water per capita per day. As of end October, 2002, the fully covered habitations were 12.80 lakh (90.03%). While 1.26 lakh habitations (8.8%) are partially covered and only 15,444 rural habitations (1.09%) are not covered. In order to reassess the rural drinking water status, a nationwide survey is being launched.

The major objectives of the Accelerated Rural Water Supply Programme (ARWSP) are to ensure coverage of all rural habitations with access to safe drinking water, to ensure sustainability of water systems and sources, to tackle the problem of water quality and to institutionalise the reform initiative in drinking water supply sector. Recognising the importance of providing safe drinking water in rural habitations, Government of India has been providing financial assistance to the State Governments. Under ARWSP, the budgetary support has been increased from Rs. 1741.41 crore in 1999-2000 to Rs. 2235 crore in the year 2002-03. The Plan outlay of the Department has been increased to Rs. 14,200 crores during the Tenth Plan as compared to the Ninth Plan release of Rs. 8455 crores, an increase of 68%.

Sector reform project is a new initiative based on demand responsive strategy and community participatory approach in rural drinking water sector. Sector reform projects for 67 Districts of 26 States have been sanctioned with a total cost of Rs. 2060 crores. Under this programme, the community contribution has been Rs. 31 crores from 18.65 lakhs households. Encouraged by the success of sector reform projects a new initiative namely, Swajaldhara has been launched in December, 2002. Under this initiative, as aginast the districts under sector reforms, Panchayats, Blocks and other beneficiaries groups have been empowered to formulate, implement, operate and maintain drinking water projects. 90% of funds towards the project cost is provided by the Government and the beneficiary group has to contribute 10% of the cost.

The Central Government supplements the efforts of the States in undertaking rural sanitation under Central Rural Sanitation Programme (CRSP) which was launched in 1986. CRSP aims at improving the quality of life of the rural poor and providing privacy and dignity to women in rural areas. A little over 1.47 lakh individual household projects have been constructed during the last three years for which Rs. 385.36 crores were released to the States. The total sanitation campaign (TSC) was launched in 1999 to improve the quality of life and promote sanitation in rural areas. TSC follows participatory demand responsive approach, educating the rural households about the benefits of proper sanitation and hygiene. TSC is being implemented in 185 Districts with an outlay of Rs. 2032 crore with GoI share of 1225 crore. So far the community contribution has been Rs. 12 crore. Under TSC, projects envisage to have 1.69 crore household toilets, 20434 women sanitary complexes, 1.68 lakh School toilets, 13206 toilets for Balwadis and 1616 rural sanitary Marts.

Area Development Programmes

One of the important objectives of the Watershed Development Programme is emphasis on sustainable rural livelihood support system to self-help groups and user groups. Concerted efforts are being made through Area Development programmes such as Integrated Wasteland Development programme (IWDP) Drought Prone Area Programme (DPAP) and Desert Development Programme (DDP) to regenerate and rejuvenate wastelands and degraded lands. All the Area Development Programmes are being implemented through the Watershed development approach. There has been a threefold increase in the budget provision for wasteland development programme. The budget provision for area development programmes has been substantially increased, particularly during the Tenth Five Year Plan period and the provision of Rs. 1000 crores has been made during the year 2002-03. During the last three years, 12,290 Watershed projects were sanctioned under DDP and DPAP and 304 Watershed projects were sanctioned under IWDP. Guidelines were revised in 2001 to provide for Government and NGO participation in Watershed projects implementation and greater role for women and Panchayati Raj Institutions in implementation.

Other Sectoral Programmes for the Weaker Sections

Apart -from the Ministry of Rural Development there are other line departments/Ministries having specific programmes and policies for the weaker sections. These include the Ministry of Social Justice & Empowerment, Ministry of Tribal Affairs, Ministry of Health & Family Welfare, Department of Women & Child, Ministry of Health etc. The Ministry of Social Justice & Empowerment is concerned with the welfare of the SCs, OBC, Minorities, Disabled and the socially disadvantage. A major break-through in the development of SCs was the formulation of a new strategy in the 6 th plan which included the Special Component Plan (SCP), the Special Central Assistance (SCA) and the Scheduled Castes Development Corporations in the states and UTs (SCDC). The SCP is designed to channelising the flow of outlays and benefits from the general sectors in the plans of the states and the central ministries for development of SCs, at least in proportion to their population in the total population. The SCP of the states are supplemented with SCA with a view to creating a multiplier effect and helping in filling the gaps which the normal financial flow from the Central and State Plans are not able to provide. To implement economic development programmes for SCs living below the poverty line and specially to mobilise institutional credit at concessional rate the Government of India decided in 1978-79 to participate in the share capital of the SCDCs in the States/UTs which have a sizeable SC population. For the educational development of the SCs this Ministry is implementing pre-matric and post-matric scholarship schemes, book bank scheme, and assistance to state governments for construction of girls and boys hostels. The National Scheme for Liberation and Rehabilitation of Scavengers launched in 1992 aims at eliminating the inhuman practice of manual handling of night soil and rehabilitating under alternative occupations through training and assistance. For this purpose, a Finance & Development Corporation for assisting this group has also been set up.

The strategy of tribal sub plan in areas of tribal concentration was evolved in the 5th plan. It represents total development efforts in the identified areas with the aid of resources pooled from (1) outlays from State Plans (2) Investment by Central Ministries (3) Special Central Assistance of the Ministry of Home Affairs and (4) Institutional Finance. Since certain pockets of tribal concentration outside the sub-plan area were still left out of the tribal sub-plan strategy, during the 6h plan a Modified Area Development Approach (MADA) under the sub-plan was launched. As in the case of development programmes of SCs there are similar educational and economic development programmes for STs.

Education

The Constitution of India provides for free and compulsory education for all children upto the age of fourteen. An enunciation of the National Policy of Education (NPE), which was announced in 1986 and then revised in 1992 guides the efforts of the country in this regard. Though significant improvements are seen in various indicators, the ultimate goal of providing universal quality education for all still remains to be achieved. However, large disparities exist across the States in terms of enrolment and educationally backward States have lower GER than the all-India average.

The efforts at formal education are being supplemented by Non-formal education for the large numbers of girls and working children who have been left out of the ambit of education. Non-Formal Education Scheme provides the flexibility, relevance of curriculum and diversity in learning activity to reach out through a decentralized management system.

Nutrition

The importance of optimal nutrition for human development is well recognized. At the time of Independence the country faced two major nutritional problems – one was the threat of famine and acute starvation due to low agricultural production and lack of appropriate food distribution system. The other was chronic energy-deficiency due to low dietary intake because of poverty and low purchasing power; high prevalence of infection because of poor access to safe drinking water, sanitation and health care, poor utilisation of available facilities due to low literacy and lack of awareness.

Initiatives that have been taken up during the last five decades to improve nutritional status of the population include: (a) increasing food production-building buffer stocks (b) improving food distribution (c) improving household food security through improving purchasing power; direct or indirect food subsidy (d) food supplementation to address special needs of the vulnerable groups (e) implementation of National programmes for tackling anaemia, iodine deficiency disorders and Vitamin A deficiency. As a result of all these interventions there has been substantial reduction in severe grades of under-nutrition in children and some improvement in nutritional status of all segments of population.

Public Distribution System (PDS)

In order to have an effective mechanism to ensure availability of food at affordable prices at household level for the poor, the PDS has been revamped and streamlined. The streamlined system aims to include only the really poor and vulnerable sections of the society such as landless agricultural labourers, Marginal farmers, rural artisans/craftsmen such as potters, weavers, blacksmiths, carpenters etc. in the rural areas and slum dwellers and persons earning their livelihood on a daily basis in the informal sector like porters, rickshaw pullers and hand cart pullers, fruit and flower sellers on the pavements etc. in urban areas.

However, several challenges remain. To meet all the nutritional needs of the growing population, the country will have to produce extra food grains annually and achieve increase in production of livestock, fish and horticultural products. This has to be achieved in spite of shrinking arable land and farm size, low productivity, growing regional disparity and depletion of natural resource base.

Family Welfare

India is the second most populous country in the world, sustaining 16.7 per cent of the world population on 2.4 per cent of the world's surface area. India became the first country to formulate a National Family Planning Programme in 1952. The focus of India's health services right from the early 1950s has been health care for women, children, and provision of contraceptive services. Successive Five Year Plans have been providing the policy framework and funding for the planned development of nationwide health care infrastructure and manpower. The Family Welfare Programme provides the States with the additional infrastructure, manpower and consumables needed for improving the health status of women and children and to meet all the felt needs for fertility regulation.

Technological advances and the improved quality and coverage of health care resulted in a rapid fall in the crude death rate (CDR) from 25.1 in 1951 to 8.5 in 2000. In contrast, the reduction in crude birth rate (CBR) has been less steep, from 40.8 in 1951 to 25.8 in 2000.

In the Tenth Plan, the thrust areas of the family welfare strategy include meeting all the ultimate needs for contraception to reduce unwanted pregnancies; integrated health care for women and children; community need assessment and decentralized area specific micro planning and implementation of program for health care for women and children, to reduce infant mortality and reduce high desired fertility; emphasis on quality and content of care; meeting the health care needs of the family with emphasis on involvement of men in planned parenthood; need and demand driven service; improved logistics for ensuring adequate and timely supplies to meet the needs;

Further, the country seeks to achieve the National Population Policy goal of replacement level of fertility by 2010 and to accelerate the pace of demographic transition

and achieve population stabilization by 2045. Early population stabilization will enable the country to achieve its developmental goal of improving the economic status and quality of life of the citizens.

POVERTY REDUCTION IN THE 10TH PLAN AND BEYOND

As indicated, the Central Plan outlay of poverty reduction programmes during the 10th five year plan has been estimated at Rs. 76774 crores which will be supplemented by the State share and also the cost of foodgrain allocation. However, any substantial reduction in chronic poverty can be achieved only if the programme beneficiaries are appropriately targeted. Past experience reveals that to some extent, the non-poor try to corner the programme benefits intended for the rural poor. Therefore, it is absolutely essential that during the 10th Five year plan period, better targeted measurer are adopted so as to reach the programme benefits to the intended beneficiaries. Thus proper identification of the poor should receive utmost priority in the delivery of the programme benefits.

The Ministry of Rural Development conducts the Below the Poverty Line (BPL) Census in all the rural areas of the country in the beginning of each plan period, through the State Government/UT Administration for identification of persons living below the poverty line and targeting them under the Programme of the Ministry. While the estimation of poverty in India is done by the Planning commission based on the Quinquennial Consumer Expenditure Surveys conducted by the National Sample Survey Organisation (NSSO), the Ministry of rural Development has conducted door to door enumeration of all the rural households in the country in 1992 and 1997 for identifying the households living below the poverty line. While the BPL Census 1992 identified 52.49 percent of the rural families living below the poverty line, the BPL Census 1997 resulted in identification of only 41.05% of the rural families of BPL. However, the methodology adopted in these two Censuses for identification of BPL families were different and hence, the results were not comparable. Nor are these results comparable with the poverty ratios estimated by the Planning Commission. Not surprisingly, the methodologies adopted for identification of BPL households in 1992 as well as in 1997 attracted criticism from various quarters.

In order to overcome the deficiencies noticed in the earlier BPL survey for conducting the next BPL survey in 2002 an Expert Group was constituted to look afresh at the methodology and devise a conceptually simple and easy to canvass schedule incorporating important socio-economic parameters of the BPL households in the rural areas of the country. It may be recalled that the Lakdawala Committee has recommended that the poverty ratio under their methodology needs to be supplemented and corrected with indicators which may also be more readily verifiable than income or consumption expenditure . This is important in order to refine targeting so that the ineligible are excluded from, and the eligible are fully covered in the intended benefits from targeted anti-poverty programmes.

The Expert Group, therefore, relied on the methodology suggested by VM Rao et.al. (1998) in adopting a set of socio-economic indicators reflecting the relative deprivation of the rural poor. An important recommendation of the Expert Group (2002) was the sub-categorization of the households into "Very Poor, "Poor, "Not-so-Poor" and "Non-Poor" based on a set of socio-economic characteristics central to the rural poor. The bottom two categories viz., "Very Poor" and "Poor" would constitute the chronically poor. The socio-economic parameters include status regarding land ownership, to wage earnings, ownership of live stock, ownership of pucca houses and consumer durables, item wise monthly expenditure, prevalence of migration, food sufficiency, indebtedness, besides preference for assistance for the on-going programmes of the Ministry of Rural Development. There is no doubt that the chronically poor are a heterogeneous group. They include the aged, the disabled women headed household, groups which suffer from social discrimination like SCs/STs in the Indian context, people living in remote rural areas etc. The chronically may suffer more than one form of disadvantage arising from gender, age,. Social grouping, disability etc.

The State Governments are given the flexibility to determine the cut off scores taking into consideration the regional disparities. It was suggested that while deciding the cut off scores keeping in view the upper limit of BPL households, the results of the BPL Census may be compared with the estimates of poverty obtained through the NSSO surveys on consumer expenditure at sub-regional levels. The on-going BPL Census is expected to identify the chronically poor which is the first stage in any poverty eradication Programme.

One of the important recommendation of the Expert Group is that the total score obtained by each household in a village may be displayed at a prominent place to ensure transparency and reduce the possibility of errors. The inter-se ranking of each BPL household as approved by the Gram Sabha should also be displayed at prominent places of the village. The BPL Census will cover all the households in the rural areas of the country. A wealth of information relating to the suggested indicators of rural life will be generated through the Census which could be utilised for assessing the area specific and people specific requirements and devising appropriate programmes to address such requirements. This would require careful analysis of the information and building up a poverty profile of the rural poor at the national, State, District, Block and village levels. It is hoped that the new methodology recommended by the Expert Group based on relative deprivation of the rural poor will greatly help in proper targeting of the chronically poor and extending the benefits of various programmes to them.

Role of PRIs

One of the important features of the 10th Five Year Plan is a definite policy of decentralised administration. There has been a paradagm shift in the strategy for rural development with focus on decentralisation through speedy and effective devolution of financial and administrative powers to the Panchayati Raj Institutions (PRIs). A strategy of pro-poor policy according to which the rural poor are treated as a resource rather than as a burden, whose ideas and experience are now an integral part of the development

strategy. Accordingly, the emphasis has shifted towards the participation of the people through PRIs and Self Help Groups (SHGs) in the planning, formulation and implementation of the programmes.

Panchayati Raj Institutions constitute the core of decentralised development planning and its implementation. Under most of the Rural Development Programmes, a crucial role is assigned to the PRIs in programme implementation. The Ministry is also pursuing with the State Governments for expeditious devolution of requisite administrative and financial powers to the PRIs as envisaged under the 73rd Amendment Act. In the All India Panchayat Adhyakshas Sammelan held in April, 2002, a National Declaration resolving that the State Governments will ensure the implementation of provisions of Constitution (73rd Amendment) Act, 1992 and the provision of Panchayats (Extension to Scheduled Areas) Act, 1996 by December, 31, 2002 was adopted by consensus.

Emerging Policy Issues and Required Changes

There are several policy issues emerging from the past experience of programme implementation outcome. First and foremost, there are a number of flaws in the guidelines of various programmes which need correction. It may be mentioned here that most of the poverty reduction programmes are formulated with uniform guidelines applicable through- out the country. However, in the context of diversity in various regions even across the States it is necessary that programme guidelines should be formulated taking into account the ground realities prevailing in various regions. There is no flexibility incorporated in any of the programmes at present, while local situation necessitates adapting the programme content to the local requirements. For instance, it may not be possible to mobilise 10 to 15 beneficiaries of SHGs in all the regions uniformly across the country. Similarly, land and geographical terrain in certain areas may not be suitable for the specifications prescribed under the IAY, or sanitary latrines. In some places, particularly in regions where there is large scale educated unemployment, local labourers may not be coming forward to take up work at the wage rate prescribed under the SGRY. Therefore, what is required is formulation of schemes and guidelines in accordance with area specific requirements and people specific needs.

The Issue of Centrally Sponsored Schemes (CSS)

There has been a persistent demand from a number of State Governments that the Centrally Sponsored Schemes should be transferred to the State along with the resources, especially those falling in the purview of the State list as per the Constitution and retention of the CSS be limited to those as qualified under the criteria laid down in the Approach Paper to Ninth Five Year Plan. According to the Approach Paper "in principle, CSS should be confined to schemes of an interstate character, matters impinging on National Security, selected national priorities where central supervision is essential for effective implementation and multi state externally financed projects where central coordination is necessary for operational reasons." Based on the exercise undertaken in the Planning Commission, a number of schemes have been identified to be transferred to

the States and some other schemes have been merged. While there is persistent demand for transfer of some of the anti-poverty programmes to the States, it is important to observe that the schemes operated by the MoRD are in accordance with the principles enunciated in the approach paper to the 9th five year plan i.e. only those schemes of selected national priorities where central supervision is essential for effective implementation and multi-state externally financed projects where central coordination is necessary for operational reasons. For example, Sector Reform and Rural Sanitation Programmes. Therefore, it is essential that the anti-poverty programmes including IAY continue to be Centrally Sponsored Schemes, lest programme implementation may not suffer.

The question of funding pattern and the State Share

In most of the programmes of the Ministry like SGRY, SGSY, IAY, DPAP and DDP, the funding pattern is in the ratio of 3:1 between the Centre and the State excepting in the case of Integrated Wasteland Development Programme where the ratio is 11:1. The Pradhan Mantri Gram Sadak Yojana and the Accelerated Rural Water Supply Programme is 100% funded by the Central Government. However, in the ARWSP, it is stipulated that matching fund will be provided by the State under Minimum Needs Programme. Under Sector Reform Programme of Rural Water Supply, 90% of the total project cost is shared by the Centre and 10% by the Beneficiaries.

Most often, the State Governments are not able to avail of the central allocation in full due to scarcity of State resources to meet their contribution as stipulated in the funding pattern. As a matter of fact, States like Assam were not able to access any central funds under poverty alleviation programmes for quite a long period as the State share was not forthcoming. Therefore, there is a strong case for 100% funding of the poverty alleviation programmes by the Central Government. This is particularly important because one of the major reasons attributed to non-utilisation of funds by various States is the lack of State share. Consequently, it is the chronically poor who are deprived of assistance under various programmes and their plight will deteriorate in the process. If the Central share is fully released without the conditionality of the State share that will go a long way in ameliorating the conditions of the chronically poor. Although there is an argument against this because it is apprehended that if the programmes are fully funded by the Centre, the total allocation will go down. But something is better than nothing.

Role of Implementing Agencies

All the programmes formulated by the Ministry of Rural Development for poverty reduction are presently being implemented by the State Governments, District authorities, NGOs and PRIs. Under most of the programmes, funds are directly transmitted to the District Rural Development Agencies (DRDAs). While huge amount of public money is being disbursed to the States for implementation of various programmes, the role of the Central Government is confined to effective monitoring. Though the programmes of poverty reduction are fairly well designed, poor delivery is a major hurdle in achieving the target. The Government machinery at the cutting edge level is thinly spread, poorly

trained and ill-equipped to implement the programmes, which require not only commitment to the poor but also certain amount of technical expertise. Given the outreach of Government the administrative machinery will have to be strengthened by reforming it from within by providing support through networking with other Institutions and by subjecting it to greater supervision and control by PRIs and other Community Based Organizations. (GoI-2001). It is seen from various surveys and studies that there are problems of implementing the programmes on account of a variety of reasons. Deviation from the guidelines of the programmes, wrong selection of beneficiates, temporary diversion of funds, engagement of contractors and deployment of machinery under wage employment programme are major impediments found in programme implementation. Therefore, the Implementing Agencies are to gear up to the task of effective implementation and delivery mechanism under various poverty reduction programmes. It may be necessary perhaps to prescribe a fixed tenure for the programme implementers not only to ensure effective programme delivery but also to establish accountability. In the context of decentralised administration, where the programme implementation is entrusted to the grassroot levels, it would be worthwhile to examine the relevance of interference by outside interest groups in programme implementation. What is required is to facilitate improvement in programme implementation environment so as to ensure speedy and timely delivery of the benefits to the chronically poor.

Allocation criteria needs a relook

The Lakdawala Committee has observed that although interstate comparisons are used for the allocation of funds to States "considering that there could still be differences in views about definition and measurement of poverty, we are not in favour of using these estimates to derive any poverty criterion in such an important matter as the inter-se allocation of financial transfers to the States". (Expert Group, 1993 page). Yet the criteria for allocation of funds to the States under major rural development programmes remains to be the relative poverty ratio i.e. allocation will be made to the States on the basis of the proportion of the rural poor in a State to the total rural poor in the country as per official estimates. Objections have been raised by several States in the past against this allocation criteria. Some other States have been demanding a change in the allocation criteria. Some of the State have also been demanding incentive for better performance in terms of poverty reduction. Moreover, there are special needs and pockets of acute distress in States and these issues need to be addressed. Therefore, an Expert Group has been set up to deliberate upon the issue of determining a suitable criterion for allocation of funds under various rural poverty alleviation programmes in accordance with the recommendations made by the NDC Committee.

The Group recommended that since the poverty ratios have been used as a basis for allocation of funds under major rural development programmes for a number of years the criterion should be based on poverty indicators and it would not be proper to substitute it by any non-poverty measure. However, the poverty indicators need to be supplemented by non-poverty indicators like reduction in population, infant mortality rate etc. and 20% weightage may be given to this parameter. Though this weightage is arbitrary, the Expert

Group felt that until a final decision is taken it would be appropriate to continue with the existing criterion of allocation of funds based on adjusted shares which is a presently used criterion. But there is a need to quickly evolve a suitable methodology of computing State level poverty estimates.

Review of the methodology of poverty estimation

As mentioned earlier, the methodology used by the NSSO for the 1999-2000 survey is not comparable with the earlier surveys and there are inherent limitations, particularly non-comparability of the official poverty ratios so derived with the earlier estimates. Moreover, the official estimate is anchored on an average calorie norm of 2400 calories for rural areas which is an average requirement. However, a single norm can not capture the differential requirements of vast section of population and households. Moreover, there has been changes in the consumption pattern, taste and habits of the people including demand for diversified food baskets since 30 years ago, when the income poverty ratio was established. Therefore, there is need to re-examine the nutritional norms recommended by the National Institute of Nutrition. And if necessary, to evolve new norms of minimum standards which, inter alia, will incorporate the quality of life. There is also need to construct appropriate state specific poverty lines indicating inter-state Price differential including for smaller States in the North Eastern Region and the Union Territories.

Need to improve fund utilisation

There is an increasing gap between allocation and utilisation of funds under various anti poverty programmes as may be seen from the Table in the Annexure which gives the financial performance of Rural Development programmes for three years from 2001-03.

It may be seen that during 2001 as against Rs. 15,305 crores availability, the expenditure has been only Rs. 12976 crores (84.78%) leaving an unspent balance of almost 2330 crores. In the next year also the unspent balance is reported to be Rs. 6184 crores fund utilisation being 66.91%and during 2002-03 it is Rs. 6654 crores (62.68% utilisation). A number of arguments are adduced to explain this big gap and also the huge opening balance at the beginning of every financial year. This includes the inability of the States to contribute their matching share, late receipt of proposals, late receipt of Audit Reports and Utilisation Certificates, short working season due to a variety of reasons such as flood, drought other natural calamities and sometimes elections and so on. What ever be the reasons, the end result is that scarce resources allocated for alleviating rural poverty remain unutilised at a time when the chronically poor need the assistance badly. Therefore, it is the poor who are severely affected. It is, therefore, necessary to rectify this situation.

Until 1997-98, there was a provision to allow 25% of the allocation for a particular year to carry forward to the next year so as to allow the implementing agencies sufficient funds to implement the programmes during the first quarter of the year which is considered to be the best period for programme implementation. However, with effect

from April, 1999, the permissible limit to carry forward balances was reduced to 20% of the annual allocation which was further reduced to 15% in April, 2000. The funds are generally released in two instalments for different programmes. While the first instalment is released in the beginning of the financial year the second instalment is released on fulfilment of certain conditions including the achievement of an appropriate level of utilisation of available funds. The proposals for release of second instalment received after 31st December, are subjected to a graded cut because of late submissions. This measure is intended to ensure timely utilisation of funds. As mentioned above, the implementing agencies face a host of problems in timely utilisation of funds. While it is necessary to ensure a healthy atmosphere in programme implementation environment so as to maximise proper utilisation of funds meant for poverty alleviation programmes, it is necessary to have a relook into the graded cuts and restriction on opening balance. Perhaps the best way is to examine each individual proposal on a case-to-case basis rather than uniformly apply the graded cuts which will also reflect on the opening balance.

Awareness Generation

Many of the evaluation studies have revealed that the beneficiaries are not aware of the programme guidelines and programme content with the result that they are not able to avail of the full benefits of poverty alleviation programmes. In order to bring about socio economic transformation in the rural areas, the rural poor and other stakeholders including the NGOs, PRIs, corporate bodies etc. need to be sensitised about the issues relating to Rural Development so as to mobilise them to participate in poverty alleviation programmes. This is particularly important because majority of the rural poor are illiterates and programme contents are germane to them. Consequently, even the targeted beneficiaries are not able to derive the full benefits of the programme and leakages take place. For instance, it is reported by field surveys that in the case of Indira Awaas Yojana, the actual beneficiaries are underpaid of the total entitlement. It is therefore necessary that the IEC activities may be intensified and different methods of awareness generation may be resorted to for creating awareness amongst the target groups and mobilising them for participatory development. The general public and opinion makers too need to be sensitised. In the final analysis people's involvement and participation is the key for the success of poverty alleviation programmes.

Issues concerning special problem States

There are several special problem States such as North Eastern Region which continue to be relatively underdeveloped on account of a variety of reasons. In order to bring these States at par with other parts of the country particularly for generation of employment and poverty reduction in the rural areas, Government has taken various measures over the years including earmarking 10% of the Budget allocation for the North Eastern States and Sikkim. In case the 10% allocation is not spent in the year it gets transferred to the non-lapsable pool to be utilised for development of the States of the region. However, the North Eastern States are not able to utilise the allocated funds resulting in deprivation of the benefits to the rural poor. Therefore, a mere provisioning of the funds may not be sufficient to achieve the objective of poverty reduction and development of the region.

In order to suggest measures for accelerated pace of programme implementation and poverty reduction in the North Eastern region an Inter-ministerial Committee was constituted by MoRD which made far reaching recommendations in this regard. While formulating the recommendations it was felt that the specific schemes for Rural Development requires modifications and it is necessary to have broader prospective which takes into account the development of the environment, the special characteristic, the unique tradition of people as also the problem areas and the positive elements, the potential and pitfalls, the weaknesses and the strengths. The Committee also explored the possibility of evolving a development strategy for rural areas with the focus on the poor. The recommendations of the Committee include suggestions on composite projects and measures for better utilisation for the non-lapsable pool for the rural poor. The Committee recommended that village community organizations must be built upon, strengthened, mainstreamed and utilised in Rural Development programmes. State specific approach on priority basis should be adopted to provide development thrust in the rural areas. The problem is not of lack of resources but rather of meaningful programmes and projects for addressing which District wise Perspective Plan should be prepared. This could be funded from the non-lapsable pool of resources. The strategy for rural development and for the poor in particular the thrust should be on a network of integrated and focussed programmes which are designed in a professional manner.

Role of Monitoring

The role of an effective system of monitoring for efficient implementation of the programmes can not be over emphasised. No matter how well designed a programme is unless the delivery system ensures the flow of benefit to the rural poor, the very objective will be defeated. An efficient system of monitoring will provide better means for improving service delivery, planning and optimum use of resources and demonstrating the success and failures of the programmes. Monitoring also provides inputs for better design of development interventions, project planning and community mobilisation. At the Central level, the MoRD has put in place an effective system of monitoring. However, at the State and District levels, it is necessary to improve the monitoring mechanism so as to ensure the programme outcome. It is necessary to ensure quality expenditure particularly, since increasing fund allocation has been made under various poverty reduction programmes. It is also essential that the State Government and District authorities may put in place an efficient monitoring mechanism to ensure the attainment of programme objectives in the most effective manner and within the given time frame, as a result of which, the public funds are put to optimal use and the programme benefit will flow to the rural poor in full measure.

Other Policy Issues

There are a number of other policy issues emerging from the past experience of the programme implementation. The much talked about convergence of services is an important area which deserves priority attention. It is well known that there are a large number of sectoral Ministries and Departments in the social sector which implements a

plethora of programmes for poverty reduction. This includes in particular, the programmes of the Ministry of Social Justice & Empowerment, women & child development, health and family welfare, education and human resource development and the like. However, there has not been adequate interaction amongst these Departments or organizations. As a matter of fact, most of them work as watertight compartments. It is both necessary and possible for better coordination between these organizations and agencies and also with the State Governments so that development benefits for the rural areas and particularly the poor can be optimised. This is specially so in the case of education and health care services as the role of these in poverty reduction has been well recognised.

There are certain other issues specific to various programmes of the MoRD itself. For instance, wage employment and self-employment programmes need not necessarily be independent and water-tight. In areas where educated unemployment is several self employment programmes would be more suitable and in such cases adequate flexibility should be allowed for the implementing agencies. There are several issues arising in the credit linkages for the self employment programmes. Past experience shows that institutional finance may not be readily forthcoming to the rescue of the rural poor and it is necessary to search for alternative credit mechanism as the SGSY is essentially credit oriented. The role of micro credit assumes special significance in this regard. Micro credit institutions need to be nurtured to fill the credit gap of the rural poor. Evaluation studies also reveal that skill training and marketing are two important areas which have not received adequate attention in the self employment programme and therefore, special attention may be paid on these aspects. Further, there may not be much sanctity in selection of key activities. Individuals and groups should be encouraged take up viable economic activities without any restrictions, the only criteria being profitability of the venture.

Effectiveness of Government Policy in Chronic Poverty Reduction

Contrary to sentimental perceptions of some quarters, the rural development programmes have helped reduce Chronic Poverty to a great extent. This is evidenced by a series of micro-studies conducted in different districts of the country. The poverty estimates made by the Planning Commission from 1973-74 to 1999-2000 have revealed that Chronic Poverty has gone down during these years. The BPL Census results of different rounds also provide ample proof that the incidence of chronic poverty has come down drastically. MoRD has conducted a large number of evaluation and Impact Assessment Studies through independent Research Organizations which provide conclusion evidence that there has been considerable reduction in Chronic Poverty in rural India over the years. A brief outline of some of these results are given in this section.

A series of Impact Assessment Studies have been conducted in the past, covering about 180 Districts in the country which throws interesting insight into the performance of rural development programmes. The major objects of the impact assessment studies was to find out the full impact of all the programmes of the Ministry of Rural

Development converging in selected villages of selected districts, thereby attempting to capture the spatial dimension of rural development and poverty alleviation programmes. The specific objectives of the studies are :

a) To examine whether the guidelines of various programmes are being followed with reference to selection of beneficiaries, utilisation of funds allocated, transparency and involvement of people in programme implementation.

b) To examine the survival of assets created, in particular, whether all the assets created under the programmes have survived, are in use and cost effective.

c) To assess the impact of the programmes on productivity and poverty alleviation and in particular, whether the programmes have contributed in increasing/improving production and providing employment for people below the poverty line. The Study was required to estimate the number of people who have crossed the poverty line after availing of the assistance under various programmes.

d) To examine the role and functioning of the Panchayati Raj Institutions (PRIs) in implementation of the programmes.

The micro-studies also involved verification of the assets created at the village level, quality of construction, maintenance of common facilities created and infrastructure development in the rural areas. Besides, the Studies examined whether the programmes are providing basic minimum services and over all improvement in the living conditions of the poor in the rural areas. A list of Districts covered under the Study during various years is given in the annexure.

Major findings of the impact Assessment Studies

The impact assessment study was conducted in Bolangir District of Orissa by the Institute of Rural Management in 2002. The Study revealed that while the annual household income has increased to 18.5% in the Study area, 11% of the households have crossed poverty line. However, the programme had tremendous impact on social, institutional and infrastrutural front which is given below:

Impact on Social, Institutional and Infrastructure Front

Description	Impact
Housing for the poor	Improved housing condition
Marketing infrastructure	More market complexes, retail outlets, storage facilities and godowns
Educational infrastructure	Better physical facilities in the form of buildings for primary schools, anganwadis
Health infrastructure	Better housing facilities for public health centres

	and veterinary dispensaries
Transport infrastructure	More village roads, bus stands and passenger rest sheds
Community infrastructure	More number of community halls, drinking water tube wells
Irrigation infrastructure	More number of pumpsets, diversion wire
Halia system	Note visible
Wage rate	Increasing trend
Untouchability	Rarely seen
Access to common property resources	More and more access to common property resources by the weaker sections
Over all living standard (dress, etc.)	Better
Secondary and tertiary activity	Involvement has gone up
Dependency on government programmes	Has gone up
Electricity pricing	Not conducive for ground water development
Number and proportion of defaulters of bank loans	Gone up

Extract from the Impact Assessment Study on the following Districts are given in the Annexure.

1. Vaishali District in Bihar
2. Salem District in Tamil Nadu
3. Bolangir District in Orissa
4. Kalahandi District of Orissa
5. West Garo Hills District of Meghalya
6. East District of Sikkim

Extract from District Level Monitoring of Karimnagar District of Andhra Pradesh is given in Annexure.

Some recent success stories are also given in the Annexure.

Concurrent Evaluation of IAY

Some positive findings on the Concurrent Evaluation of Indira Awwas Yojana brought out in 2001 are indicated below:

- The scheme has been able to provide shelter benefits to significant proportions of socially and economically vulnerable populations in most of the States.
- Gram Sabhas have been involved in section of beneficiaries in nearly three quarters of the cases.

- The occupancy rate of IAY houses is very high, indicating that the investment made in building houses is largely justified.

- Most of the IAY houses have used local materials for construction, thus resulting in useful linkages with local skills and resources.

- All IAY houses, barring a minuscule proportion, have easy access to drinking water with facilities like hand pumps, taps, or village wells located within the premises of the habitation.

- In general, the beneficiaries are satisfied with the constructed houses.

Concurrent Evaluation of SGSY

The first-ever Concurrent Evaluation of the Swarnjyanti Gram Swarozgar Yojana (SGSY), the only Self-Employment Programme being implemented by the Ministry of Rural Development through the State Governments, was conducted by the Ministry of Rural Development recently and the Report has been brought out. About 29 Research Institutions spread through out the country have been engaged in conducting the field Survey, collection, collation and analysis of data on various aspects of self-employment over a period of six months. The Centre for Management Development (CMD) Thiruvananthapuram coordinated with the data collecting Institutions and prepared the All India Report. The Report has brought out very interesting conclusions.

The Report indicates that Haryana, Punjab, Andhra Pradesh, Himachal Pradesh, Tripura and Goa ranked as the best performing States in regard to implementation of the programmes, based on the criteria of average investment for BPL familles, credit subsidy ratio, utilisation of funds, receipt and disbursement of funds and a number of other parameters. 14 States, namely, Andhra Pradesh, Chhatisgarh, Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu and Tripura have been able to utilise the funds completely.

The average income generated by the sample households and groups is found steadily increasing and the average annual incremental income is estimated at Rs. 8,800/- for individuals and for the groups Rs. 34,930/-. Most of the total Swarozgaris (93%) belong to the BPL families and majority of the SGSY beneficiaries (64%) are women. Swarozgaris from Scheduled Castes/Scheduled Tribes constitute 47.45%. Another interesting finding is that more than three fourth of the total Swarozgaris are either illiterate or just literate.

Almost 84% of the total beneficiaries are of the opinion that SGSY activities have helped them in increasing their income and nearly 61% reported that the programme has helped them to increase their savings as well. The programme has also resulted in developing a greater desire for self-employment. More than 40% of the swarozgaris have claimed that there has been improvements in their social prestige and around 38% have

claimed that they could provide their children and other members of the family better health and education facilities after taking up SGSY activities.

The Study revealed that the prime objective of SGSY in bringing BPL families above the poverty line is satisfied to some extent as 49% of the SHGs had incremental income although the groups have just started their economic activities and may take a year or two more to stabilise themselves. 43% of the SHGs reported substantial increase in their savings.

The analysis of the survey findings reveals that among the total Swarozgaris who have reported income generation from their SGSY activities, 37.24% individuals and 15% SHGs have crossed the poverty line due to SGSY activities.

The major complaints reported by the District Authorities include non-cooperation from the Banks, delay in Bank procedure and delay in disbursement of the assistance. More than 2/3rd of the districts face problems in operationalising the Scheme which include problems of coordination with the Banks, lack of awareness among the target groups, inadequate infrastructure and staff support. Though the programme has been successful in reaching the target groups, instances have been reported where people who are not eligible have also become beneficiaries. The formation and evolution of SHGs are observed to be rather slow in most of the districts surveyed.

Critical review of the poverty reduction programmes

The various anti- poverty programmes came for critical review on the eve of the Tenth Plan. Considering the prevalence of widespread unemployment the Government had evolved specific programmes for creating employment opportunities. Such Programmes have been guaranteed/assured and non-committal in its approach. Assurance for employment imposes a relatively less commitment on the government where financial implication will be less than that under guaranteed employment policy. Unlike a regime of guaranteed or assured employment policy which are demand driven, a noncommittal employment programme like EAS is supply driven where size of employment generation depends on the size of the budget. Under EAS job takers are only about 20 million as against the total population of about 106 million who require employment. Wage employment may not be needed in all regions and can be focussed in backward and poor districts. Providing a guarantee of work, at least in environmentally degraded backward regions having poor infrastructure is absolutely essential. In the case of rural housing it is necessary to focus on the shelterless rather than the entire BPL group as many of them do possess a dwelling which is built with local technology and local material. The limitations of resources and the size of the target group suggests that the programmmes have to be calibrated to subserve the most needy or the chronically poor.

Self- employment and the related credit linkage has been an important strategy for poverty alleviation. Despite the impressive gains made by the rural credit delivery system in terms of resource mobilisation, geographical coverage, and functional reach

during the last three decades, there has been deterioration in the credit delivery mechanism and quality of lending. The over-emphasis on quantitative target has spawned the selection of non-viable projects and under-financing. This combined with instances of wilful default has created an impression in the lending institutions that the poor lack the ability to put credit to productive use and repay loans. Social mobilisation of the poor through the Self-Help Groups (SHG) can be considered to be an effective means to establish this linkage. In fact the SGSY is anchored on SHGS. SHG movement provides scope for micro credit route for self- employment of the poor. Evaluation of developmental programmes have time and again bought to light the fact that there is marked variation from State to States. For instance group based activities may not take-off in regions where there is lack of social cohesiveness. In such instances, the option of beneficiary oriented schemes have to be given priority. The provision of credit assistance to the individual or the group has to be preceded by capacity building and training so that the programme can
sustain itself through recycling of loan repayments. There is an urgent need to undertake micro-level planning to identify key activities/livelihood . The existing administrative formations like the DRDAs are not equipped to carry out this function. As the NG0s can play the role of a catalyst there is a need for committed and competent NG0s at the district level and they have to be carefully chosen. It is time to wean away from subsidy. Scarce resources should be deployed for infrastructure and support services as envisaged in SGSY, much of which will be of benefit to the general micro finance programme and for organising training.

Concluding Observations

The anti- poverty programmes have not been an unqualified success . This is not entirely surprising considering the size of the country, the complexities of the task, regional variations , administrative weaknesses, leakages, under-funding etc. Multiple objectives, uneconomic delivery costs and weak monitoring have diluted the benefits of the programmes. Nevertheless, the anti- poverty measures have made a dent in poverty eradication as is evidenced by the decline in the overall poverty ratio in the country. What is now needed is to calibrate the system to meet the special needs of certain states where poverty levels are still significantly high and to put in place a fool-proof monitoring mechanism buttressed by periodic evaluation of the programmes to check leakages. Some flexibility may also have to be introduced to make the programmes respond to local needs for making midterm correction wherever deemed necessary.

Correct targetting is the essence of success in antipoverty programmes. This would require a sound information /data base so that it is the poor who participate in the programmes intended for them. The costs and the benefits of programme participation vary with the scale of the programme and its location. Unfortunately, social programmes invariably have a hidden cost which is to be borne by the beneficiary such as transaction cost to be paid to secure access to the programme. Empowerment of the poor is therefore a sine qua non for securing a higher placement for the poor. Effective targetting is to be the mantra. There has also to be a greater convergence in programmes of health, education, nutrition, water and sanitation along with income generating activities . States

with high incidence of poverty can consider a strategy of saturating poverty by taking up one district with chronic poverty for concerted action during a plan period with the objective of totally eradicating poverty. Since an effective delivery system is the key to success, decentralisation of both functions and resources has to become a reality which has become possible with the 73rd and 74th Constitutional Amendments. In the final analysis it is through devolution of functions and authority that poverty can be eradicated at the grass root level .

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SELECT REFERENCES

Ahluwalia,M.S.(1976)	Inequality, Poverty and Development, Journal of Development Economics, Vol.3,No.3
Ahluwalia,M.S.(1976)	Rural Poverty and Agricultural Performance in India
Bardhan, P.K.(1973)	On the Incidence of Poverty in Rural India, Economic and Political Weekly
Beckerman.W.(1979)	The Impact of Income Maintenance Payments on Poverty in Britain, Economic Journal
Dandekar.V.M. and N Rath (1971)	Poverty in India, Indian School of Political Economy
Dandekar V.M.(1981)	On Measurement of Poverty, EPW, Vol.XVI No. 30
Dubey & Gangopadhyay (1998)	Counting the poor, Where are the poor in India, Sarvekshana Analytical Report Number 1, Department Of Statistics, Government of India
Expert Group (1993)	Report of the Expert Group on Estimation of Proportion And Number of Poor, Planning Commission, Government of India, New Delhi
Franklin.N.N.(1967)	The Concept and Measurement of minimum living Standards, Internal Labour Review
Gaiha R.(1988)	On Measuring Risk of Rural Poverty in India' in T.N. Srinivasan and P K Bardhan (ed.) Rural Poverty in South Asia, OUP
Gaiha (1992)	Estimates of Rural Poverty in India, An Assessment in Barbara Harriss (eds.) Poverty in India, Research & Policy
Government of India (1999)	Planning Commission, Ninth Five Year Plan, 1997-2002 Vol.II
Harriss Barbara ed.al.(1992)	Poverty in India, Research & Policy,OUP,Delhi
Joshi,Heather (1975)	Poverty in Bombay and Abidjan, unpublished paper, Institute of Development Studies, Sussex

Minhas B.S.(1987)	Rural Poverty, Land Distribution & Development Strategy Facts in Srinivasan & Bardhan (eds.)
Minhas B.S.(1988)	'Measurement of General Cost of Living for Urban India, All-India and Different States', Sarvekshana
Nayyar Rohini (1991)	Rural Poverty in India, An Analysis of Inter-State Differences, OUP, Delhi
Rao, V.K.R.V. (1981)	Measurement of Poverty, EPW, August, 1981
Rath. Nilkanth (1985)	Garibi Hatao: Can IRDP do it? Economic and Political Weekly
Sen.A.K. (1976)	Poverty: An Ordinal Approach to Measurement, Econometrica, March 1976
Sen.A.K.(1979)	Poverty, Inequality and Unemployment: Some conceptual issues i merasurement, EPW VIII, August 1979
Srinivasan T.N. and Bardhan P.K.(Eds.)1974	Poverty and Income Distribution in India, Indian Statistical Institute, Calcutta
Streeten.P.(1977)	The Distinctive features of a basic need approach to Development, International Development Review.19.
Sukhatme.P.V. (1981)	On measurement of Poverty, EPW XVI No.32
Vaidyanathan A.(1992)	Poverty and Economy: The Regional Dimension in Barbara Harriss et.al(Eds.)
Rao V.M.et.al(1998)	Choosing Among the Equals: Beneficiary Selection for Anti-Poverty Programmes by V.M.Rao, V.J.Naidu and K.V. Rajan in the Indian Journal of Labour Economic, VI. 41, No.2,1998.
Expert Group (2002)	Report of the Expert Group on Identification of Households Belo Poverty Line (BPL) Census 2002. Chaired by Dr. P.S.Sanjeeva Reddy.
Hulme et.al(2001)	Chronic Poverty : Measuring and Analytical Frameworks In CRPC Working paper 2 by David Hulme, Karan Moore and Andrew Shepherd.
Mehta & Shah (2003)	Chronic Poverty in India by Asha Kapur Mehta and Anita Shah, CPRC working paper 7

GOI (2001) Report of the Steering Committee on Rural poverty Alleviation, Watershed Development, Decentralised Planning and PRIs. For th Tenth Five Year Plan (2002-2007), GOI, Planning Commission.

Annexure I

Table - 2

Number and Percentage of Population Below Poverty Line by States 1999-2000 in rural areas

S. No	States / UTs	7 day recall		30 day recall	
		Persons in lakhs	Percentage of Persons	Persons in lakhs	Percentage of Persons
1	2	3	4	3	4
1	Andhra Pradesh	48.14	9.15	58.13	11.05
2	Arunachal Pradesh	3.23	34.00	3.80	40.04
3	Assam	78.27	34.00	92.17	40.04
4	Bihar	322.96	38.00	376.51	44.30
5	Goa	0.23	2.80	0.11	1.35
6	Gujarat	36.87	12.20	39.80	13.17
7	Haryana	11.13	7.71	11.94	8.27
8	Himachal Pradesh	4.63	7.61	4.84	7.94
9	Jammu & Kashmir	3.10	4.14	2.97	3.97
10	Karnataka	47.02	13.64	59.91	17.38
11	Kerala	18.20	8.14	20.97	9.38
12	Madhya Pradesh	202.78	34.58	217.32	37.06
13	Maharashtra	109.25	20.71	125.12	23.72
14	Manipur	5.54	34.00	6.53	40.04
15	Meghalaya	6.70	34.00	7.89	40.04
16	Mizoram	1.19	34.00	1.40	40.04
17	Nagaland	4.42	34.00	5.21	40.04
18	Orissa	131.63	43.98	143.69	48.01
19	Punjab	8.53	5.31	10.20	6.35
20	Rajasthan	48.97	12.22	55.06	13.74
21	Sikkim	1.70	34.00	2.00	40.04
22	Tamil Nadu	73.19	18.68	80.51	20.55
23	Tripura	10.64	34.00	12.53	40.04
24	Uttar Pradesh	379.41	28.75	412.01	31.22
25	West Bengal	154.04	27.24	180.11	31.85
26	A & N Islands	0.52	18.68	0.58	20.55
27	Chandigarh	0.06	5.4	0.06	5.75
28	D&N Haveli	0.26	15.31	0.30	17.57
29	Daman & Diu	0.02	2.80	0.01	1.35
30	Delhi	0.12	0.63	0.07	0.40
31	Lakshadweep	0.02	8.14	0.03	9.38
32	Pondicherry	0.58	18.68	0.64	20.55
	All India	**1713.35**	**24.02**	**1932.43**	27.09

Annexure II

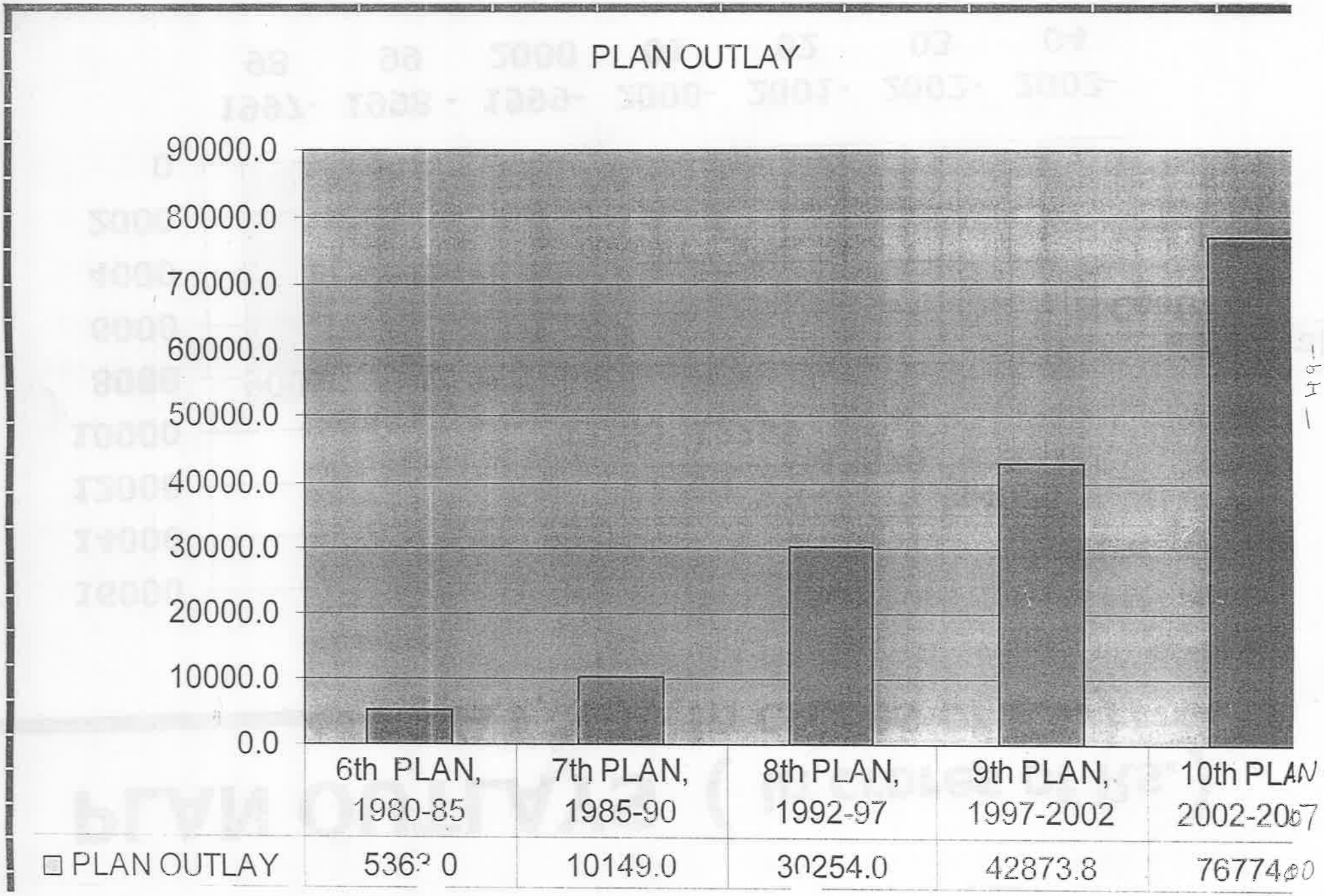
Table - 3

State-Specific Rural Poverty Lines in 1999-2000 (Rs. per capita per month)

S.No.	States	Poverty line
1	2	3
1	Andhra Pradesh	262.94
2	Assam	365.43
3	Bihar	333.07
4	Gujarat	318.94
5	Haryana	362.81
6	Himachal Pradesh	367.45
7	Karnataka	309.59
8	Kerala	374.79
9	Madhya Pradesh	311.34
10	Maharashtra	318.63
11	Orissa	323.92
12	Punjab	362.68
13	Rajasthan	344.03
14	Tamil Nadu	307.64
15	Uttar Pradesh	336.88
16	West Bengal	350.17
17	Delhi	362.68
	All India*	327.56

* The poverty line (implicit) at All India level is worked out from the expenditure class-wise distribution of persons and the poverty ratio at All India level. The poverty ratio at All India level is obtained as the weighted average of the state-wise poverty ratio.

Annexure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70000.0
60000.0
50000.0
40000.0
30000.0
20000.0
10000.0
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6th PLAN, 1980-85
7th PLAN, 1985-90
8th PLAN, 1992-97
9th PLAN, 1997-2002
10th PLAN 2002-2007
PLAN OUTLAY
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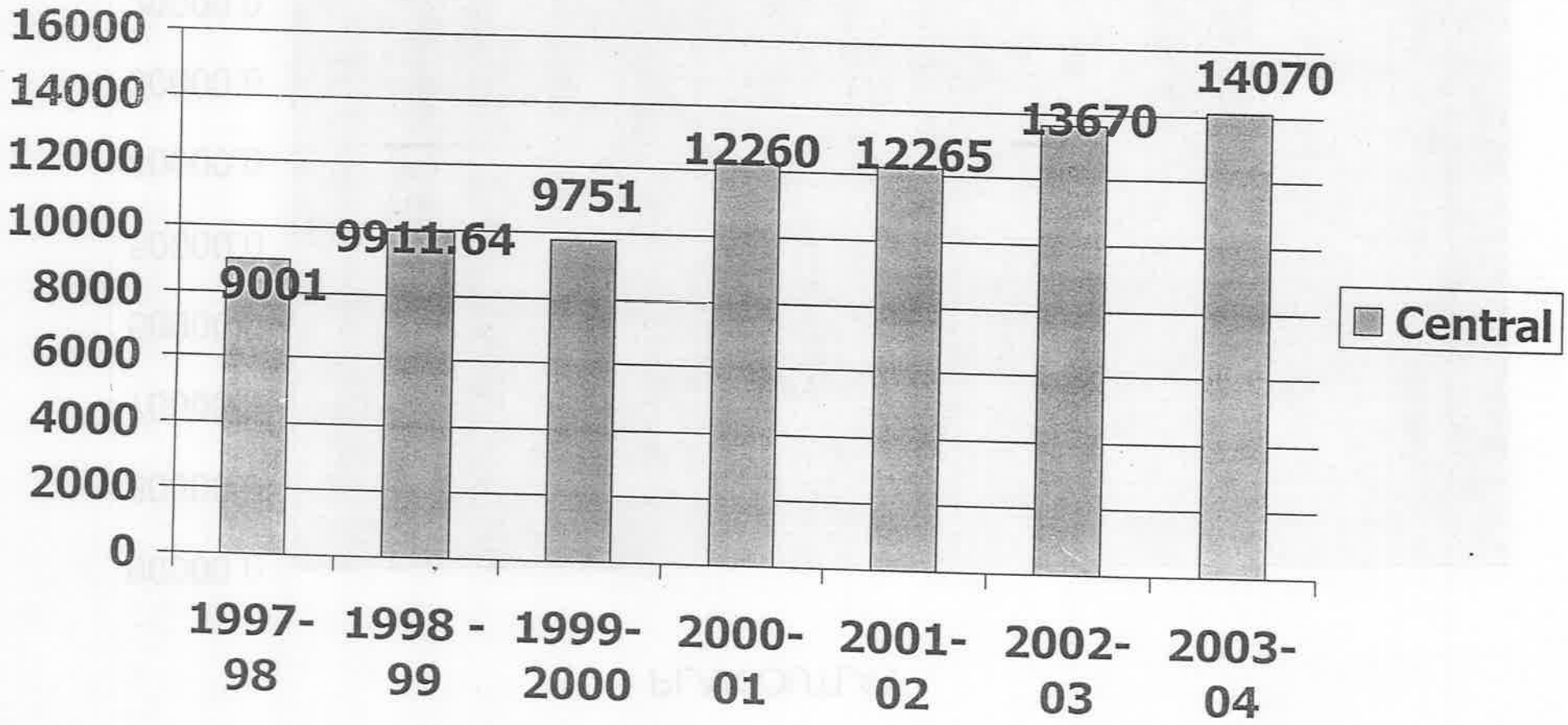
76774.00

Annexure

PLAN OUTLAYS (in crores of Rs.)



Annexure

Financial Performance of Rural Development Programmes
ALL INDIA

YEAR : 2000-2001 (Rs. in Crores)

Sl. No.	Programme Name	Opening Balance	Central Allocation	Central Release	Total Funds	Total Expenditure	Balance Funds
1	JGSY	593.48	1645.50	1327.57	2363.53	2225.36	138.17
2	EAS	688.74	1262.00	1145.27	2195.97	1861.11	334.87
3	SGSY	855.38	1000.00	462.11	1518.40	1116.36	402.04
4	DRDA Admn.	0.00	260.01	165.50	165.50	165.50	0.00
5	IAY	569.27	1613.69	1521.94	2597.93	2185.81	412.12
6	NFBS	48.18	209.14	187.32	235.50	201.65	33.84
7	NMBS	28.43	94.56	71.37	99.80	84.10	15.70
8	NOAPS	148.19	512.61	439.88	588.07	477.80	110.27
9	ANNAPURNA	0.00	99.05	99.05	99.05	35.07	63.98
10	PMGSY	0.00	2375.00	2435.00	2435.00	2110.67	324.33
11	DDP	5.99	136.34	136.34	142.32	140.37	1.95
12	DPAP	4.93	190.00	190.00	194.93	181.74	13.19
13	IWDP	6.60	386.90	386.90	393.50	371.05	22.45
14	LR	0.00	72.10	72.10	72.10	72.10	0.00
15	ARWSP	376.03	1848.09	1655.17	2031.20	1707.62	323.58
16	CRSP	40.98	42.14	131.68	172.66	39.49	133.18
	TOTAL	**3366.21**	**11747.12**	**10427.19**	**15305.45**	**12975.79**	**2329.66**

Source : Ministry of Rural Development

JGSY JAWAHAR GRAM SAMRIDHI YOJANA
EAS - EMPLOYMENT ASSURANCE SCHEME
SGSY - SWARNJAYANTI GRAM SWAROZGAR YOJANA
DRDA Admn. - District Rural Development Agency Administration
IAY - INDIRA AWAAS YOJANA
NFBS - NATIONAL FAMILY BENEFIT SCHEME
NMBS - NATIONAL MATERNITY BENEFIT SCHEME
NOAPS - NATIONAL OLD AGE PENSION SCHEME
Annapurna - Annapurna Scheme
PMGSY -Pradhan Mantri Gram Sadak Yojana
DDP - Desert Development Programme
DPAP - Drought Prone Area Programme
IWDP - Integrated Wastelands Development Programme
LR - Land Reforms
ARWSP - Accelareted Rural Water Supply Programme
CRSP - Central Rural Sanitation Programme

Annexure

Financial Performance of Rural Development Programmes
ALL INDIA

YEAR :2001-2002 (Rs. In Crores)

Sl. No.	Programme Name	Opening Balance	Central Allocation	Central Release	Total Funds	Total Expenditure	Balance Funds
1	JGSY	346.02	1870.60	1892.11	2867.89	2171.22	696.67
2	EAS	435.37	1873.00	1896.58	2898.43	2020.85	877.58
3	FFW	0.00	1738.37	1738.37	1738.37	800.00	938.37
4	SGSY	662.23	581.50	401.10	1219.40	970.33	249.07
5	DRDA Admn.	0.00	220.00	198.90	198.90	198.90	0.00
6	IAY	541.99	1618.00	1869.74	3034.11	2149.56	884.55
7	NFBS	25.11	167.90	166.95	192.06	155.47	36.58
8	NOAPS	100.37	470.24	460.15	560.52	453.61	106.91
9	ANNAPURNA	76.31	99.05	71.47	147.79	47.57	10[illegible].2
10	PMGSY	324.33	2375.00	2489.73	2814.06	1116.53	1697.53
11	DDP	9.03	149.88	149.88	158.91	146.03	12.88
12	DPAP	3.28	209.01	209.01	212.29	198.39	13.90
13	IWDP	5.25	376.79	376.79	382.04	368.24	13.80
14	SRA & ULR	0.00	24.84	24.84	24.84	24.84	0.00
15	CLR	0.00	44.71	44.71	44.71	44.71	0.00
16	ARWSP	310.30	1918.23	1723.11	2033.41	1615.68	417.73
17	CRSP	31.10	138.98	129.92	161.02	22.77	138.26
	TOTAL	**2870.69**	**13876.10**	**13843.36**	**18688.73**	**12504.69**	**6184.04**

Source : Ministry of Rural Development

JGSY JAWAHAR GRAM SAMRIDHI YOJANA
EAS - EMPLOYMENT ASSURANCE SCHEME
FFW - Food for Work
SGSY - SWARNJAYANTI GRAM SWAROZGAR YOJANA
DRDA Admn. - District Rural Development Agency Administration
IAY - INDIRA AWAAS YOJANA
NFBS - NATIONAL FAMILY BENEFIT SCHEME
NMBS - NATIONAL MATERNITY BENEFIT SCHEME
NOAPS - NATIONAL OLD AGE PENSION SCHEME
Annapurna - Annapurna Scheme
PMGSY -Pradhan Mantri Gram Sadak Yojana
DDP - Desert Development Programme
DPAP - Drought Prone Area Programme
IWDP - Integrated Wastelands Development Programme
LR - Land Reforms
CLR - Computerised Land Records
SRA & ULR - Strengthen of Revenue Administration & Updating of Land Records
ARWSP - Accelareted Rural Water Supply Programme
CRSP - Central Rural Sanitation Programme

Annexure

Financial Performance of Rural Development Programmes
ALL INDIA

YEAR :2002-2003

(Rs. in Crores)

Sl. No.	Programme Name	Opening Balance	Central Allocation	Central Release	Total Funds	Total Expenditure	Balance Funds
1	SGRY - I	785.91	1778.75	1848.53	3245.01	2553.40	691.60
2	SGRY - II	582.63	1773.78	1837.10	3001.19	2437.49	563.71
3	SGSY	415.77	567.90	504.56	1080.60	921.11	159.49
4	DRDA,Admn.	7.10	220.00	199.19	207.71	202.98	4.73
5	IAY	821.65	1656.40	1628.53	2992.63	2766.35	226.27
6	PMGSY	1697.53	2375.00	2469.00	4166.53	N/R	4166.53
7	DDP	8.17	184.99	184.99	193.16	177.41	15.75
8	DPAP	29.14	249.95	249.95	281.07	239.21	41.86
9	IWDP	9.67	210.45	210.45	220.26	201.36	18.90
10	SRA & ULR	0.00	20.73	20.73	20.73	N/R	20.73
11	CLR	0.00	31.18	31.18	31.18	N/R	31.18
12	RWS	347.15	1845.18	1901.69	2248.85	1664.44	584.40
13	RSP	0.00	0.00	140.10	140.10	11.12	128.98
	TOTAL	**4704.72**	**10914.30**	**11225.99**	**17829.01**	**11174.89**	**6654.12**

Source : Ministry of Rural Development

SGRY - I & II (streams) - SAMPOORNA GRAMIN ROZGAR YOJANA
SGSY - SWARNJAYANTI GRAM SWAROZGAR YOJANA
DRDA Admn. - District Rural Development Agency Administration
IAY - INDIRA AWAAS YOJANA
PMGSY -Pradhan Mantri Gram Sadak Yojana
DDP - Desert Development Programme
DPAP - Drought Prone Area Programme
IWDP - Integrated Wastelands Development Programme
LR - Land Reforms
CLR - Computerised Land Records
SRA & ULR - Strengthen of Revenue Administration & Updating of Land Records
RWS - Rural Water Supply
RSP - Rural Sanitation Programme

Annexure

Case #1 Nizamabad District

A disabled person benefits from SGSY Scheme.

Sri. Shaikh Babu Miya S/o Mohammed Sab (aged 35 years) of Bheemgal village (Nizamabad District) is a poor person. He studied up to 7th class. He has 6 dependent members in his family. To earn livelihood for the family, he used to sell bangles in the nearly villages of Bheemgal mandal on a bicycle. While touring in the villages on bicycle, he met with an accident and fractured his leg. Thus he became physically handicapped and was not able to ride the bicycle. Even after becoming physically handicapped, he did not lose the hopes of earning. He approached local officers and got assistance under SGSY in the month of January 2002.

He has been sanctioned a loan of Rs. 3 lakhs through SBH Bheemgal branch out of which Rs. 75,000/- is subsidy component under SGSY. With this amount he has opened a general store at main centre at Bheemgal in which items like cosmetics, bangles, stationery, school bags etc are being sold.

Due to assistance through SGSY scheme his annual income has increased from Rs. 12,000 to Rs. 24,000. He is repaying the bank loan installments regularly.

Shri. Sheikh Babu Miya and his family members are now living very happily and they are grateful to SGSY scheme which provided timely assistance.

Annexure

Case # 1 Medak District

Construction of Gram Panchayat building under SGRY – II is a good investment.

Yeuugandla village is situated in Kulkharam mandal of Medak district. This village has a population of 2920. Though the Gram Panchayat was established about 3 decades back, there was no permanent building for it until recently. Consequently, it was a problem to hold regular meetings. Recently, the villagers have taken keen interest and constructed a permanent building (with 2 rooms, a meeting hall and a verandah) at a cost of Rs. 2.15 lakh. This has been funded under JGSY / SGRY – II scheme. The Panchayat building has been constructed near village school. It has now become very convenient to hold regular meetings of Village Panchayat.

Annexure

Case # 1 Warangal District

The village road proves to be a good investment under SGRY – I.

The road from Borai to ZP road in Zaffergadh village was in a very bad condition earlier. The people could not even walk on the road. The length of this road is 300 m.

After sanction of the SGRY funds (Rs. 2 lakhs), a cement concrete road has been constructed recently. For construction of this road, 1775 man-days of employment was created. This cement concrete road has proved to be very useful for the people of this village.

The village people are grateful to SGRY scheme for providing funds for construction of this road.

Annexure

Case # 2 Nizamabad District

A poor family benefits from IAY scheme.

Smt. Vadla Laxmi W/o. Brahmaiah (age 42 years) of Bheemgal village of Nizamabad District belongs to B.C. community. Her family members include her husband and 2 children. They do not have any agricultural land for cultivation. Her husband works in a hotel and she is engaged in beedi rolling. The annual income of the household is about Rs. 12,000/- per annum. Earlier, they used to live in a hut.

During 2001-02, she was sanctioned a house under IAY scheme on the recommendation of Gram Sabha. She has received Rs. 20,000/- worth material and money till now and completed the construction. She received the installments of money and material in various stages of construction.

Smt. Vadla Laxmi's dream of constructing a pucca house is fulfilled now with the assistance of IAY scheme. This scheme has proved very useful to this poor family.

Annexure

Case # 1 Karimnagar District

Poor people in a backward village benefit from rural development schemes.

Dumala is one of the neglected villages in remote mandal of Yellareddypet in Karimnagar district. Though it is situated only 6 km away from the mandal headquarters, the development rays had not reached this village until recently. However, during the recent years this village is developing with the assistance from centrally sponsored rural development schemes.

SGRY - I & II

The development activities have been initiated with the support of SGRY in the village.As per the grama sabha resolution, in the year 2001-02, the Grama Panchayat has taken up construction of drains costing of Rs. 55,000.By completing the above drainage work, the sanitation facilities have improved in the village. In addition, the wage employment has been provided to local landless labour and women. Mr. Chandraiah a community activist said that people are feeling happy and also the sanitation in the village has improved.

SGSY

Ten women belonging to marginalized sections in Dumala have formed a Self Help Group "Peddamma SHG" in the year 1997 with the guidance of local NGO "KRUSHI". They are running their group activities very effectively. In the last five years, they have raised their savings Rs. 60,000 by mobilizing Rs. 30/- as monthly savings. At the group level, the loaning to the members on productive purpose is 90% and consumption purpose is 10%. The recovery rate is 100%. In the year 2001-2002, basing on the representation of the group members, the grama sabha has taken a decision and considered their application for the purpose of "General store" under SGSY. As per the performance of the "PEDDAMMA GROUP", the local Indian Overseas Bank has come forward and given Rs. 1 lakh as soft loan and DRDA has provided Rs. 1 lakh as grant (subsidy). With the total cost of Rs. 2 lakhs the group members have started their enterprise. Now the members of this group are getting Rs.1500/- each per month as income. The members are thankful to SGSY and Govt. of India for providing this support.

IAY

The beneficiary, Mrs. Ramindla Mariya (who has completed her house) said that she has got Rs.20,000 towards construction of a house. Another beneficiary, Mrs. Pandavula Bharathamma expressed thanks to the Govt. of India, for providing 100% as grant. She requested the Govt to enhance the grant from Rs. 20,000 to Rs. 30,000 per unit.

PMGSY

The people were not having any road facility from Dumala village to other villages, and even to mandal headquarter. Because of this problem, the children (particularly girls) were not able to go to school. Pregnant women and old people were not able to go to the hospitals. In addition, the farmers were also not in a position to send their agricultural produce to nearby market yards.After getting sanction of the link road of Rs. 11.50 lakhs from the village to mandal head quarters under PMGSY in the year 2001-02, the situation has been changed. Now the road is completed. The village people are thankful to PMGSY scheme for road construction. This road is proving to be very useful for development of this village.

CRSP

In Dumala village, under CRSP, 6 beneficiaries have got sanctions for ISL. Out of this, three beneficiaries have constructed the "Individual Sanitary Latrines". One of the beneficiaries Mrs. Pilli Laxmi has expressed her thanks to Govt. of India. She said that she has received Rs. 750 cash and 200 Kgs of rice for construction of a latrine. But it is not sufficient for completing the latrine. Therefore she requested to increase the grant to Rs. 30,000 per unit. Other beneficiaries have expressed similar opinion also.

Annexure

Details of Districts where Impact Studies have been done/assigned

I.N.	States	Study done in 1999-2000	Study done during 2000-01	Study done during 2001-02	Study assigned during 2002-03
1	Andhra Pradesh		East Godawari, Nalgonda	Guntur, Krishna	Adilabad,Cuddapah Chttoor Medak, Anantpur
2	Arunachal Pradesh		Changlong	Lohit, East Siang	West Siang
3	Assam		Barpeta, Tinsukhia	Cachar, Dibrugarh	Nalbari, Lakhimpur , Nagaon & Karbi Angong
4	Bihar	Sitamarhi,Chhapra Jehanabad	Araria, Buxar	Vaishali, Muzaffarpur	Champaran East, Gaya
5	Chattisgarh		Bastar	Durg, Raigarh	Raipur, Kenkar
6	Gujarat		Bharuch, Dahod	Jamnagar, Gandhinagar	Surat,Rajkot ,Sabarkantha, Surendernagar
7	Haryana		Fatehabad	Hissar, Jind	Panipat, Ambala & Rohtak Yamunagar
8	H.P.		Chamba, Una		Kangra,Mandi, Solan ,Sirmour
9	Jharkhand	Dumka		Bokaro, Ranchi	Giridih,Gumla, Lohardaga
10	J. & K.		Jammu, Leh	Doda	Kupwara, Udhamnagar
11	Karnataka	Mysore	Bagalkote, Shimoga, Tumkur, South Canara	Dharwad, Gulbarga	Raichur,Koppal & Bangalore Rural, Hasan
12	Kerala	Idduki	Kasargod, Alleppey, Ernakulam	Kottayam, Malappuram	Palakkad & Wayanad
13	M. P.		Balaghat	Guna, Shahdol	Jhabaua, Sagar, Dhar & Chindwara
14	Maharashtra	Aurangabad	Jalna, Chandrapur	Thane, Wardha, Ahmednagar	Sholapur, Akola , Amravati, Yavatmal, BEED
15	Manipur	Senapati		Tamenglong	
16	Mizoram				Aizawal
17	Meghalaya	Tura(West Garo Hills)	Jaintia Hills	East Garo Hills, Ri Bhoi	East Kahasi Hills
18	Nagaland		Zunheboto	Mon, Tuensang	Phek
19	Orissa		Jagatsinghpur, Navrangpur	Kalahandi, Bolangir	Ganjam, Bargarh, Mayurbhanj, Sundergarh
20	Punjab	Jalandhar	Gurdaspur, Fatehgarh Saheb	Ludhiana, Hoshiarpur	Sangrur
21	Rajasthan	Jaiselmer	Barmer, Sikar	Sirohi, Jhalawar	Bhilwara,Sriganganagar, Churu, Banswara ,Chittorgarh
22	Sikkim		Namchi	Gangtok, Mangan	
23	Tamil Nadu		Cuddalore, Salem	Erode, Nagapattinam, Nilgiri	Thanjavur, Tuticorin, Madurai ,Villupuram,Ramanathapuram, Vellore, Tirunelveli, s & Tiruchira
24	Tripura		Dhalai	Replaced	West Tripura
25	Uttar Pradesh	Gonda	Ambedkar Nagar, Bahraich, Sultanpur, Pratapgarh	Balia,	Barabanki, Ghaziabad, Azamgarh,, Mirzapur & Lucknow, Bareilly, Ghazipur
26	Uttaranchal		Chamoli	Tehri Garhwal, Nainital	Pauri Garhwal, Udhamsingh Nagar, Uttarkashi
27	West Bengal		Jalpaiguri, Nadia	North 24-Pargana, Hooghly	Bankura, Purulia, Midnapur East, Midnapur West

Annexure

MPACT ASSESSMENT STUDY ON RURAL DEVELOPMENT PROGRAMMES IN VAISHALI DISTRICT IN BIHAR (REFERENCE PERIOD: 1998-99 to 2000-01) BY INTERNATIONAL MANAGEMENT INSTITUTE.

MAJOR FINDINGS:

- The average income of beneficiary household before the receipt of the benefits of the programmes has been Rs.24766 per annumn which increased to Rs.26,824 per annum after receipt of the benefits.
- The quality of life has been improved in case of majority of beneficiaries.
- Panchayats elections were held in 2001 after a gap of 23 years. After election of Mukhias the selection of beneficiaries is done with the consultation of Gram Panchayat.JRY/JGSY funds are transferred to GPs directly from DRDA.
- Utility of most of the assets created have been found satisfactory. However, benefits are reaching the beneficiary with leakages in most cases.
- The useful infrastructures like Panchayat Ghars, Market Yards, Community Centres, Anganwad Centres, Dispensaries, School buildings etc., have been constructed under the programmes. However, the houses constructed under IAY are better than the other assets created.
- In most of the cases houses constructed under IAY are not according to the guidelines.
- 9% beneficiary did not belong to BPL category and 27% are not eligible to be listed under BPL category.
- 69% beneficiaries are satisfied with the role of Govt. functionaries in aggregate level.

IMPACT ASSESSMENT STUDY ON RURAL DEVELOPMENT PROGRAMMES IN SALEM DISTRICT IN TAMIL NADU (REFERENCE PERIOD:1997-98 TO1999-2000) BY CENTRE FOR MANAGEMENT DEVELOPMENT

MAJOR FINDINGS:

- Rural Development schemes have been beneficial to the rural community and have created a positive impact in improving the quality of lives in rural households to the extent of 92.34%of beneficiaries.
- 20% of the beneficiaries have crossed the poverty line as a result of the implementation of the schemes.
- Major part of assets built under Rural Development programmes is IAY houses(49%of the value)It is followed by 38.6% built under JRY/JGSY.
- The Panchyati Raj Institutions are playing major role in the successful implementation of the programmes.
- There is inadequate awareness of the people regarding the types of schemes, eligibility criteria, eligible benefits, details on implementation and types of works that could be undertaken under the schemes.
- The women participation in schemes like JRY/SGSY and EAS are found to be low.
- Contractors are found to be involved in wage employment and Infrastructure Development Schemes.
- Middlemen are playing dominant role in the marketing channels for products produced under development programmes.96%beneficiaries under SGSY did not receive marketing support for goods produced by Self Help Group members.
- There is difference between wage paid and eligible wages as 80%are not aware of the amount of wage and wages are not displayed in 95.56% at the sites under JRY/JGSY.
- 80% beneficiaries are satisfied over the selection procedures adopted and 84.4%on the implementation of the JRY/JGSY.

IMPACT ASSESSMENT STUDY ON RURAL DEVELOPMENT PROGRAMMES BOLANGIR DISTRICT OF ORISSA (REFERENCE PERIOD:1998-99 TO 2000-01) BY INSTITUTE OF RURAL MANAGEMENT, ANAND

MAJOR FINDINGS:

- The average Annual Household Income increased from Rs.12561 to Rs.14886 ie.,an increase of 18.5% during the reference period.Also 11% of the sample households in the aggregate had crossed the poverty line during the aforesaid three years.
- The average unemployment level per household measured in terms of days per year has declined by 4.1%.
- The general living standards of the people improved with the implementation of the various Rural Development Programmes.
- While none of the sample villagers were found to be fully aware of all aspects of the rural development programmes currently in operation, the broad features of the relative schemes were observed to be known to 16.6%beneficiaries in case of SGSY,20.9% in case of JGSY, and 22.3% in case of IAY.
- Panchayati Raj Institutions, particularly Gram Panchayats were found to be associated in selection of beneficiaries under SGSY(97.5%). In case of ARWSP, the involvement was 95% in the selection of the locations of stand posts. In case of payment of wages under JGSY the role of panchayats was found to be in few cases(19.4%) only.
- The involvement of contractors/middle man was found in 16.5%,62.7% and 68% in case of IAY, JGSY and EAS respectively.
- 78% beneficiaries under JGSY and EAS confirmed the timeliness of payment of wages to them. Under SGSY, the disbursement of loan by the banks found in 80.7% within the 30 days of application.

- According to 55.2%, 97% and 36.9% of beneficiaries under JGSY,SGSYand IAY respectively, the funds released for various works were adequate to meet the entire cost of the projects.
- The assets created under the programmes consists of Primary School Buildings, Community Halls, Anganwadi Centres, , Public Health Centre, Bus-Stand, Passanger Rest Shed, storage facilitation and village roads etc.
- The assets created under the JGSY and SGSY were found in poor condition only in 6% and 2.5% cases respectively 74.8% houses under IAY found to intact and 8.5% hand pumps erected under ARWSP were observed to be satisfactory.
- The assets created under SGSY and IAY were found to be covered by insurance in 72.3% and 98.1% respectively.
- A large number of beneficiaries of SGSY were found to have not received any training.

IMPACT ASSESSMENT STUDY ON RURAL DEVELOPMENT PROGRAMMES KALAHANDI DISTRICT OF ORISSA (REFERENCE PERIOD :1998-99 TO 2000-01) BY INSTITUTE OF RURAL, MANAGEMENT ANAND

MAJOR FINDINGS:

- The average household income increased from Rs.10210 to Rs.12,791 implying an increase of 25.3%.It was also found that 14.6% of the sample households in the aggregate had crossed the poverty line during the reference period.
- There has been some improvement in the living status of the village population.
- 93% beneficiaries under JGSY and EAS found adequate funds to meet the entire cost of projects, released to them.84.5% under SGSY and 82.4% under IAY beneficiaries confirmed the adequacy of funds.
- Under JGSY and EAS Primary School buildings, veterinary dispensaries, community halls, anganwadi centers, public health center, bus stand passenger rest shed, storage facilities, life aid centers and village roads were constructed
- 7.2% of community Assets were found to be intact condition. 67.5% of hand pumps erected under ARWSP observed to be satisfactory. 83.2% houses constructed under IAY found to be intact. Under SGSY 95% of assets found to be in proper condition.
- 81.9% of Assets under SGSY and 99.2% under IAY were found to be covered by insurance.
- The average unemployment level per year per household declined by 3.9%.
- There is involvement of contractors/middlemen –65.3% underJGSY,33% under EAS and 5.9% in case of IAY.
- 69.4% beneficiaries under JGSY/EAS confirmed the timeliness payment of wages and 91.4% of beneficiaries under SGSY were disbursed loan within 30 days of application.

- Broad features of the relative schemes observed to be known to 13.8% beneficiaries in case of SGSY, 63.9% in case of JGSY and 64.7% in case of IAY. However, none of the sample villagers were found to be fully aware of all aspects of the various Rural Development Programmes.
- Panchayati Raj Institutions, particularly Gram Panchayats were found to be associated in selection of large majority of the beneficiaries under SGSY (94%), IAY (91.6%), ARWSP (95%) in selection of locations, JGSY & EAS in payment of wages.

IMPACT ASSESSMENT STUDIY ON RURAL DEVELOPMENT PROGRAMME IN WEST GARO HILLS DISTRICT OF MEGHALAYA BY NATIONAL INSTITUTE OF RURAL DEVELOPMENT,HYDERABAD(REFERENCE PERIOD:1996-97 TO 1998-99)

MAJOR FINDINGS:

- If Rs.11000 per anumn is considered as Poverty Line Income, the BPL declined from 51% to 38% during 1996-97 to 1998-99 in case of beneficiaries and 50.50% to 42.50% in case of non-beneficiaries. In case of Poverty Line Income as Rs.20000 the reduction had been 4.25% and 1.5%.
- Due to implementation of programmes there was some Economic Improvement in the capacity of beneficiaries household to send their children to school and spending on health. The living standard and social status of the people also improved.
- There had been a positive impact of various programmes on the prodctive resource like horticulture, farm productivity, Irrigation, shifting cultivation, tree plantation area, livestock productivity and grass fodder production.
- The average annual income improved from Rs.19547 to Rs.22490 in 1996-97 to 1998-99 per household beneficiaries under poverty alleviation programme.
- Many programmes could not reach to all the villages, IRDP reached to 92.5%, DWCRA to 52.5%,SITRA to 50%,TRYSEM to 42.5%, JRY to 90%, EAS to 65% ,IAY to 65%,NOAPto 32.5% villages. However, the position improved substantially between 1996 and 1999.
- As a result of programmes income during 1998-99, 6.39%, 29.4% and 5.55% beneficiaries under IRDP, SITRA and MWS respectively become above poverty line. No beneficiary under DWCRA and TRYSEM become above poverty line if the income of RS.11000 is considered BPL. In case the income of Rs.20000 is considered BPL, 2.84% and 11.7% beneficiary become Above Poverty under IRDP and SITRA respectively and none under DWCRA and MWS.

- Under JRY average mandays of employment per year per beneficiary had been 22, 23 and 16 mandays during 1996-97, 1997-98 and 1998-99 respectively. Under EAS the corresponding figures had been 35, 20 and 28 mandays.
- The wage employment to the local people was negligible due to works execution by the contractors. The employment was given to the labour from outside area..
- Two third works executed under JRY were durable, one fourth semi durable and 8% was not worth, under EAS 97% works were durable.

IMPACT ASSESSMENT STUDY ON RURALDEVELOPMENT PROGRAMMES IN EAST DISTRCT OF SIKKIM BY NATIONAL INSTITUTE OF RURAL DEVELOPMENT,HYDERABAD(REFERENCE PERIOD:1998-2000-01)

MAJOR FINDINGS:

- Around 40%of respondents is estimated to have crossed the poverty line as a result of the self employment scheme, while others gained some improvement in family income.
- Though wage employment programmes offered only a marginal addition to income in the family, durable infrastructure meeting the most felt needs of the communities had been created, resulting in improved quality of life and reduction in drudgery. There was an overwhelming opinion that wage employment programme benefited the poor individually and collectively.
- Among the beneficiaries 97% were new beneficiaries and only a small proportion were old indicating second dose of assistance.
- For SHGs only the grant component has been disbursed and cash credit facilities from the banks is largely absent. The co-operation and participation of the banks was very minimal.
- Village Panchayats played an important role in selection of beneficiaries under self employment schemes.
- The average assistance under IRDP/SGSY was more than Rs.10,000 per beneficiary and covered the entire cost of physical assets.
- In 94% of the cases the assets found to be in fair condition and almost all of the continued the assisted activity.
- Maximum amount under JRY/JGSY has been spent for constructing foot paths and school building.
- Contractors and Sarpanches were reported to be primary executing agents under EAS.
- Considerable number of beneficiaries under IAY belonged to relatively better off sections in the villages and everyone except a single case was satisfied with the house.

- The Rural Development Programmes have great potential to reduce the severity of burden of poverty and improving the quality of life in rural areas.
- The general awareness of various programmes of Rural Development at village level is poor and massive publicity as well as orientation training for grass root functionary is necessary.

IRDP helped Biglu Ansari, a marginal farmer to become truck owner:

This is a success story of Biglu, which tells us how a little assistance received under IRDP boost his confidence to transform his sincerity, hard work and honesty. It completely changed his social status of being a poor marginal farmer to a well established businessman. He not only grow vegetables on a medium farm size of land but also undertake quarrying for making sized boulders-used for building pucca houses in urban areas and purchased second hand truck to sale/transport these boulders. He hails from Tangar Basli village of Mandar Block situated in Ranchi district of Jharkhand State. A case study of his success was made by Socio-Economic Research and Development Organisation[1] in the year 1999, which revealed that Biglu was given an assistance of Rs.5698/- for purchase of pump set under IRDP during the year 1987.

He had a total of about 2.5 acres of land at the time of assistance and his annual income from all sources was Rs.4885/-. He used this pump set for irrigating land and started cultivating vegetables. By virtue of being located near the State capital, he had no problem selling vegetables in the local market and fetch remunerative price. He adopted multiple cropping and save some money also. He started increasing land size by purchasing adjoining land. Now, he had more than 5 acres of land. At the same time he was also regularly repaying loan to the bank and got a good name among Block as well as Bank officials. This gave them a confidence to encourage Biglu and was further assisted with Rs.18,000/- to construct well under Jal Dhara scheme. With increased potential of the land, his income also increased significantly.

Keeping in view his performance, officials supported him in getting land on lease for quarrying sized boulders. There was a market for this but he had to hire truck. Thus, his saving was marginal. His well-wishers and friends encouraged him to purchase a second hand truck. He obtained loan from them and one of his son became driver. As reported by the beneficiary, his annual income increased to Rs.1,57,700/-. All members of his family were engaged in and contributing their full potential in cultivation, driving, liasoning, marketing, quarrying and study. There was no sign of poverty after the first doze of assistance was given 12 years ago.

The element of success in this case was beneficiary's intention- sincerity, hard work and honesty.

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[1] *Impact Evaluation Study of Innovative Income Generating Success Stories under IRDP, TRYSEM and DWCRA- A Case Study of Bihar* ,Volume - I, (1999), Pp- 56-67.

DWCRA Gave International Recognition to Sikki Mauni[3]:

Sikki-Mauni (handicrafts made out of shrubs) has been in practice since the time imemorial in Mithila region of Bihar which provide a self-supporting employment to the women. It is an art, which has come through culture and got new dimension with support of government sponsored programmes like DWACRA. It has opened a new vistas of self employment to a large number of women who by utilising their free time at home have inter linked the trade with national and international market.

The success story begins with the visit of Mrs. Neelam Gupta, APO(DWCRA) to Sarisavpahi village in the year 1988. She called a meeting of the poor women of the village, which was attended by about 50 women. Nuna Khatun who heard about the meeting and was keen to attend was not allowed by her in-laws but her husband allowed her to attend the meeting. She was very happy to listen to the advice given by the APO. She was inspired to know that women can take up income generating activities jointly by forming a group within the village and apart from involving themselves in economic activities, they can also help their family and the society. Discussion and queries continued whole day on various aspects of the scheme and activities and ended with formation of group of 20 members. Nuna was elected Secretary of the group. The group decided to undertake Sikki-Mauni activity as some of them had expertise in this activities. APO was keen to give it a wider dimension. Accordingly, Md. Hasim, a resident of Bhawanipur, Pandoul was sent to this village as a Master Craftsman who gave them on the job trainnig for about 6 months. Each member of the group was given an stipend of Rs. 50/- per month, Rs.15,000/- as revolving fund and Rs. 3000/- each as loan.

Appreciating the successful efforts made by the group, officials developed confidence on the group and felt that the group needed new market outlets. For the first time in 1989 this group was sent out to Patna by the DRDA tp participate in the Hast Shilp Kala Pradarshini, which was organised at Harding Park in Patna. They earned Rs. 4000/- and used it for repayment of loan. This was quite inspiring for them.

By now the group was confident of giving any aesthetic appeal and design to their products. To create demand for new products and to make new articles such as bags, planters, bangles, earnings, hair clip, ring and decorative pieces, innovative designs were evolved. The group participated in a Design Development Workshop organised by CAPART in the year 1992. They participated in a large number of fairs and exhibitions, organised at District and State levels. The group diversified their products and included pickle, papad, Bari, Dolls, Toys, candles etc. The group never faced any financial problem and the revolving fund went on increasing. The way this group developed, it was recognised as learning centre for such women of other villages. Accordingly, they

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[3] *Impact Evaluation Study of Innovative Income Generating Success Stories under IRDP, TRYSEM and DWCRA- A Case Study of Bihar* ,Volume –III, (2000), Pp- 56-67.

applied for registration in the name of Sarisabpahi Mahila Vikas Samiti and was registered under Societies registration Act. 1860 on 3.5.1994. Their performace level reached to the extent that during 1997 they participated in International Trade Fair at Pragati Maidan in Delhi as well as Dubai Shopping Festival, organised by All India Handloom & Handicraft Welfare Board, New Delhi.

Women SHGs of Ayurda economically empowered under SGSY[2]:

This is a success story of SGSY, which offered an opportunity to Budhani Bai of Ayurda village in Raigarh district of Chhatisgarh to bring about social and economic change in about 20 poor families of this village. Initially, she organised 5 women of her village in October, 1997, decided to go around in the village and explain the concept to others. Their number increased to 20. Lokshakti- a local NGO, gave first lesson in November, 1997 on administering group, maintaining books and managing money. Most of the initial members were literate. Janaki was made the Secretary as she was most educated among them (11th pass).

They successfully started the SHG activities, savings and inter-loaning. Gradually, savings was cultivated as a habit. In December, 1999 they opened their first bank account, and registered with the SGSY programme.

The group took decision to start economic activity. The first attempt was to use the savings for leasing of land for vegetable cultivation. In the year 1999, the group took 4 acres of land and cultivated vegetables and experimented on another farm of 0.5 acre with sugarcane. All women of the group took part in the work, some farming and some in marketing of the produce in the nearby village hat. Next year the vegetable cultivation was stopped, and the group started with peanut cultivation on 1.0 acre land, and continued with the sugarcane. Instead of selling the sugarcane they decided to do value addition and make *gur*. This was quite profitable. The *gur* was easily sold in their own village. This continued for two years.

Next year they decided to diversify the cropping and cultivate ginger. In one acre land the ginger production was successfully tried out. Today these women are upbeat and sure that they can experiment, learn from failures and arrive at what suits them most. The group decided to use the lean season for other activities- such as tailoring, cot weaving, paddy processing, etc. On being asked if they receive any training for these, they say women in the village themselves are a big resource. They learn from each other. The group also started an Anna Kosh in which they initially donated some paddy. Later on this stock was used to lend out for each khand of paddy. The borrower gives back 4.5 Khand. The Anna Kosh has now 5 quintals of paddy and 125 kg of rice in stock. The group decided that from their Anna Kosh they will contribute 10 Kg. of grains to the family where calamity takes place.

Each of the women is able to earn between Rs. 500/- to Rs. 1000/- per month. For a village where market rate of daily wages is only Rs. 30/- this is not a mean achievement. The income is stable, but they are quite happy. They decide where to spend the money and this is just the beginning.

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[2] 'Impact Assessment Study of Rural Development Programmes in District Raigarh of Chhatisgarh, conducted by WIZMIN Management Consultants, Kanpur, November, 2002, Pp-IV-13 & 14.

SAFETY NETS FOR CHRONIC POOR IN INDIA: AN OVERVIEW

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Safety Nets for Chronic Poor in India: An Overview

S. Mahendra Dev

1. INTRODUCTION

The objective of this paper is to provide an overview of the safety nets for the chronic poor followed in India since independence with emphasis on last two decades. It examines the dimensions, performance and reforms needed for better functioning of safety nets.

There are three main motivations for safety nets, which are broadly complementary. They are : "protection (ex-post) motivation; insurance (ex ante) motivation; other considerations like poverty alleviation, income distribution, aiding growth promotion" (Subbarao, 2003). Often, these motivations overlap. For example, a programme with protection motivation could also alleviate poverty.

If we leave everything to market and growth, one can take care of risk and inequality. Also, certain re-distributive policies can be good for growth. Presence of safety nets can maintain acceptable minimum floor for social cohesion and can prevent irreversible losses of human capital in hard times. Good safety nets may also promote high risk/high return investments by households. These are particularly important during periods of adjustments/shocks/crises[1].

The state has a role in helping poor in times of insecurity and in ensuring minimum levels of provision to those unable to gain from the growth process. Government interventions will blend elements of both redistribution and insurance (World Bank, 1990). The recent theory and evidence "offers a new perspective on social protection policies in poor countries, suggesting that there is scope for using these policies to compensate for the market failures that perpetuate poverty, particularly in high-inequality settings" (Ravallion, 2003).

The paper is organized as follows. Section 2 provides dimensions of chronic poor. Sections 3 discusses about the major safety nets and impact on the poor while Section 4 looks at social exclusion with respect to migration and social groups. Section 5 examines the policies needed for strengthening safety nets. Last section provides concluding observations.

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[1] More on this see Subbarao (2003); Also see Ravallion (2003)

2. WHO ARE CHRONIC POOR?

For many sections of rural and urban population, poverty is chronic and not transient[2]. In rural areas, 'typically, these sections comprise: people living in remote, resource-poor regions, without any infrastructure, barely managing to survive; backward sections of society (euphemistically referred to as scheduled castes and tribes in India), debarred from owning assets, denied access to education and condemned to menial occupations; and the disabled and aged, incapable of augmenting their incomes above a bare subsistence level. Even when agricultural growth takes place, their plight seldom improves" (Gaiha, 1993).

Using National Council of Applied economic Research (NCAER) panel survey data, Gaiha (1989) showed that : (a) about 47% of the poor in 1968 were chronically poor; (b) the majority of the poor were either landless or near landless and has higher dependency and illiteracy; (c) casual labour in agriculture were the largest group and cultivators the second largest among the chronically poor; (d) Around 79 per cent of the chronically poor depend on wages; the chronically poor were not necessarily the poorest. Gaiha and Deolalikar (1992) provide supplementary evidence based on a small sample (170 households) in semi-arid tract in south India but covering a longer period of nine years from 1976 to 1984. According to this study, persistence of poverty is quite high. Around 87 per cent were poor for some time during the nine-year period. Slightly more than 60 per cent households were poor for about half of the time and one-fifth of the households were poor during all nine years.

Tendulkar (1992) makes a distinction between transient and persistent poverty in terms of economic viability of the household in the production process. According to this distinction, "poverty may be taken to be *transient* in nature when the household is basically economically viable but has been pushed below the poverty line due to a sudden but non-continuing fall in its income. In contrast, *persistent* poverty is attributable to the persistent economic non-viability in the sense that, given the organization of economic activity and the character of the continuing growth process, their interaction with the household-specific factors do not generate for the household enough sustainable income to enable the maintenance of an above poverty level of living" (Tendulkar, 1992: p.33).

Another distinction is generally made between organized and unorganized labour. The vast majority of the workforce including agricultural labour, construction labour and labour in traditional leather tanning, handloom, fishing, forestry, salt making, household industry etc., as also village artisans, coming under the generic categories of unorganised sector are wholly out of any reckoning in the various statutory laws in the country. These workers are unprotected by legislation and most of them tend to be poor and also chronic poor. The questionnaire circulated by the National Commission on Rural Labour spells out the following as the generally recognised categories of unorganized rural labour[3]:

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[2] on chronic poor see Hulme (2003) and A.K. Mehta and A.Shah (2003)

[3] This was quoted in Sankaran (1996)

(a) agricultural labour; (b) persons engaged in animal husbandry including sheep and goat rearing; (c) persons engaged in cottage and village industries including sericulture; (d) weavers and workers engaged in carpet manufacture; (e) rural artisans such as blacksmiths, carpenters, potters and basket makers; (f) fishermen; (g) workers engaged in collection of raw hides and skin, tanning and leather work; (h) persons engaged in the production and collection of minor forest produce such as tendu leaves, gums, resins, essentials, oils and sal seeds; (i) beedi workers; (j) workers engaged in brick making; (k) workers engaged in stone quarries, fire clay and lime; (l) building and construction workers; (m) contract and migrant labour; (n) workers engaged in the preparation of forest coops. marketing and felling of timber, preparation of charcoal and loading and unloading of timber in forests; (o) workers engaged in khandasari units, saw mills, oil mills etc; and (p) salt workers.

In addition, we have workers in urban informal sector. Some of their problems are different from that of rural labour. However, many components of the urban informal sector in the Indian context are a phenomenon more of a rural than of an urban origin.

Table 1 gives data on number of workers and the shares of unorganized workers by sectors in all India. Around 93 per cent of the workers were in unorganized sector in the year 1999-2000. It is clear that even in manufacturing sector, more than 80 per cent of the total workers were in the unorganised sector. Similarly, services also had high share of unorganised workers.

TABLE 1 : Organised and Unorganised workers and percentage share of Unorganised workers in the total : 1999-2000

Sector	Organised Workers (millions)	Unorganised workers (millions)	Total workers (millions)	Share of Unorganised sector (per cent)
Ag.allied activities	1.39	236.11	237.61	99.42
Mining quarrying	1.01	1.25	2.26	55.31
Manufacturing incl. Repair services	6.79	37.27	44.02	84.67
Electricity, gas and water	1.00	0.05	1.05	4.76
Construction	1.18	16.41	17.59	93.29
Trade, hotel & restaurants	0.49	40.77	41.26	98.81
Transport, Storage & Communication	3.15	11.59	14.74	78.63
Financial Services	1.65	3.37	5.02	67.13
Community, social & personal services	11.49	21.95	33.44	65.64
All Sectors (Total)	28.11	368.89	397.00	92.92

Source: Computed from GOI (2001)

Tendulkar (1992) also makes a distinction between the *self-employed* and the *wage employed* poor households. This distinction is based on the availability or lack of an asset-base. "In the case of the persistently *poor self-employed households,* its physical asset-base is important enough in relation to labour-endowments to provide a major source of livelihood but its productivity is not high enough to afford an above-poverty level of living in a sustainable fashion. .. The other category under this classisfication

consists of the virtually asset less and hence *wage-income dependent poor households*. Their *persistent poverty* is due to their dependence on uncertain, fluctuating and low wage employment" (Tendulkar, 1992: pp.34 and 35, emphasis added).

Using the NCAER data for 1970-71 and 1980-81, Bhinde and Mehta (2003) show that more than half (52.61%) of the panel households who were poor in 1970-71 remained in poverty over a decade later. " With more than half the households remaining in poverty eleven years later, it is not possible to argue that very few households remain poor over time. However, the data also supports the view expressed in the literature that there's considerable movement both out of and into poverty. 47.39% of poor households escaped from poverty. One fourth of households who were non-poor in 1970-71 became a poor a decade later" (Bhinde and Mehta, 2003).

The evidence on India shows that there is high level of persistent poverty among large subsets of the poor over several years. Although growth is important for reducing chronic poverty, targeted anti-poverty programmes have crucial role reducing risk and vulnerability and increasing incomes of the chronic poor.

The programmes, which are aimed at directly helping the poor instead of the entire population, are termed as targeted poverty alleviation programmes. The main objective of these programmes is to directly help the poor to improve their economic and social conditions. Note that these are programmes that directly target the poor and the benefits from them would be in addition to those that would accrue to the poor in the normal economic activities in the economy. These schemes are supposed to protect a person or household in the case of both *chronic* as well as *transient* poverty. In this study we are more interested in chronic poverty.

Targeting is regarded as an attractive way of intervention for poverty alleviation in many developing countries, which face the necessity both of reducing the poor and of limiting the public spending. The rationale for targeting is that the benefits or social returns are higher for the population at the lower end of the income distribution than at the upper end.

Identification of poor has become an important issue for the success of targeted poverty alleviation programmes. The approaches to identify the poor can be grouped under three broad categories: means-testing or income criterion, indicator targeting and self-targeting. Information on income or consumption is generally used as a means test that ascertains whether household income is below the cutoff point. If it is possible to conduct a perfect means test, targeting by income scores over other types. But because of the informational and administrative constraints, means testing may not be perfect and may induce costly leakages and create adverse incentives. These considerations have led to a variety of schemes for indicator targeting, whereby transfers are made contingent on some correlates of poverty. The indicator targeting in turn can be divided into two types. The first one is similar to means testing and uses some characteristics of households to select beneficiaries. Under this category, instead of information on income or consumption, information on variables like land holding, profession, social class are used for targeting.

The second type of indicator targeting known as geographical targeting uses the place of residence as a poverty indicator. The geographical targeting allocates resources to states, municipalities or neigbourhoods based on their average welfare level (e.g. head count ratio).

Finally, self targeting is generally suggested for poverty alleviation because of its simplicity in administering the programme. Self targeting occurs where a program is ostensibly available to all but is designed to discourage the non-poor from participating. For example, participants can be required to do manual work, as in public employment programmes. It acts as an effective deterrent to higher income groups.

Targeting costs can be divided into four types. They are : administrative, incentive (deadweight), disutility and stigma and, political[4].

Administrative costs: The administrative costs mainly relate to costs relating to identification of the poor. Particularly, if the targeting is based on income-based means tests the administrative costs can be quite high. Also, exclusion errors (failure to include all the poor) can be quite high if we shift from universal to targeted schemes[5]. It has also been shown that attempts to achieve " more for the poor" through the use of indicator targeting may in fact mean less for the poor (Gelbach and Pritchett, 1995). However, exclusion errors can be minimized with self targeted schemes like rural public works.

Incentive costs: One negative incentive effect often mentioned about targeted subsidies is distortions in labour-leisure choice. Sahn and Alderman (1995) examined the effect of receiving a rice ration on labour supply. It is found that in rural and urban areas there is a substantial reduction in the level of work effort in response to receiving the rice ration. In other words, workers have increased their leisure time due to rice scheme. We can not, however, call this deadweight loss. In a strict welfare sense, the worker's overall utility (in terms of work and leisure) might be higher now as compared to the period before the introduction of food subsidies. The disincentive to work is one problem associated with programmes targeted according to income based means test. The beneficiaries may change their behavior by altering their labour supply and hence their income[6]. The workers may be better off by remaining poor in order to be eligible for the benefits under the means test based scheme. The beneficiary may not lose anything from the programme but the society as a whole would lose their output.

Stigma and Disutility costs: It is argued that stigma and disutility are possible negative consequences of means-tested government transfer programmes. The recipients may lose their self-esteem because they have to rely on public support. Also, the non-recipients may treat the recipients differently due to targeting. However, we have many

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[4] For a useful discussion on costs of targeting, see Sen (1995). Dreze and Sen (1989) say that there are broadly three ranges of options for targeting, depending on the programme. They are: Administrative selection, market selection and, self selection.

[5] Cornia and Stewart, 1995 use the term 'F' mistakes for exclusion of the poor.

[6]. See Kanbur et al (1995) for assessing changes in labour supply

targeted programmes in developing countries and it may be needed in some cases. Moreover, universalism it self is some kind of a targeting objective because our aim is to cover more poor. The public works programmes do not carry the stigma attached to charity handouts.

Costs of Political Economy: Any anti-poverty programme needs political support. It has been argued that the programmes with wide or universal coverage are generally supported by the politicians and governments. The finely targeted programmes may not have political support. However, self targeted programmes may have wider support as compared to income-based mean tested programmes. For example, the Employment Guarantee Scheme has considerable political support in Maharashtra.

It may be noted that out of the four targeting costs, administrative and political economy costs are more serious as compared to the other costs. In the case of self targeted programmes, these costs can be minimized.

3. SAFETY NETS : DIMENSIONS AND IMPACT ON POVERTY

In this section, we provide an overview of safety nets and their impact on poverty. It is difficult to isolate the impact only on chronic poor. But, wherever necessary we highlight the transient nature of poverty to distinguish from chronic poverty.

"Growth with Social Justice" has been the basic objective of the development planning in India since independence. There have been several initiatives to tackle the problem of poverty in India since independence. The first such initiative was the Community Development Programme started in 1952. The programme aimed basically at integrated development at local level through co-operation of people and convergence of technical knowledge in various fields. The second initiative was taken in the country by introducing the measures for abolition of intermediary institutions and systems of land holdings such as Zamindari, Jagirdari etc. This was followed by attempts to have a comprehensive policy of land reforms. The third initiative was the emphasis during Third Five Year Plan on foodgrain production through introduction of new technology, which resulted in green revolution. While the achievements through many of the efforts were significant, the impact of these initiatives was far from satisfactory to tackle the problem of poverty. Abolition of intermediary system of land tenure was completed with success, but land reform, which is still an on-going process, has not yielded desired results in terms of either growth or social justice. The success of green revolution was limited to specific areas and crops.

There was a rethinking on the need for reconceptualization of the programmes and policies. The need for direct attack on poverty was finally felt particularly during the Fourth Plan period. The 1970s are a significant decade in this context. Many new programmes including the Rural Work Programmes (RWP), the Drought Prone Areas Programme (DPAP), the Desert Development Programmes (DDP), programmes for small and marginal farmers (Small Farmers Development Agency-SFDA, Marginal Farmers & Agricultural Labourers Agency – MFAL) were all tried in rural areas. However, since the 1980s there

has been proliferation of centrally sponsored poverty alleviation programmes in the country with higher allocations in the Five Year Plans.

The present major programmes for the poor in India can be broadly divided into the following four categories[7]:

(a) Self Employment programmes
(b) Wage employment programmes
(c) Public distribution system (PDS) and nutrition programmes
(d) Social Security Programmes

3.1. Self Employment Programmes

The focus of self employment programmes is on the provision of productive assets to households in the target group, or on the provision of credit meant to finance the purchase of such assets by the government or the NGOs. These programmes could have a third point of focus viz., training and skill creation schemes, which would improve the household's ability to generate self employment in later periods. The credit provides the necessary financial resources to complement the labour resources of the poor for undertaking productive activities. It could include a variety of activities like irrigation, land development, animal husbandry, weaving, food processing, trade and other services. The micro-credit programmes often have the dual objective of alleviation of income poverty and the empowerment of poor women.

Credit programmes for chronic poor can smoothen their consumption in the short run and improve income in the long run by enabling them in to make investments in physical and human assets.

Secondary Objectives: (a) Priority to women and other disadvantaged sections of the society among the targeted poor population; (b) Encourage savings; (c) Empowering the poor particularly women; (d) Facilitating market and other supporting services ; (e) Group insurance.

Integrated Rural Development Programme (IRDP)

The IRDP was the first major self employment programme started in the late 1970s. The programme was initially started in 20 selected districts on pilot project basis, but extended to 2300 blocks of the country in 1978-79. From 2nd October, 1980, it was extended to all blocks in the country. The programme aimed at providing assistance to the beneficiaries in the form of bank credit and government subsidy so as to help them in getting sustainable income generating assets. The target group of the programme consisted of families below the poverty line (BPL) in rural areas comprising the landless and small and marginal farmers, agricultural labourers, rural artisans etc.

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7 The details of the current anti-poverty programmes are given in Appendix 1.

In order to strengthen the IRDP, there are few allied/ sub-programmes. The scheme for Training of Rural Youth for Self Employment (TRYSEM started in 1979) was intended to take care of the training requirement of the people who were selected and assisted under the IRDP. There is a programme to focus particularly on the rural poor women namely, Development of Women & Children in Rural Areas (DWCRA started in 1982-83[8]).

The achievements show that more than 54 million families had benefited under the IRDP till March 1999 since the inception of the programme (table 2). Total credit mobilized during this period was Rs. 22542 crore. The total investment including subsidy was Rs. 33953 crores. Similarly under the TRYSEM 45.56 lakhs youths had been trained from 1980-81 to 1998-99 and 2.73 lakh groups were formed with 41.45 lakh members under the DWCRA during 1982-83 to 1998-99(table 3).

Table 2: Financial and Physical Progress under IRDP (1980-81 to 1998-99)
Physical (Lakh Families) and Financial Progress (Rs. in Crore)

Year	Total Families	SC/ST Families	% of SC/ST	Women	% of Women	Central Share	Central Release	Total Expen-diture
1	2	3	4	5	6	7	8	9
1980-81	27.27	7.81	28.64	NA	NA	127.80	82.58	158.64
1981-82	27.13	10.01	36.90	NA	NA	153.36	128.45	264.65
1982-83	34.55	14.07	40.72	NA	NA	204.48	176.18	359.59
1983-84	36.85	15.37	41.71	NA	NA	207.72	194.23	406.09
1984-85	39.82	17.38	43.65	NA	NA	207.72	206.96	472.20
Total	**165.62**	**64.64**	**39.03**	**NA**	**NA**	**901.08**	**788.40**	**1661.17**
1985-86	30.60	13.23	43.24	3.03	9.90	205.93	207.10	441.10
1986-87	37.47	16.80	44.84	5.67	15.13	277.31	279.67	613.38
1987-88	42.47	18.99	44.71	8.30	19.54	310.60	299.72	727.44
1988-89	37.72	17.50	46.39	8.74	23.17	345.00	330.84	768.47
1989-90	33.51	15.45	46.11	8.59	25.63	375.00	347.92	765.43
Total	**181.77**	**81.97**	**45.10**	**34.33**	**18.89**	**1513.84**	**1465.25**	**3315.82**
1990-91	28.98	14.46	49.90	8.95	30.88	374.56	346.59	809.49
1991-92	25.37	12.96	51.08	8.41	33.15	352.66	321.31	773.09
1992-93	20.69	10.64	51.43	6.91	33.40	331.65	336.69	693.08
1993-94	25.39	13.46	53.01	8.54	33.64	547.61	537.70	956.65
1994-95	22.15	11.03	49.80	7.51	33.91	550.00	546.10	1008.32
1995-96	20.89	10.14	48.54	6.99	33.46	549.50	514.22	1077.16
1996-97	19.24	8.95	46.52	6.44	33.47	549.50	512.40	1139.55
Total	**108.36**	**54.22**	**50.04**	**36.39**	**33.58**	**2528.26**	**2447.11**	**4874.76**
1997-98	17.07	7.92	46.40	5.86	34.33	567.68	545.02	1109.54
1998-99	16.77	7.76	46.27	5.77	34.41	729.15	625.63	1162.29
Total All	**543.94**	**243.93**	**44.85**	**99.71**	**18.33**	**6967.23**	**6539.31**	**13706.16**

[8] Another sub-scheme namely, supply of improved toolkits to rural artisans (SITRA) was introduced in 1992 to look after the modernization and improving the efficiency and productivity of the poor rural artisans.

Table 3: Physical and Financial Achievements under DWCRA (Rs. In Lakhs)

Year	Achievement (No. of groups)	Women Benefited	Expenditure
1990-91	7139	109557	500.66
1991-92	9378	208012	784.18
1992-93	9029	128744	978.61
1993-94	15483	268525	1882.25
1994-95	37964	592026	5419.91
1995-96	37576	697088	5859.27
1996-97	41462	581944	8313.73
1997-98	36436	460409	7385.97
1998-99*	46916	576523	8025.27
GRAND TOTAL	272722	4144705	42248.85

* Releases made in 1998-99 includes amount released for CCA, CAPART & IEC.

The results of the last Concurrent Evaluation (done in 1996) revealed that 14.8 per cent of the beneficiaries assisted under the IRDP could cross the revised poverty line of Rs.11,000/- (1991-92 prices). It shows that in terms of crossing the poverty line, the programme had limited impact. The recovery performance under the programme, however, was relatively poor (41 per cent as on March 1996). The programme also had negative impact on the health of the financial institutions due to increasing proportion of non-performing assets and resulting defaults in loan payments.

IRDP has been extensively evaluated by researchers, scholars, various national institutions and international organizations. After evaluating the IRDP experience, Dreze (1990) concludes that "(1) even if IRDP were flawlessly implemented, we could not expect this programme to bring about the kind of radical reduction of rural poverty in India that is often claimed or expected to be produced, (2) in large parts of India (with some important exceptions such as West Bengal) the selection of IRDP beneficiaries is at best indiscriminate and at worst biased against the poor, and (3) we have no solid evidence on the actual effects that IRDP has on the living standards of the participating households" (pp. A101 - A102). Instead of IRDP, Dreze advocates a serious programme of employment generation, preferably in the form of an employment guarantee scheme with legal status[9].

Leakages, misappropriation of funds, violation of programme guidelines, selection of the non-poor as target group, absence of proper maintenance of accounts and poor quality of assets are some of the problems mentioned by various studies regarding IRDP

The IRDP and its sub-programmes along with wage employment programmes were reviewed by a committee constituted by the Planning Commission in 1997 under the chairmanship of Hashim, Member, Planning Commission at that time. The Committee in its report submitted in 1997, recommended for a single self-employment programme for the rural poor. It also suggested that efforts should be made to move away from individual beneficiaries approach to group approach in implementation of the programme. The Committee had also recommended for preference to group activities and cluster approach.

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[9] Also see Rath (1985)

The Swarnajayanti Gram Swarozgar Yojana (SGSY) has, accordingly been launched as a single self-employment programme in place of the earlier programmes with effect from April, 1999[10].

3.2. Wage Employment Programmes

As mentioned earlier, majority of the chronic poor depend on wage employment. By now it is well recognised that rural public works programmes (RWPs) have become important instruments for alleviating poverty and hunger in many developing countries. The public works also fit into the ideas of Ragnar Nurkse (1955) who regards surplus labour in low income countries a potential saving useful for capital formation. The objectives of RWPs are to provide employment and to generate 'public goods' such as physical infrastructure.

The primary objective of a RPW is to generate additional gainful employment for unemployed men and women in the rural and urban areas. The secondary objective is to create productive assets, which in turn are expected to create sustainable employment for the poor. Generally priority is given to directly productive and economic infrastructure rather than social infrastructure. Some tertiary objectives are:

(a) while creating employment, giving more emphasis to women and other socially disadvantaged sections
(b) Seasonal and stabilization benefits. PWP can also function as insurance.
(c) putting upward pressure on rural and urban wages.
(d) slowing rural-urban migration
(e) objective of environment protection
(f) Making rural and urban poor a political force

India has a long experience in experimenting with labour intensive public works. After independence in 1947, many schemes were sponsored by the Central Government, beginning with the Rural Manpower programme in 1960[11]. The Employment Guarantee Scheme (EGS) of Maharashtra has received acclaim from several sources. It is particularly interesting example because of its unprecedented feature of guaranteed rural employment which makes it a model for other states in India and throughout the developing world[12]. At the national level, Jawahar Rojgar Yojana (JRY) and Employment Assurance Scheme (EAS) are the important programmes in rural areas[13]. An important role was envisaged for the panchayats in JRY's implementation. The funds are directly given to panchayats. In terms of person days of employment created, India's rural public works programmes are the largest in the world. The JRY reached around a billion person days in recent years. JRY's share is quite high in the social sector expenditure. Around Rs.35,000 crores were spent on JRY during 1989-90 to 2000-01[14].

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[10] See Appendix 2 for details of SGSY

[11] From the fourth century BC when the ancient Indian political economist, Kautilya, wrote his *Arthasastra*, there has been emphasis on public relief works, particularly at times of famine.

[12] The EGS is commended by the UNDP's Human Development Report (1993) as one of the largest public works programmes in the developing world.

[13] The National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were working in the 1980s.

[14] JRY has been restructured in 1999 and renamed as Jawahar Gram Samridhi Yojana (JGSY).

An evaluation of the Employment Guarantee Scheme (EGS) in Maharashtra shows that the programme has reduced unemployment in Maharashtra; increased the incomes of many participating households; acts as an insurance mechanism; has an impact on agricultural growth and wages; made the rural poor a political force; and has had considerable impact on empowerment of women (Mahendra Dev, 1996).

Contribution of JRY and EAS to Rural Employment

Since both JRY and EAS are major programmes, which provide rural employment, it is useful to consider their contribution to rural employment creation by taking the two schemes together. The total employment generated by these two programmes in 1998-99 is equivalent to 4.4 million person years (table 4). Compared to the size of the total labour force of over 300 million this is only 1.5 per cent and if adjustments are made for the likely over-reporting in official figures, the percentage is even lower. However, comparing the employment created under these schemes to the total labour force in rural areas is not appropriate since these schemes are aimed specifically at the rural poor. If we assume that this segment is about 30 per cent of the rural labour force, the contribution of the employment schemes increases to about 4.5 per cent of the labour force. This is still small but considering the scale of unemployment in rural areas (around 7 per cent) it can make a significant difference. One can therefore conclude that the schemes do help to contain the level of unemployment in a significant way.

Table 4: Financial & Physical Performance Under EAS/SGRY Since Inception

(Rs. in crores

Sl.No.	Year	Total Utili. Of funds	% of Utili. to Total Avail.	Wage emp. generated (lakh Mandays)	Works completed (Nos.)
1	2	3	4	5	6
1	1993-94	183.75	26.79	494.74	1397
2	1994-95	1235.45	58.06	2739.56	114199
3	1995-96	1720.61	53.70	3465.27	128420
4	1996-97	2160.41	63.84	4030.02	277014
5	1997-98	2904.97	78.37	4717.74	184699
6	1998-99	2882.18	85.84	4279.36	196589
7	1999-2000	2182.61	75.02	2786.17	156540
8	2000-01	1861.11	84.38	2183.92	137722
9	2001-02*	530..92	42.29	666.27	44872
	TOTAL	10361.79	77.13	14633.46	720422

Note: * upto September, 2001.

Concurrent Evaluation of JRY (1993-94)

The findings of the report of the concurrent evaluation (1993-94) are as follows. (i) In about 77.18 per cent of the works, the panchayat functionaries were the executing agency and only 2.02 per cent of works were executed by the contractors; (ii) A substantial amount of JRY funds has been spent on roads and buildings; (iii) wage and non-wage ratio has been 53:47; (iv) 47 per cent of employment is generated for SC/ST and 36 per cent for landless labourers; (v) Quality of majority of assets were found to be

good and only 0.41 per cent of assets were not useful. 86 per cent of assets were reported to be durable; (vi) 70 per cent of the assets created were maintained by the panchayats. However, 13 per cent of the assets were not maintained at all; (vii) On an average employment generated under JRY was 11 days per month[15] (GOI, 2001).

Other evaluations show that the resources were spread thinly so as to increase the coverage of areas/ beneficiaries without any concern for duration of employment. Projects selected bore no relationship to the local needs or the agricultural development strategy. A study on U.P. reports that the timing of works coincided with peak agricultural season and that the selection of works was not done in the gram sabha as required (GOI, 2000). Wage employment programmes, by effectively intervening in the labour markets, were expected to exert upward pressure on the market wages. This could not happen because of insufficient employment provided by these programmes. The share of women in employment generated under the programme was only 17 per cent. JRY and similar public works programmes have tended to breed corruption. The fudging of muster rolls and of measurement books is very common resulting in huge loss of funds that could otherwise have been invested in building rural infrastructure.

Notwithstanding some of the problems mentioned above, there are two positive aspects of the programme (GOI, 2000). First, the programme did succeed in creating durable community assets in rural areas. It is true that some assets built have poor quality. Second, the programme led to empowerment of panchayats as the funds were placed at their disposal along with power to get the works executed through line departments.

Evaluation of EAS

Programme Evaluation Organisation (PEO), Planning Commission undertook the evaluation study on Employment Assurance Scheme (EAS) for the reference period 1995-97. The main findings are as follows.

(i) The utilization of EAS funds is extremely low. Lack of planning, untimely release of funds, both from the center to DRDAs (District Rural Development Agencies) and from DRDAs to blocks and other factors, such as inability of the states to generate matching resources are the important factors that have contributed to low utilization of employment funds.

(ii) The coverage of villages and the target group is extremely low. A maximum of 32 per cent of the villages and 5 per cent of the target group in a block are estimated to have been covered annually.

(iii) A large part of the EAS funds has been used in activities that are less labour intensive and more capital intensive. The normative capital labour ratio has not been generally adhered to.

(iv) The majority of EAS beneficiaries received less than 30 days' wage employment in a year. Non- poor households were also found to have been the beneficiaries of EAS.

Several lacunae have come to notice in the design and implementation of EAS. First, there has been bogus reporting to achieve targets. Second, employment generation

[15] In the Concurrent Evaluation, the question in the survey relates to the employment generated under JRY in 30 days preceding the date of survey.

programmes create income for the rural poor but leave no assets behind. Third, such programmes have encouraged corruption, both at political and administrative levels.

Employment and Income Benefits: Concurrent Evaluation of JRY

As mentioned above, according to concurrent evaluation, JRY worker got on an average 11.06 days of employment (or 133 days per year) from panchayat JRY works during the reference period of 30 days preceding the date of survey. State-wise variations are given in table 5. In some poorer state like Madhya Pradesh, Orissa, JRY workers got less than 10 days per month.

Table 5: Average Person Days of Employment Generated During the Last 30 days Preceding the Date of Survey: Major States, 1993/94

State	By Self State Under JRY		By Self Under JRY
Andhra Pradesh	12.53	Madhya Pradesh	9.34
Assam	17.94	Maharashtra	11.80
Bihar	10.13	Orissa	8.58
Gujarat	10.67	Punjab	30.00
Harayana	11.84	Rajasthan	11.02
Himachal Pradesh	15.00	Tamil Nadu	12.30
Jammu and Kashmir	9.65	Uttar Pradesh	12.22
Karnataka	12.89	West Bengal	8.52
Kerala	11.59	**All India**	**11.06**

Source: GOI (1997a)

According to the concurrent evaluation, the average daily wage rate was Rs.33.36 (Rs.30.54 cash + Rs.2.82 value of foodgrains). On an average, a JRY worker at the all India level earned Rs.369 during the 30 days preceding the date of survey. The poverty line income per month per family is around Rs.917[16]. In other words, a JRY worker earned on an average 40 per cent of the poverty line threshold. Thus JRY seems to be contributing substantial income to the families working under the scheme.

Targeting Under JRY:

The concurrent evaluation for the year 1993-94 shows that 82 per cent of the workers had annual family income of less than Rs.11,000, which is the revised poverty line. Therefore, largely, the workers who were provided employment belonged to the poorer sections[17]. The picture varies at state level. In Andhra Pradesh, 52 per cent of JRY workers were non-poor. This percentage is quite high for Bihar, Karnataka and Uttar Pradesh. On the other hand, it was less than 10 per cent for Assam, Gujarat, Orissa, Rajasthan, Tamil Nadu and West Bengal. Thus, there are significant variations in the coverage of poor under JRY across states.

[16] Annual family income of Rs.11,000 is considered as poverty line.

[17] The concurrent evaluation for the year 1992, however, shows that around 56 per cent of the JRY workers were non-poor in 1992. This result could be due to the low poverty line (Rs.6400 per annum) used in this evaluation.

3.3. Public Distribution System and Nutrition Programmes

Public Distribution System (PDS) is one of the instruments for improving food security at the household level in India. The government has been supplying six essential commodities through PDS: wheat, rice, sugar, edible oils, kerosene and soft cake. They are supplied at below market prices to consumers. The access to the system was universal until 1997. During the first few decades of its existence, the PDS had actually never operated as an anti-poverty programme but merely as an instrument of price stabilization. Till the late 1970s, the PDS was mainly restricted to urban areas and food deficit regions. The main emphasis was on price stabilization and as an alternative channel to private trade. Since the Sixth Five Year Plan, however, the welfare importance of the PDS has been recognized. Rural areas have also been covered in many states in the 1980s. In the 1990s, the government has decided to restructure the PDS in the form of Revamped PDS and Targeted PDS.

The PDS has been effective during drought years e.g. 1979-80 and 1987-88[18]. It is also effective in transferring foodgrains from surplus areas to few deficit regions like Kerala. However, present system of public distribution has many problems: (a) it is benefiting the poor only marginally (Parikh, 1994); (b) in some areas poor have to pay higher market prices in the presence of PDS (Radhakrishna and Indrakant, 1987); (c) considerable decline in the share of consumer's share in food subsidy due to high costs of procurement and carrying costs and; (d) leakages to open market (see Ahluwalia, 1993) and inefficiency of FCI, etc, (see GOI, 1991; Ray 1993).

Problems in the Public Distribution System

There has been significant diversion of PDS commodities. A study was conducted by the Tata Economic Consultancy Services to determine the quantity of PDS goods diverted from the system. At the national level it was found that there was a diversion of 36 percent of wheat supplies, 31 percent of rice and 23 percent of sugar. The diversion occurs more in the northern, eastern and northeastern regions; it is comparatively less in the southern and western regions.

The overall impact of PDS on the poor seems to be less than assumed. Few studies have measured the welfare gains of the PDS. Parikh (1994) says, " The cost effectiveness of reaching the poorest 20 percent of households through PDS cereals is very small. For every rupee spent less than 22 paise reach the poor in all states, excepting in Goa, Daman and Diu where 28 paise reach the poor. This is not to suggest that PDS does not benefit the poor at all, but only to emphasize that this support is provided at high cost". A study conducted by Directorate of Economics and Statistics, Karnataka also reveals that only 13 paise out of a rupee spent on PDS reach the poor[19]. A study by Radhakrishna et al (1997) concludes that the "potential benefits from the PDS to the poor could not be realized cost-effectively due to weak targeting and leakages. The cost of income transfer was high mainly because the program was open ended and never targeted." The study also says that approaches other than quantity rationing, including self-targeting and food stamps, need to be considered in

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[18].See Tendulkar et al (1993)

[19]. See Machaiah (1995)

order to deliver food transfers to the needy cost-effectively.[20] Poor states have not benefited much from PDS. The relationship between poverty and PDS off-take is weak across Indian states

The targeted public distribution system (TPDS) has undergone changes over time and has some weaknesses. TPDS was introduced in 1997 by issuing special cards to BPL families. A separate issue price is fixed for APL households. Under the scheme, each poor family was originally entitled to 10 kg of food grains per month at a subsidized price. To improve allocation to poor families, the government increased the allocation to BPL families from 10 kg to 20 kg of grain per family per month at 50 percent of economic cost from April 2000. The allocation for APL households was retained at the same level at the time of introduction of TPDS but the Central issue prices (CIP) for APL families was fixed at 100 percent of economic cost from the date so that entire consumer subsidy could be directed for the benefit of BPL population. In order to reduce excess stocks, the central government has initiated the following measures under TPDS from July 2001: (a) The BPL allocation of foodgrains has been increased from 20 kg to 25 kg per family per month w.e.f July 2001; the CIP for BPL families at Rs. 4.15 per kg for wheat and Rs. 5.65 per kg for rice is 48 percent of the economic cost; (b)The government has decided to allocate foodgrains to APL families at the discounted rate of 70 percent of the economic cost. The CIP of APL wheat, which was Rs. 830 per quintal, has been reduced to Rs. 610 per quintal, and the CIP of APL rice, which was at Rs. 1130 per quintal, has been reduced to Rs. 830 per quintal.

There are problems with the targeting of PDS. The Government's approach of TPDS is related to the income-based means test. However, it is known that identifying the poor through the income-based means test is difficult. Other methods should be used for targeting. Targeting also leads to exclusion and inclusion errors. The former type occurs when the poor are excluded while the latter occurs when the non-poor are included. Both kinds of errors seem to be high under TPDS. The challenge is to minimize the errors with innovative programs.

Food Subsidy is Helping FCI more than consumers

For the last few years, public stocks of foodgrains have been rising disturbingly to a high level—62.55 million tons on May 1 2002. As a result of the accumulation of food grains, the food subsidy increased significantly in the late 1990s. Food subsidy increased from Rs. 2410 crores in 1990-91 to Rs.21200 crores (budgeted) in 2002-03.

The related issue under food subsidy is that the buffer stock costs have increased while the consumer subsidy has declined. Higher procurement with the reduced off-take resulted in the generation of larger stocks, which in turn led to higher carrying costs (comprised of freight, storage, interest charges etc.). In 1997-98, the buffer component of the food subsidy bill was only 13 percent. It increased to 42 percent in 2000-01 (figure 1).

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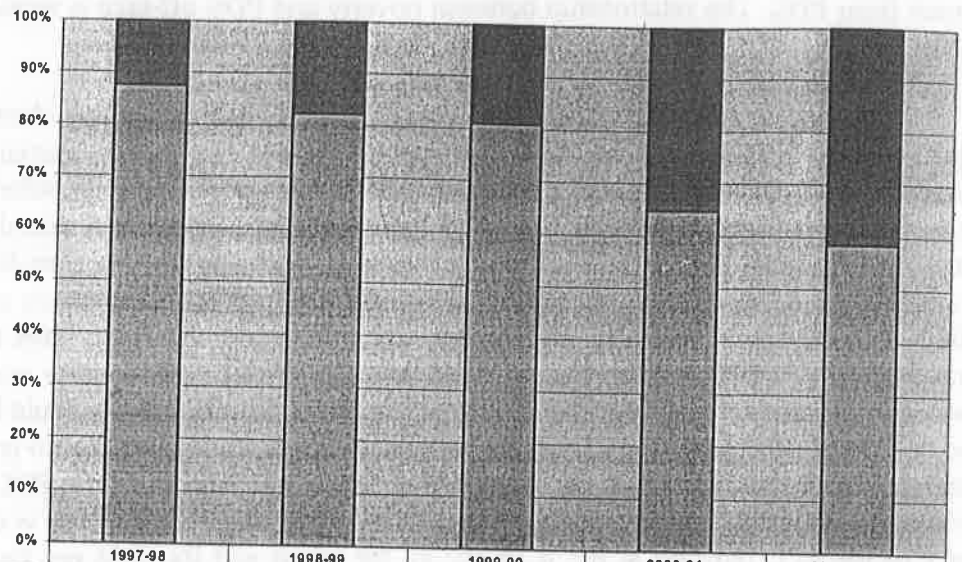
[20] See Ramaswamy (2002)

Fig 1. Components of Food Subsidy



	1997-98	1998-99	1999-00	2000-01	2001-02 (BE)
Buffer Stocking	9.37	15.52	17.54	42.33	56.8
Others	65.63	71.48	74.46	77.77	79.9

Thus, much of the food subsidy is being used to store and transport the tones of wheat and rice at FCI (Food Corporation of India) godowns.

Impact of PDS on the Poor

(a) 1986-87 NSS data

Using NSS 1986-87 household level data, Radhakrishna et al (1997) estimate the extent of income transfer through PDS to the poor, and the consequent reduction in poverty in terms of percentage and severity. They also assess the nutritional impact of PDS on the poor as well as the cost per rupee of income transferred to the poor. Main findings of their study are the following.

(a) The study finds negligible welfare gains due to PDS. The per capita income gain to the poor from all consumer subsidies was no more than Rs.2.01 per month, or 2.7 per cent of their per capita expenditure, in rural areas. It was Rs.3.4 per month (or 3.2 per cent of per capita expenditure) in urban areas. The overall transfer gains were very meager although there were differences in income transfers between the commodities and across states. The income transfers due to PDS (food and non-food) in Andhra Pradesh and Kerala were much higher than Orissa and U.P. The study also shows the transfers are regressive i.e. non-poor are getting higher benefits.

(b) The study also finds that there has been minimal impact of PDS on poverty and nutritional status. With the exception of Kerala and Andhra Pradesh, the impacts on poverty and nutritional status were negligible. If we consider the country as a whole, there would have been a decline of barely 2 percentage points in the poverty ratio due to combined incidence (income gains) of food and non-food consumer subsidies. In the cases of Andhra Pradesh and Kerala, however, there would have been a decline of 4.64 and 5.49 percentage points respectively in the rural poverty ratio.

1999-00 NSS data

In order to get the impact of PDS in recent years, we examined the income gain for the poor at state level by using NSSO 55 th Round (1999-00) data on PDS. All computations are made using the household level data. Table 6 provides dependency ratio for rice and wheat (consumption underPDS/total consumption) and income gains for all commodities under PDS.

Income gain for the consumer is the difference between the value of the quantity of goods purchased in PDS when evaluated at market prices and the actual value of PDS purchases. The NSSO data gives the purchases made in PDS and open market in both quantity and value terms. Prices implicit in these data are use to derive the income gain. The income gains vary with quantities purchased in PDS, open market prices and PDS price. Though the central issue price is the same for all states, the income gains can be higher for some states on account of lower PDS prices due to additional state subsidies.

Following are the findings on income gains and poverty from Table 6.

(a) The income gains through PDS form about 5.8 percent of the total monthly per capita expenditure in rural areas and 2.5 percent in urban areas at the all India level. As compared to 1986-87, the income gain to the rural poor in 1999-00 was higher. On the other hand, there was marginal reduction in income gain for urban poor.

(b) The Highest income gain for the poor is in rural Tamil Nadu (9.7%) followed by rural Andhra Pradesh (6.6%) and rural Kerala (6%).

(c) The income gains to non-poor were higher than poor in 1986-87. But, the 1999-00 data shows that income gain to rural poor (5.8%) was much higher than for rural non-poor (1.3%). It shows that targeting might have improved in 1999-00. Same is with urban areas although income gains are lower for both poor and non-poor.

(d) Impact on Poverty: Our estimates show that without PDS, poverty would have been 28.58 per cent[21]. Due to income gain through PDS the poverty ratio is 26.2. Thus, the effect of PDS on poverty is 2.38 percentage points only. Similarly in the case of urban areas, the effect of PDS is only 2.13 percentage points[22].

(e) Income transfers through PDS do not show any relation to poverty. The correlation coefficient of average income gain and poverty ratio is almost zero in both rural and urban areas. It is evident that except for a few states the performance of PDS is poor.

Table 6. Dependency on PDS and Incomes Gains from PDS subsidies for Poor and Non-poor across States and All India

State/Group	MPCE (Rs.)	% of persons	Dependency (Rice+ Wheat)	Income Gain Rs. 0.00	Income Gain % to MPCE	MPCE (Rs.)	% of persons	Dependency (Rice+ Wheat)	Income Gain Rs. 0.00	Income Gain % to MPCE
	RURAL					URBAN				
Andhra Pradesh										
POOR	264.26	26.20	28.54	17.35	6.57	301.58	10.80	21.98	16.10	5.34
NONPOOR	521.38	73.80	19.47	17.62	3.38	830.33	89.20	13.69	14.74	1.78
ALL CLASSES	454.02	100.00	21.47	17.74	3.91	773.22	100.00	14.50	15.15	1.96

21 We have used Poverty line of Rs. 324.32 for estimating rural poverty ratio.

22 Urban poverty line used for estimating poverty ratio is Rs.391.13

Assam										
POOR	280.15	35.50	11.48	8.35	2.98	314.37	11.80	18.49	9.75	3.10
NONPOOR	505.63	64.50	6.96	7.26	1.44	868.56	88.20	4.50	5.85	0.67
ALL CLASSES	425.58	100.00	8.55	7.83	1.84	803.17	100.00	5.77	6.52	0.81
Bihar										
POOR	262.61	41.10	2.23	2.83	1.08	286.75	24.70	2.08	2.35	0.82
NONPOOR	468.46	58.90	1.72	3.99	0.85	703.07	75.30	0.67	3.17	0.45
ALL CLASSES	383.85	100.00	1.85	3.52	0.92	600.24	100.00	0.99	2.98	0.50
Gujarat										
POOR	291.03	20.00	34.35	10.05	3.45	344.02	6.40	16.04	9.95	2.89
NONPOOR	616.26	80.00	17.62	11.42	1.85	929.66	93.60	7.31	7.37	0.79
ALL CLASSES	551.21	100.00	20.06	11.27	2.04	892.18	100.00	7.85	7.59	0.85
Haryana										
POOR	286.39	5.70	1.65	1.08	0.38	263.02	6.40	0.00	3.12	1.19
NONPOOR	741.02	94.30	0.87	5.37	0.72	954.39	93.60	0.43	4.11	0.43
ALL CLASSES	715.11	100.00	0.90	5.08	0.71	910.14	100.00	0.41	4.05	0.45
Himachal Pradesh										
POOR	330.37	9.80	42.25	9.05	2.74	314.01	1.20	71.92	5.91	1.88
NONPOOR	719.26	90.20	34.23	6.91	0.96	1256.61	98.80	15.03	5.86	0.47
ALL CLASSES	681.14	100.00	35.04	7.06	1.04	1245.30	100.00	15.53	5.97	0.48
J&K										
POOR	339.99	6.10	16.82	6.76	1.99	381.83	1.30	20.90	2.28	0.60
NONPOOR	698.45	93.90	40.24	10.20	1.46	973.18	98.70	47.23	21.72	2.23
ALL CLASSES	676.58	100.00	39.28	9.70	1.43	965.49	100.00	46.90	21.35	2.21
Karnataka										
POOR	294.11	30.70	42.05	10.18	3.46	325.66	10.80	26.17	8.86	2.72
NONPOOR	590.17	69.30	25.64	14.30	2.42	983.63	89.20	15.32	13.01	1.32
ALL CLASSES	499.28	100.00	29.16	13.49	2.70	912.57	100.00	16.10	12.80	1.40
Kerala										
POOR	320.68	10.00	73.26	18.88	5.89	331.75	9.60	73.46	22.02	6.64
NONPOOR	814.35	90.00	47.62	24.05	2.95	989.54	90.40	45.65	23.41	2.37
ALL CLASSES	764.98	100.00	49.67	23.67	3.09	926.39	100.00	47.62	23.42	2.53
Madhya Pradesh										
POOR	237.52	31.30	7.11	2.78	1.17	284.42	13.90	3.25	1.51	0.53
NONPOOR	476.01	68.70	4.47	4.19	0.88	756.15	86.10	1.80	3.11	0.41
ALL CLASSES	401.36	100.00	5.20	3.77	0.94	690.58	100.00	1.98	2.91	0.42
Maharashtra										
POOR	280.32	31.90	24.78	7.02	2.51	323.23	12.00	14.44	3.76	1.16
NONPOOR	598.72	68.10	18.01	7.84	1.31	1060.29	88.00	6.73	9.61	0.91
ALL CLASSES	497.15	100.00	19.74	7.67	1.54	971.84	100.00	7.17	9.03	0.93
Orissa										
POOR	237.42	43.00	16.20	11.54	4.86	271.73	15.60	13.55	10.19	3.75
NONPOOR	476.16	57.00	12.47	10.50	2.21	681.81	84.40	9.57	9.41	1.38
ALL CLASSES	373.50	100.00	14.00	11.06	2.96	617.84	100.00	10.15	9.59	1.55
Punjab										
POOR	272.78	2.40	0.00	4.44	1.63	324.59	3.40	0.00	3.12	0.96
NONPOOR	752.64	97.60	0.21	4.70	0.62	919.00	96.60	0.04	5.28	0.57

ALL CLASSES	741.12	100.00	0.21	4.68	0.63	898.79	100.00	0.04	5.25	0.58
Rajasthan										
POOR	307.63	17.30	5.80	3.79	1.23	334.04	10.80	4.17	4.19	1.26
NONPOOR	599.17	82.70	3.30	3.75	0.63	852.28	89.20	1.34	3.29	0.39
ALL CLASSES	548.74	100.00	3.62	3.74	0.68	796.31	100.00	1.61	3.37	0.42
Tamil Nadu										
POOR	260.98	24.30	45.07	25.37	9.72	323.02	11.30	43.01	32.56	10.08
NONPOOR	594.71	75.70	33.55	33.02	5.55	1054.72	88.70	25.88	33.03	3.13
ALL CLASSES	513.61	100.00	35.86	31.67	6.17	972.04	100.00	27.56	33.70	3.47
Uttar Pradesh										
POOR	253.91	21.50	4.50	3.48	1.37	290.18	17.30	1.65	4.53	1.56
NONPOOR	524.82	78.50	3.94	3.77	0.72	771.20	82.70	1.98	4.87	0.63
ALL CLASSES	466.57	100.00	4.07	3.71	0.79	687.99	100.00	1.93	4.82	0.70
West Bengal										
POOR	255.54	21.90	4.75	5.56	2.18	321.71	11.30	7.08	14.88	4.63
NONPOOR	510.03	78.10	2.80	8.16	1.60	932.88	88.70	4.74	8.89	0.95
ALL CLASSES	454.30	100.00	3.17	7.65	1.68	863.82	100.00	4.98	9.27	1.07
All India										
POOR	262.56	26.30	13.53	15.31	5.83	303.85	12.00	10.73	7.65	2.52
NONPOOR	565.31	73.70	12.06	7.30	1.29	928.77	88.00	10.30	10.10	1.09
ALL CLASSES	485.69	100.00	12.41	9.48	1.95	853.78	100.00	10.35	9.87	1.16

Notes: (1) Dependency = Percentage of Purchases made in fair price shops to total purchases of rice and wheat.

Income gain includes gains from all purchases of rice, wheat, sugar and kerosene made in fair price shops. Income gain for a given commodity is defined as

(2) $IG = (P_M - P_D)*Q_D$, where IG is income gain, P_M and P_D are open market and fair price of the commodity and Q_D is the quantity purchased in fair price shop.

Nutrition Programmes: ICDS and Tamil Nadu Integrated Nutrition Programme

ICDS

Malnutrition among children and women is severe in India. Integrated Child Development Services (ICDS) is one of the main programmes for providing nutrition. ICDS is perhaps the largest of all the food supplementation programmes in the world. Under universalisation of ICDS, world bank assistance is being received for expansion of the ICDS programme since 1990-91. The WB-ICDS project I (1991-97) covered 301 ICDS projects in the states of Andhra Pradesh and Orissa while WB-ICDS project II (1997-2000) covered 454 projects in the states of Bihar and M.P. This project has been extended upto 2002. The WB-ICDS project III (1998-2004) started in 1998-99 aims at covering 461 priojects in the states of Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh. During the Ninth Plan ICDS programme in Orissa and Andhra Pradesh were evaluated by the National Institute of Nutrition. The World Bank and Government of India have reviewed the ICDS programme in 1997. The findings are:

(a) ICDS services were much in demand but there are problems in delivery, quality and coordination. The programme might perhaps be improving food security at household level, but failed to effectively address the issue of prevention, detection and management of undernourished child/mother; (b) Children in 6-24 months age group and pregnant and

lactating women did not come to the Anganwadi nor did they get food supplements ; (c) Available food was shared between mostly 3-5 year old children irrespective of their nutritional status; (d) There was no focused attention on management of severely undernourished children; (e) No attempt was made to provide ready mixes that could be given to 6-24 month child 3-4 times a day; nor was nutrition education focused on meeting these children's need from the family pot (f) childcare education of the mother was poor or non-existent; (g) there were gaps in workers training, supervision, and community support; (h) inter-sectoral coordination was poor (GOI, 2000).

Tamil Nadu Integrated Nutrition Project (TNIP)[23]

In order to learn lessons from Tamil Nadu, we did study on the state's integrated nutrition programme. The state level schemes have been sponsored mainly by the state government with substantial assistance from foreign donor agencies like Swedish International Development Assistance (SIDA), World Bank (International Development Assistance-IDA) and Danish International Development Assistance (DANIDA) from time to time. Unlike the other nutrition schemes in Tamilnadu, the general ICDS is a centrally sponsored scheme and all expenses (including salaries of State, District and Project Level functionaries) except the expenditure on weaning food are reimbursed by the Government of India.

A recent district level data on the prevalence of under nutrition shows much lower prevalence rates compared to the ICDS data. The percentage of normal and mildly undernourished children in the age-group 0-3 years varies from 85% to about 98% with some states showing very similar rates. The rank correlation between 1996 (during TINP II period) and 2001 (during WB ICDS III) is about 0.65. Though there seems to be some link between economic and social development and nutritional impact the rank correlation between prevalence rates 2001 and (a) Gross District Domestic Product (GDDP) (b) percentage of agriculture in GDDP (c) and female literacy rates are 0.37, 0.31 and 0.30 respectively. The inference that can perhaps be drawn from these low correlation values is that the program is effective irrespective of the socio-economic indicators. Since a lot has been written and analyzed about the TINP the present study summarizes the main findings as follows.

How different is TINP?

- The percentage of expenditure on nutrition in total revenue expenditure is highest in TN.
- Reduction in severe malnutrition among 6-60 months old children in 5 years during TINP-I.
- TINP-II showed systematic improvements in severe and moderate malnutrition reductions with increase in normal and mild malnourished categories for the children and reductions in low birth weights.
- Regular growth monitoring and selective feeding based on this information were identified as the main causes of success.

[23] This sub-section is based on Viswanathan (2003)

- Immunization of children and mothers was regular with (universal) coverage of 90% and massive doses of micronutrient supplementation like Vitamin A, iron and folic acids with a coverage rate varying from 35 to 60 percent.
- Better targeting of the schemes due to decentralization.
- Better management of the schemes leading to low level of leakage.
- Good coordination with health services in the later stages of the program.
- The nutrition centers in rural areas had two workers, one looking after the needs of the 0-3 year olds and the other to take care of pres-school education and nutrition of the 3-6 year olds. This resulted in good impacts for both the age groups unlike the experience in ICDS areas, which favored the 3-6 year olds.
- Calorie-protein content of the food supplement is clearly stated with regular surveillance of the quality. Few deviations form quality had been observed.
- Some success seems to have been achieved in changing permanent nutritional behavior.
- Institutional sustainability is apparent as the program is now being completely managed by the staff as the World Bank input has come to an end.
- Strong political commitment to implement and improve the nutrition schemes.
- A recent policy note by the state government indicates a plan for (a) making the state malnutrition free along the United Nations advocated approach of "nutrition throughout the life-cycle" (b) change in focus of the programs from management to prevention of malnutrition (c) convergence of health and nutrition services under one department (d) focusing on nutrition and education of the adolescent girls and (e) economic empowerment of women.

Though Tamilnadu has been leading in nutrition expenditures as a percentage of total revenue expenditure and is among the leading states on per capita social security expenditure there is declining trend in the 1990s towards 2000-01. As in ICDS there are very few studies analyzing the cost-effectiveness or cost-benefit of the successful nutrition programmes in Tamilnadu. However indications are that as supplementary nutrition was selective and the food cost having the largest share in the total cost of the project there was a definitive reduction in project cost resulting in sustainability of the project. It is found that the unit cost of TINP was about US$9-12 per year per child and is among one of the cost effective programs around the world. At the same time the ratio of mobilizers to children was 1: 300 and is considered to be good enough to achieve sustainable impacts as not only effective investment but also a required level of effort is required in achieving the desired result. As in any other nutrition program the impacts have been studied only on the basis of growth monitoring and other impacts of better nutritional and health status like school achievement, improved living conditions and job opportunities have not been ascertained.

Antyodaya Anna Yojana

This programme was introduced in early 2001 is addressed to the poorest of the poor, as identified by gram panchayats and gram sabhas. Antodaya households have special ration cards and are entitled to 35 kg of grain a month at highly subsidized prices (Rs. 2 a kg for wheat and Rs.3 kg for rice). In a survey of destitution in five states (Andhra Pradesh, Chattisgarh, Jharkand, Rajasthan and Uttar Pradesh) indicates that the programme is doing

well, in contrast, with other components of the PDS[24]. The selection of Antyodaya households appears to be quite fair: among the 450 Antyodaya households living in the sample villages, a majority of them turned out to be poor. The programme has, however, some problems. In some areas, the survey found that many Antyodaya households had been deprived of their entitlements. Ration shop dealers took advantage of their powerlessness. Another major limitation of the scheme is its restricted coverage. It is less than 5 per cent of the rural population. If these limitations are sorted out the Antodaya programme has a lot of promise.

3. 4. Social Security Programmes

National Social Assistance Programme (NSAP)

First time in India, a social security system in the form of the National Social Assistance Programme (NSAP) was introduced in 1995. It represents a significant step towards the fulfillment of the Directive Principles in Article 41 and 42 of the constitution. It introduced a National Policy for Social Assistance benefit to poor households in the case of old age, death of primary bread winner and maternity. The programme accordingly had three components namely

- National Old Age Pension Scheme (NOAPS)
- National Family Benefit Scheme (NFBS)
- National Maternity Benefit Scheme (NMBS)

NSAP supplements efforts of state governments with the objective of ensuring minimum national levels of well being and the central assistance is not meant to displace the state's own expenditure on social protection schemes. After some trouble in initial years, NSAP is now a popular programme. Most of the allocations were spent under the schemes. In 2000-01, Rs. 477 crores were spent on old age pension scheme and Rs. 201 crores were spent on national family benefit scheme. Around 51 lakh persons were benefited from old age pension scheme in the same year.

NSAP was evaluated by operations research group (ORG) three years after its implementation. The study was taken up in eight states (Andhra Pradesh, Bihar, Gujarat, Kerala, M.P., Maharashtra, Orissa and West Bengal). It reveals low levels of physical achievements for all the three schemes in the first two years of implementation. However, in the third year, achievement under NOAPS has surpassed targets in most of the states whereas achievement under NFBS and NMBS continues to be low. The programme has largely reached SC/ST population and women. The coverage of women in NOAPS was found to be 40-60 per cent and in NFBS 40-50 per cent. The programme appeared to have been well targeted. Lack of awareness about the programme is a major problem. There is no formal system for information dissemination. The procedure of registration involves production of several proofs and certificates, which makes it very cumbersome. The panchayats may be entrusted the responsibility of verifying facts and claims. The evaluation revealed that the NFBS beneficiaries either saved the assistance money in a bank or used it to repay old debts. Use of benefit in income generating activities was negligible. There have been cases of corruption in implementation of the programme. Most NMBS beneficiaries reported having

[24] See Dreze (2002)

received the benefit after the delivery. There is a need to create awareness about the scheme among the target segment so that claims are made well in time. The procedure under this scheme, and other schemes under NSAP, needs to be simplified and made more transparent to make it all hassle-free.

2.5.Targeting and Cost Effectiveness : Comparison of Some Anti-Poverty Programmes

Here we discuss the targeting and cost effectiveness of some direct poverty alleviation programmes. The main objective of these programmes is to directly help the poor to improve their economic, physical and social conditions. It has been shown that in terms of targeting success, self targeting schemes like rural public works score over income based targeting (Ravallion and Datt 1995). For example, a comparison of public works programmes and IRDP (self employed programme) in Maharashtra shows that the participation in public works is highest for the poorest households and tapers of with rising expenditure levels. But the IRDP data reveals the participation is more or less similar across expenditure classes (a horizontally straight line graph). In other words, participation has no relationship with expenditures. These data suggest that the public works is much better targeted and that income based means testing does not assure better targeting. However, the data used by Ravallion and Datt refers to 1987-88. The data for the year 1993-94 indicates that even in IRDP, percentage of participating households is higher for some of the lower expenditure classes as compared to upper expenditure classes. It shows there has been some change in targeting over time for IRDP.

In recent years, comparisons between Employment Guarantee Scheme and Public Distribution System (PDS) have been made. Table 7 gives these comparisons. It shows that although transfer efficiency is higher under PDS than in EGS, the benefit cost-ratio in the PDS may be only half of that in the employment programmes. This is because of better targeting in employment programmes. However, the coverage is much wider for PDS (more on this see Mahendra Dev, 1996a).

In the case of employment programmes, mistakes relating to coverage of non-poor are expected to be less and exclusion of some poor is expected to be higher as compared to those of PDS. For example, 90% the workers working under Employment Guarantee Scheme were poor according to some estimates (Dandekar, 1983). In this case, mistakes of covering non-poor are very low. However, exclusion of some poor is high under employment programmes because many of the poor are not generally covered. Another point is that EGS is considered superior over PDS even if it does not create any assets (see Parikh, 1994). EGS scores much more over other poverty alleviation programmes if secondary benefits such as asset creation, increase in agricultural wages, insurance benefits etc. are considered. If these benefits are considered, the impact of EGS on poor could be much higher than that of PDS.

Table 7. Comparison of Cost-effectiveness in the Employment Guarantee Schemes (EGS) and Public Distribution Systems(PDS) in India

	EGS	PDS
1. Budgetary cost	100[1]	100[2]
2. Overheads	50[3]	37[4]
3. Leakage	10[5]	35[6]
4. Gross Benefit (1-2-3)	40	28
5. Participation Cost	16[7]	Neg[8]
6. Net Benefit (4-5) i.e. transfer efficiency	24	28
7. Targeting efficiency (coverage of poor)	0.9	0.4
8. Final transfer to poor (6 * 7) (benefit-cost ratio)	21.6	11.2

[1] Aggregate cost for creating one person-day of employment. [2] Cost of food subsidy. [3] Administrative overheads and non-labour expenditures. [4] Distribution overheads such as freight, storage, costs, interest, etc. being 57 per cent of 65 per cent reaching consumers. [5] Under payment of wages. [6] In transit and at point of sale. [7] Foregone earnings. [8] Negligible, assuming that forgone earnings due to waiting time and transport costs to retail shops is not significant.

Source: Adopted from Guhan (1994)

Regarding credit based self employment programmes, group lending is more successful in targeting than lending for individuals. In general, the government run programmes are less successful in targeting as compared to NGO based community participated programmes. For example, Self Employed Women's Association (SEWA) has excellent targeting record. Targeting based on age, gender and other vulnerabilities are also successful in identifying the targeted groups (e.g. nutrition programmes, programmes for children and women, programmes for elderly, widows and handicapped). Decentralized programmes (e.g. involvement of panchayats) are also more successful in targeting as compared to centralized programmes. Maternal and child nutrition programmes appear to be better targeted than most other programmes, presumably because targeting women and children requires less administrative effort.

3.6. Risk and Vulnerability

The evaluations of targeted programmes mainly concentrate on the impact of these programmes on income of the beneficiaries. Reducing fluctuations in income can be as important to the poor as raising average incomes. For example, public works or PDS can prevent acute distress and avoid the need for costly forms of adjustment, such as selling productive assets. In other words, even if the increase in employment and income is not very large compared with the aggregate needs, the existence of a form of income/employment *insurance* can be quite significant. How valuable this insurance function of public works will depend on other factors such as the ease with which employment is actually obtainable and the costs of alternative mechanisms e.g. credit.

"Vulnerability can be defined as the expected welfare loss above a socially accepted norm which is caused by uncertain events and the lack of appropriate risk management instruments... The common practice so far has been to look at consumption of households in order to detect patterns that suggest vulnerability. .. However, vulnerability extends to a number of other dimensions that may not be entirely captured by consumption evidence.

Children's health and development, physical well-being, social capital, family sizes and insecurity of old age are but some of the dimensions where vulnerability can have adverse impacts" (World Bank, 2003).

Poverty is also associated with insecurity (to cope with risk) and fear for the future. The poor are exposed to a wide variety of risks against which they have little protection, mainly because they are overwhelmingly concentrated in rural areas and informal sectors where formal instruments of social protection are almost non-existent.

4. SOCIAL EXCLUSION AND VULNERABLE GROUPS

Social exclusion is another important aspect of chronic poverty. The most potent form of social exclusion in India is caste based exclusion. It is well known that SCs and STs in India suffer from this inspite of many policies. Apart from SCs and STs, we will also focus on other vulnerable groups such as migrant population, old age population, widows, child labour. The vulnerable members of any society tend to be those who are deprived of social, economic, political and civil rights due to pre-existing ideologies that determine social arrangements. Thus, lower caste groups, because of the caste system; women, because of gender ideology; widows, due partly to social stigmatization and lack of access to and control over economic resources; and the elderly, being economically unproductive, obviously constitute the vulnerable sections of the population.

4.1. Scheduled Castes and Scheduled Tribes

The Scheduled Castes (SCs) and Scheduled Tribes (STs) implying those castes and tribes scheduled by the state as socially and economically deprived are given reservation in government jobs and other facilities. However, an examination of current status of the SCs and STs with respect to occupational pattern, unemployment and poverty, education vividly exposes the inability of government policies in making any dent in their status.

Poverty of Scheduled Castes(SCs)in recent years

The rate of decline for SCs living below the poverty line was marginally higher than that of the total population between 1993-94 and 1999-00. The gap between the total population and the SCs also decreased during the same period in both rural and urban areas. However, the incidence of poverty amongst SCs still continues to be very high with 36.25 per cent in rural areas and 38.47 per cent in urban areas (Table 8). This is primary due to the fact that a large number of SCs who are living below the poverty line are landless with no productive assets and with no access to sustainable employment and minimum wages (GOI, 2003). The women belonging to these groups suffer even worse because of the added disadvantage of being denied of equal and minimum wages.

Table 8: Population Living below Poverty Line :Scheduled Castes and Total

Category	Rural		Urban	
	1993-94	1999-00	1993-94	1999-00
Total	37.27	27.09	32.38	23.62
SCs	48.11	36.25	49.48	38.47
Gap	10.84	9.16	15.82	14.85

Source: GOI, 2003

Poverty of Scheduled Tribes in recent years

The poverty among scheduled tribes also declined along with general population (Table 9). However, it is disquieting to note that the rate of decline in respect of STs is much lower than that of the general population. As a result, the gap between poverty ratios of STs and general population increased during 1990s. Further, the incidence of poverty among STs still continues to be very high with 45.86 and 34.75 per cent living below the poverty line in rural and urban areas respectively.

Table 9: Population Living below Poverty Line : Scheduled Tribes and Total

Category	Rural		Urban	
	1993-94	1999-00	1993-94	1999-00
Total	37.27	27.09	32.38	23.62
STs	51.94	45.86	41.14	34.75
Gap	14.67	18.77	7.48	11.13

Source: GOI, 2003

4.2.Migrant Population

The major sources of migration data are Census and NSS. The NSS data are based on the responses of migrants at their destinations. The data from NSS for the past two decades show declining trend of migration for males, both in rural and urban areas although the fall is rather modest. The percentage of migrants in rural areas has gone down from 7.2 to 6.9 during the period 1983 to 1999-00 (Table 10). The migration ratios, however, have gone up in both rural and urban areas during the reform period.

Table 10 Percentage of Migrants in different NSS rounds in Rural and Urban India

Year	Rural		Urban	
	Male	Female	Male	Female
1983	7.2	35.1	27.0	36.6
1987-88	7.4	39.8	26.8	39.6
1993	6.5	40.1	23.9	38.2
1999-00	6.9	42.6	25.7	41.8

Source: Various NSS reports

Both the censuses and NSS have limitations, the main being they ignore or severely underestimate short duration (circular) migrants and commuting labour. The National Commission on Rural Labour (NCRL) estimates more than 10 million circular migrants in the rural areas alone. These include an estimated 4.5 million inter-state migrants and 6 million intra-state migrants. The commission notes that there are large numbers of seasonally migrant workers in agriculture and plantations, brick-kilns, quarries, construction sites and fish processing. In addition, large numbers of seasonal migrants work in the urban informal manufacturing, construction, services or transport sectors – as casual labourers, head-loaders, coolies, rickshaw pullers, hawkers and so on. Information is not available on the trends in circulation of labour time but the few studies on migration over several decades that exist suggest a growth in labour circulation (e.g. Breman, 1996).

Some studies have examined the impact of labour migration in the source areas and destination areas. Srivastava's study (1998) shows that in the source areas, increased

labour mobility has contributed to breaking down the isolated nature of rural labour markets and a greater integration between rural and urban labour markets. The overall impact of labour out migration in the recent period has been to put an upward pressure on wages and accelerate changes in production relations. The remittances to the rural areas are quite sizeable in many areas (e.g. U.P. Hills). On the other hand, in the destination areas, labour migration is principally to the rural and urban informal sectors. Migrant labour in these areas operated in a setting in which there is segmentation and fragmentation in the labour market and enables the employers to lower wage costs, exercise greater control over the labour process.

Thus, migration seems to have benefited the source areas in improving rural livelihoods while in the destination areas migrant labour are being exploited. There is a need for appropriate policies to help the migrant population in destination areas.

4.3. Old Age Population

Since a further breakthrough in fertility and mortality is expected, the proportion of the elderly in India is likely to rise in the coming years. The number of old age population (age 60+) has increased from about 19.8 million in 1951 to 56.7 million in 1991 and their share in the total population has risen from 5.5 per cent to 6.8 per cent during the same period. According to the population projections prepared for the Ninth Plan, the number of aged 60 and above will rise from 54.5 million in 1991 to 70.6 million in 2001 to 113 million in 2016. The share of aged in the total population is likely to increase to 8.9 per cent by 2016[25].

Some characteristics of the old age population are given below (see Visaria, 1998 for more details).

- The percentage of the old age population in rural areas (7.1 percent) was higher than that for urban areas (5.7 per cent) in 1991.
- The proportion of elderly was almost same for both males and females (6.7 per cent) in 1991 and is likely to increase faster for females in future.
- The proportion of illiteracy among the old age population is much higher than in the population aged 15 and over.
- The proportion of workers among the aged is higher than total population. A majority of the workers among the elderly are self employed (75 per cent for rural and 71 per cent for urban areas). Casual work is the second most important work for the aged.
- The special survey of NSS for 1995-96 on aged show that about 30 to 31 per cent of the elderly males in rural and urban areas was fully dependent on others. The corresponding figures for females in rural and urban areas were 71 and 76 per cent.

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[25] According to some alternative projections, number of persons aged 60 and above will rise even more rapidly to 124 million forming 10.2 per cent of the total population by 2016. Visaria (1998) cautions about the data on the aged because of errors of age reporting which led to an overestimate of the number and proportion of the aged.

"The various small sample surveys conducted in rural India in general reflects a greater degree of financial insecurity among the aged, and this insecurity is more pronounced in the case of females compared to males. Moreover, financial problems are more common among widows and among elderly in nuclear families. The worries of the elderly are on two fronts, one in relation to social strain and the other on economic independence. The worries on social relation aspect are much more complex compared to economic worries for those who like in nuclear families or living alone" (p.2336, James, 1994). The majority of the elderly also seem to be suffering from ill-health and poverty.

There is a need for a comprehensive policy for taking care of the problems of the elderly. Informal methods for obtaining income security, such as India's joint family, are increasingly unable to cope with the enhanced life span and enhanced medical costs in old age. Hence there is an acute need for formal arrangements, which can supplement informal systems. The programmes for the old age can be in two forms: pension funds and health insurance.

Social Insurance for the Elderly: Social security for the elderly, or more appropriately, social insurance against poverty (income security) and ill health (health security). This is a contractual arrangement that the elderly sign with the government, which in turn finances it by taxing the working young. The contract is `paid for' by the elderly during their working lives, and they expect it to be honoured when they are old. This is why social insurance provision needs government intervention, since a private provider cannot guarantee that the contract will be honoured since a private provider runs a risk of bankruptcy.

Pension Schemes: At present, less than 10 per cent of the workers between the ages of 20 and 59 (i.e. workers in the organized workers) are preparing for income security in old age using the existing formal systems. Almost all states and union territories have old age pension schemes. A few states such as Andhra Pradesh, Gujarat, Kerala and Tamil Nadu also have special pension schemes for agricultural labour. However, working of the pension schemes for unorganized sector is not satisfactory except in states like Kerala. As mentioned above, the National Social Assistance Programme was launched by the central Government in August 1995. This is not enough to achieve income security for the elderly. There is a need for framing a comprehensive pension scheme covering the unorganized workers.

Health Insurance[26]: Any provision of health insurance to the elderly will necessarily involve government because of market failure. There is almost none or very little provision of health insurance to the elderly in India. Based on the surveys of the NSSO, NCAER and the National Family Health Survey it has been noted that the elderly population suffer from severe physical and mental conditions. Furthermore increasing diagnostic and drug prices have also contributed to their vulnerability. There is also growing disease burden prevalent among the elderly. There are basically three market products for health insurance that the elderly can access in the Indian market. They are: Mediclaim, Senior Citizens Unit Plan and Bhavishya Arogya Yojana. The Mediclaim statistics show that only that the total number of people covered is a modest 1.3 million,

[26] For more details on health insurance for the elderly see Ranade (1998)

of which the elderly probably constitute a small fraction. We can thus see that total coverage for health services for the elderly is miniscule, in that only a tiny fraction of the nation's 54 million elderly have assured medical services. Therefore, there is a need for designing a comprehensive health insurance scheme for the elderly with the support of the government.

4.4. Widows:

There are about 33 million widows in India in 1991 and the condition of widows is one of the most neglected social issues in the country. The quality of life is reduced for many Indian women because of widowhood. Only 3% of all Indian men are widowed compared with 8% of women. This large gap primarily reflects high incidence of remarriage among widowers. In many places the widows cannot participate in some of the social functions. According to some estimates, the mortality rates are, on average, 86% higher among elderly widows than among married women of the same age[27]. The basic factors for the disadvantage and insecurity experienced by many Indian widows are brought out in a study of North Indian villages (see Chen and Dreze, 1992; Dreze and Sen 1995)). These are given below.

- The legal rights of widows are violated and large majority of widows have very limited and insecure property rights. Widows lose not only a potential source of independent income but also bargaining power with in-laws, sons and other supporters.
- The widows are expected to stay in husband's village and face the social isolation.
- They have limited freedom to remarry.
- The segmentation of labour market by gender severely restricts employment opportunities for widows. Also, they tend to be concentrated in the older age groups and their labour force participation rate is lower than that for married women.
- Most widows get little economic support from their family or at community level. There is no evidence of joint family providing support to widows. Majority of them live on their own with unmarried children or stay with adult son as dependants.

How do we provide income and social security for widows? Some of these factors can be seen as an integral part of the gender inequalities in India. One way is to provide property rights particularly land rights for women. So far, the strategy of land reforms has not given importance to the existing gender inequalities in land inheritance laws and ceiling laws. Women are more dependent on agriculture for a livelihood than men, as men shift to non-farm employment. It is estimated that 20 per cent of the rural households are defacto female-headed. Yet, very few women have titles of land and even fewer control it. Therefore, ensuring women's effective command over land in the form of land rights will be one of the measures needed for providing income security for widows[28].

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[27] For some other details on widows in India, see Dreze (1990).

[28] On the general issue of women's land rights in India see Agarwal, Bina (1994).

Widow Pensions: Many states have widow pension schemes on paper but, except in states like Kerala they have negligible coverage and impact. A study on the destitute widows in Dindigul district of Tamil Nadu provides some evidence on the accessibility of the scheme to widows. Based on a survey of widows in Dindigul district, this study focuses on (i) how accessible is the scheme to needy destitute widows; and (ii) the distortions that arise as the scheme is to put to everyday practice. The study shows that the administrations remains largely inaccessible to widows given its access or withholding information, rigid procedural orientation, insensitivity to the urgent needs of people, etc.

Therefore, government interventions are needed for providing land rights and in providing widow pensions effectively. it does not mean that government intervention should replace income and social support at the community level. They should be complementary to each other. Inspite of its significance, the problems of widows are rarely discussed in public debates. Thus, the solution requires a combination of government intervention, public pressure and community support

4.5.Child Labour

India has probably the largest number of child labourers in the world. The Convention on the Rights of the Child recognizes that every child should have a right to education. In other words, many children in India are being deprived of this right. Conventionally, a working child is defined as a child in the range of 5 to 14 who is doing labour, either paid or unpaid. The incidence of child labour in South Asia (14 per cent) is not that high as compared to that for East Africa (32.9 per cent), West Africa (24.2 per cent) and East Asia (20 per cent). The absolute numbers are, however, quite high in countries like India. For the age group 5-14 age group, estimates of the number of working children in India range from 15 to 20 million in the Censuses and NSS data to 44 million according to the operations research group. The Chamber of Commerce and Industry (CCI) estimates child labour in the organized, unorganized and household sector in India to be over 100 million. Of course there are significant regional disparities. Andhra Pradesh has the highest incidence of child labour while Kerala has the lowest incidence.

One can broaden the definition of child labour or child work by defining it as a child who is deprived of the right to education and childhood. The child population can be grouped into three categories: school going children, child labour, nowhere children (non-labour and non-school goers). According to NSS data, the last category of nowhere children forms about 35 per cent and they are potential child labourers. Therefore, the child labour problem should address not only the category of child labour but also the category of nowhere children.. Because of the gender bias and urban bias in school education, the category of nowhere children is high in rural areas and among girl children. There is a need to concentrate on these two areas to improve education and reduce child labour.

Regarding determinants, it is true that poverty is one of the main determinants of supply of child labour. The policy prescriptions for this are to have income generating programmes for parents of the working children and improve the overall condition of the adult labour. However, the economic dependence of the families is only a part of the

explanation for the persistence of child labour. Across states, there is a very weak correlation between incidence of poverty and incidence of child labour. For example, poorer states like Bihar, Uttar Pradesh, Orissa have lower incidence of child labour. On the other hand states like Andhra Pradesh, Karnataka and Tamil Nadu have higher incidence. Some time utilization studies for the children suggest that most of the children who are not attending school are not doing much work either. Also, the direction of causation does not necessarily run from child labour to non-attendance. This can be other way round in the sense that drop out children take up productive work of their own choice or through parental pressure as a 'default occupation'. A case study on Calcutta finds that two thirds of working children 'work as they have nothing else to do as the schools are not very attractive and teaching conditions are poor'. Thus, the schooling system is partly responsible for the persistence of child labour. Recent field studies in U.P. have also confirmed that factors relating to schooling are partly responsible for the persistence of child labour. While children contribute to the earnings of the family, albeit in an insignificant way, the real malaise is that there is no corresponding skill advancement of the child labour during her/his tenure of employment. Kashik Basu and Van argue for improving the conditions of adult labour for reducing the child labour. However, increase in the wages of a male member may not guarantee reduction in child work. Field studies have shown that male members of some families spend wages on liquor and children are sent for work to earn.

The establishment of compulsory education for children is a necessary condition for the reduction and abolition of child labour. In a narrow sense the compulsory education is understood as a law making it compulsory for parents to send their own children to school and allowing for the punishment of parents who do not imply with it. As Jean Dreze says, in a broad sense compulsory education may be interpreted as (a) a compulsion on the state to provide adequate schooling facilities to all children, and (b) subject to that, an obligation of the parental community to send all children to school. Thus, understood compulsory education is a broad notion. The most important thing is that compulsory education would put much needed pressure on the state to expand schooling facilities. The argument against compulsory education is that it leads to official harassment to parents and poor families lose earnings from child labour. It may be noted that non-coercive means can be used for promoting compulsory education. The girl child is going to be particularly be benefited from the establishment of compulsory education. Again as Jean Dreze says the compulsory education makes sense on two conditions: (a) adequate facilities being available at a convenient distance and (b) education being free. According to him, introducing compulsory education before these conditions are met would be putting the cart before the horse. Field studies in U.P. and other northern states have shown that parents from poor households also want to send their children to school but the school facilities and quality are not satisfactory.

Child labour is a complex issue and therefore requires complementary strategies and the involvement of all sections of civil society, i.e. NGOs, human right activists, lawyers, media, trade unions, employer's organisations, academics and so on. Some NGOs are doing good work on eradication of child labour. For example, M.V. Foundation in Hyderabad focuses on elimination of child labour and putting the children back in schools. According to the charter of the Foundation, every child out of school is considered a child labour. The Foundation works in about 400 villages in rural

Rangareddy district in Andhra Pradesh and is said to have pulled out several thousands of children for work and are put into schools in the last few years. Some overall improvements were also found in the areas worked by the foundation. Wages for adults seem to have improved with the withdrawal of children from labour market; there has been a shift in the cropping pattern so that agriculture could be managed without child labour and adults became more organised in their work. There has been improvement in the schooling facilities. More such efforts are needed in a state like Andhra Pradesh where large numbers of the country's child labourers are concentrated.

5 HOW TO STRENGTHEN SAFETY NETS

5.1. Reforms Needed for Rural Public Works

The main criticism against public works is that they are relief oriented and are not creating durable assets. Around 40 to 50 per cent of total funds under public works are being used for non-wage purposes. What is happening to these funds? How productively these funds are being used? The major issue is how to generate productive assets without diluting the primary objective of employment guarantee and poverty alleviation.

Reforms Under JRY

(a) Are the Resources Enough for Wage Employment Programmes?

We have noted above that the person days under public works contribute only 3 to 5 per cent to the total casual labour days in rural areas[29]. This shows that the all India programmes are thinly spread and are unlikely to have a significant impact in any given state[30]. It can be interpreted in two ways. One view is that these funds should be diverted for investment purposes since they are not having much impact on poverty particularly in normal years. On the other hand, we can say that funds should be increased under wage employment programmes in order to have significant impact on poverty. For example, Parikh (1998) argues that 'a nationwide EGS with increased wage and easy access to all can provide individual food security against both chronic and transient hunger to the employable hungry. This can be done at a cost of about Rs.14,775 crores per year to cover both rural and urban areas. Of course here Parikh is assuming that other programmes like PDS are not necessary for employable persons[31]. Obviously we need more resources for public works in order to have a significant impact on poverty.

(b) Minimum Wage Rate:

Higher wages in public works may be important from the point of view of income guarantee. The use of minimum wage rates for JRY work, however, raises several issues. Where the minimum daily wage is above the market wage, as may be the case in poorer localities, there is a danger that persons with other market based work opportunities will be attracted to JRY, which detracts from targeting and inflates demand for JRY employment,

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[29]. On the other hand, Nayyar (1996), Papola and Sharma (1996) show that JRY and EAS are taking care of 40 to 50 per cent of the underemployment in the country.

[30] This point is due to Suresh Tendulkar, Delhi School of Economics, (personal communication)

[31] Parikh says along with EGS, a PDS to reach the old and the infirm who can not work on EGS would be required. The EGS with supplementary PDS for 5 per cent of the poor requires around Rs.16700 crores for both rural and urban areas.

possibly necessitating rationing. On the other hand, in some places the minimum wage rate appears to be well below the market wage, in which case no one would be attracted to engage in JRY work unless higher wages are paid in a disguised manner (violating JRY guidelines). The question that naturally arises is whether JRY is needed at all localities where the market wage far exceeds the minimum wage. If there is no demand for JRY employment at the minimum wage rate, the programme could simply be dispensed with in that locality, leaving more resources available where they are truly needed in poorer localities. Attraction of some of the non-poor to JRY mentioned above could also be due to higher wages under this programme.

(c) Using Excess Bufferstock for Public Works:

Sometimes governments have excess bufferstock as happened in 1995. It had reached a peak of 37 million tonnes in May 1995. Government has several options to dispose of this excess stock. These are : (a) exporting the grains, (b) selling in the open market, (c) increasing the demand for PDS by reducing the issue price and, (d) using for public works programmes. Among these options, the last option of linking foodgrains with public works programmes like JRY seems to be the most effective strategy for buffer stock reduction. Similar view was expressed by Ghosh et al (1996). According to them, existence of food stocks 'provides a tremendous opportunity in terms of a substantial non-inflationary expansion in public works and other infrastructure development and maintenance which can be organized through food-for-work and similar schemes'(p.1235).

(d) Public Works Can be Used for Targeting PDS:

Various options are being discussed regarding targeting of PDS to the poor. There is, however, some sort of consensus that PDS should be linked with public works programmes because they have excellent self targeting character. Giving food coupons as part of the wages to the workers in public works can be experimented.

(e)Involvement of Institutions

It is a general impression that the effectiveness of the programmes on the lives of the people is less compared to the funds spent on the schemes. The major criticism of the government based anti-poverty programmes relates to lack of people's participation. The approach seems to be more technocratic and top-down approach in implementing these programmes. There is a need for involving Panchayats and NGOs, self-help groups, community based organizations for strengthening Government employment programmes.

More Involvement of Panchayats: With the 73rd and 74th Constitutional Amendments, people at the village level are now empowered through participation in local government to exercise their rights and manage their own developmental activities. It opens up space for potentially meaningful, and creative, local development effort with in built pressures for accountability. Thus, people's participation through Panchayats would strengthen Government activities. There are, however, apprehensions that given the highly stratified and unequal socio-economic structure of Indian villages, the dominant landowning caste elites would effectively control power and that they are unlikely to be concerned about the welfare of the poor and the women. However, over time the poorer sections are likely to participate in panchayat system.

JRY is implemented through panchayats. However, as mentioned in the concurrent evaluation, only 43 per cent of the heads of elected panchats imparted training for implementation of JRY works. Therefore, there is a need for more orientation of heads of

village panchayats through training programmes. In general, panchayats are working better in West Bengal and Kerala.

Voluntary Organizations (NGOs, CBOs): Wherever the voluntary organizations have shown interest, the effectiveness of Government programmes have improved. NGOs and CBOs (Community Based Organizations) thus play vital role in strengthening the hands of the Government. The voluntary organizations also make the Panchayats accountable. For accountability two instruments are needed. They are: (a) Right and access to information and (b) social mobilization. The activities of Government at the local levels have to be transparent and the people should have the right to information regarding funding and other activities. The NGOs and CBOs can also facilitate for social mobilization of people and in particular women. Also some of the special employment programmes like DWCRA can be given to self help groups for implementation.

(f) Leakages Under the Programmes: There are many stories throughout India on leakages under JRY. There is no accountability for officials as well as panchayats. The right to information and involvement of voluntary organizations can reduce the leakages.

(g) Better in Drought Years?: An interesting dimension of the rural works programmes is that they seem to work remarkably well during drought years as relief programmes. There is evidence that the poor have better access to food during periods of scarcity as compared to normal years. It is worth examining why the bureaucracy who works efficiently during drought years fails in the normal years.

(h)Need for linkages with Sectoral Programmes for Productive Employment

The special employment programmes may have to be continued in the short run until growth process generates the required employment. However, it is necessary to recast the employment programmes with a view to making them more effective in meeting not only the short term objective of providing temporary work, but also in building up the productive capacity of individuals/areas which in turn, would make greater employment on a more sustainable basis feasible (Nayyar, 1995). For example, public works programmes should create assets, which can provide a sustainable productive employment in future. They should not be relief programmes. The case for using rural public works as a development activity and for providing productive employment has been argued by Hirway and Terhal (1994).

The most glaring weakness of the expenditures made every year in public works is that they are not conceived in the framework of overall development plan. Rao (1992) discusses about the lack of integration of employment-generation programmes with development programmes in India. Action plans of JRY are nothing more than lists of schemes having hardly any interconnections between them. Again there is hardly any integration between the JRY programmes and the schemes of various line departments. The potentialities of JRY type programmes can be fully utilized if the projects of these schemes are identified in the framework of planned development of an area. Some novel experiments can also be tried for effective utilization of these programmes at local level. For instance, one can try Zimbabwe type public works in which government provides only the casual wage cost and requires the community to mobilize its own resources for non-wage expenses.

Mid-year Utilisation of Funds

There are problem when one looks at mid-year utilisation rates of funds under poverty alleviation programmes. This has been done in a study by Rajaraman (2001a and 2001b).

The study focuses on some major schemes of the Ministry of Rural Development for the year 2000-2001. The utilisation rates of these funds, for most of the schemes, were less than 50% of the funds allocated for the first six months. In other words, in the first six months, less than 25 per cent of the annual allocation was used. The utilisation rate of the two major employment schemes (the Employment Assurance Scheme and JGSY, the successor of JRY) was 42 per cent (of 50 per cent). This, according to Rajaraman, is especially surprising, "since the first six months of the fiscal year from April encompass the agricultural slack season, when the demand for rural employment should be at its peak." (Rajaraman, 2001a:20). The utilization rates at the end of the year are, however, much higher "suggesting hasty, wasteful utilisation in the second half of the fiscal year" (ibid: 20). Underutilisation of funds seems to be more in the poorer States. "A simple regression shows a statistically significant rise in the mean mid-year utilisation rate of 4 per cent for every increase in the SDP of Rs. 1000 per capita. The worse-off states are also less efficient in using JGSY funds" (Rajaraman, 2001b). So, although these schemes are meant to alleviate poverty, the poor States make less efficient use of them than the better-off States.

Several reasons can be mentioned for explaining this underutilisation. First, new schemes bring new guidelines and require new procedures. It takes time before these State governments or local bodies are fully aware of these and able to fulfill the criteria. Second, for some schemes, the central government gives a grant, which has to be complemented by matching funds from the States. If these matching funds are not available, the CSS grant will not be given. Third, there can be a deliberately created or unintentional delay in the central bureaucracy, with spill-over effects for next year's allocation (which is partly based on spending figures of the previous year). Fourth, some schemes presuppose the availability of local infrastructure, such as rural primary health centres. If this infrastructure does not exist, schemes make no sense and funds are not allocated. Some central schemes are also not relevant in each and every State. Fifth, there may be other forms of institutional disability or disinterest. State governments may not be able to get their act together and design a plan (for instance for a rural road) and can therefore not receive the money. It may also be that low priority is given by some State governments to implement the schemes. This can be the case, for instance, when the States are ruled by a party that does not participate in the central (coalition) government. It may also be that there is hidden or open opposition.

Task Force and Study Group on Poverty Alleviation Programmes

The Task Force on Employment Opportunities (2001)[32] reviews the special employment programmes. The Report says that wage employment programmes can play a very useful role in providing supplementary employment to vulnerable sections of the population especially in seasonal lean periods, which are common in agriculture. They are also a potentially useful form of social safety net to deal with situations of exceptional distress e.g. droughts. In the absence of extensive system of social security the use of employment programmes as a form of social security to deal with a targeted population has a great deal of merit. According the report, wage employment programmes should be

[32] Montek Ahluwalia is the Chairman of the task force

focused as possible on maximizing the developmental impact on rural areas through the creation of durable assets in the area of economic and social infrastructure. On the self-employment programmes, the report says that the experience is mixed at best with some outstandingly successful examples based on self help groups involving women, but the general experience with IRDP has not been very encouraging. Part of the problem is that it is not easy for individuals or families below the poverty line to transform themselves into entrepreneurs capable of producing marketable products and services, which have to survive in competitive markets.

The Task Force concludes that 'in a situation where resources are severely constrained and there are several other demands on the system our ability to expand the total volume of resources devoted to special employment programmes in the years ahead will be limited. In these circumstances a large expansion of size of these programmes in future is unlikely to take place and is also difficult to justify given the experience thus far" (p.5.16).

On the other hand according to the Special Group on Targeting Ten Million Employment Opportunities per year (GOI, 2002)[33], of the proposed 50 million job opportunities to be generated over the Tenth Plan, nearly 20 million should come from specific employment generation programmes and 30 million from growth buoyancy. The Study Group says that there is a need for launching specific employment generating programmes in some areas where aggregate growth is having little impact.

Do we shift funds under anti-poverty programmes to other areas?

Using econometric methods, Fan et al (1999) examine the impact of government expenditures relating to rural infrastructure and anti-poverty programmes on poverty. The results show that investments in rural roads and agricultural research and development have the greatest impact, while government spending specifically targeted too poverty reduction such as rural development and employment programmes have only modest effects.

It is known that anti-poverty programmes are found too suffer from leakages and only a part of the funds are reaching the poor. There are some success stories but at the same time there are many problems with Government employment programmes. The effectiveness of the programmes on the lives of the people is less compared to the funds spent on the schemes. Therefore, there are suggestions that the funds under the anti-poverty programmes should be shifted to physical (irrigation and roads) and human infrastructure (health and education). This seems to be a valid suggestion. But, there is relevance for anti-poverty programmes particularly in a country like India where substantial sections are outside the market.

The major criticism of the government based anti-poverty programmes relates to lack of people's participation. The approach seems to be more technocratic and top-down approach in implementing these programmes. There is a need for involving Panchayats and NGOs, self-help groups, community based organizations for strengthening Government employment programmes.

[33] S.P.Gupta is the Chairman of the study group

Thus, the government strategies should facilitate creation of productive employment instead of generating relief type employment.

During the Tenth Five Year Plan (2002-2007), Swarnajayanti Gram Rojgar Yojana (SGRY) would be the single wage employment programme. The programme would seek to provide productive employment opportunities in employment-intensive sectors. The government would try to generate a shelf of projects for execution under SGRY that fits into the overall development plan of an area.

SGRY would have three streams. One to address the need of rural infrastructure in all the states; the other to provide focused attention to areas facing endemic poverty focused attention to areas facing endemic poverty while the third would respond to natural calamities.

The wage employment programmes provide only short term relief to the poor. Long term sustainable poverty reduction in the underdeveloped regions can come about only if other sectors of the economy grow rapidly. It is imperative, therefore, to ensure that the growth process is inclusive and pro-poor. Agricultural growth still holds the key to poverty alleviation in the Indian context. There is considerable scope for increasing agricultural productivity through expansion of irrigation, better land and water management practices and infrastructure support. The planning of works under the SGRY would be undertaken keeping this in mind. Many assets have been created but maintenance has been neglected. Therefore, a specific proportion of allocations under SGRY would be used for the maintenance of assets. Panchayati Raj Institutions (PRIs) would play a major role in the planning, implementation and monitoring of wage employment programmes and allocations under the SGRY would be routed through them.

5.2. Self Employment Programmes

The group approach to self employment programmes is in the right direction. The findings show that the poorest of the poor are not participating in the existing self-help groups. The repayment schedule suitable to the poorest of the poor should be adopted. The improvement in skill base, given the other asset base, can also be a solution to tackle the problems of the poorest. Proper livelihood planning, bulk purchases o f inputs and collective marketing of outputs help the poorest of the poor to organize their economic activity effectively. Thus micro-credit alone cannot address the problems of the poorest. Interventions in commodity markets are also needed. The second issue is how to make the existing groups sustainable over time. The low growth of the economy and existing class relations are posing constraints for the relatively better off among the poor in improving their well-being. The process of empowerment of women can not be sustained unless their livelihood concerns are aptly addressed. There is a need to undertake viable economic activities , which can improve incomes much faster.

5.3. Government Initiatives in three directions

To strengthen the effectiveness of anti-poverty programmes, the government has initiated three changes in recent years. First, Panchayati Raj institutions are involved in anti-

poverty programmes. This may improve targeting and delivery systems. Second, the government has recognised the role of self help groups for credit mobilization and has been involving NGOs in the programmes. Third, the multiplicity of existing programmes is being consolidated into two or three major programmes.

Panchayati Raj: With the 73rd and 74th Constitutional Amendments, people at the village level are now empowered through participation in local government to exercise their rights and manage their own developmental activities. It opens up space for potentially meaningful, and creative, local development effort with in built pressures for accountability. Thus, people's participation through Panchayats would strengthen Government activities. There are, however, apprehensions that given the highly stratified and unequal socio-economic structure of Indian villages, the dominant landowning caste elites would effectively control power and that they are unlikely to be concerned about the welfare of the poor and the women. Recognizing this, the constitutional amendment provides explicitly for reserving a substantial proportion of elected positions for women and SC/STs. One important way for empowering women is by ensuring them a share in decision making at the local level. This has been done by reserving not less than one-third of the total seats of the Panchayat Raj institutions for women and reserving one-third of the posts of chairpersons for them at the various levels.. One implication for the medium and long terms for strengthening womens' employment through panchayati Raj is to improve literacy rates for females.

Voluntary Organizations (NGOs, CBOs): Wherever the voluntary organizations have shown interest, the effectiveness of Government programmes have improved. NGOs and CBOs (Community Based Organizations) thus play vital role in strengthening the hands of the Government. The voluntary organizations also make the Panchayats accountable. For accountability two instruments are needed. They are: (a) Right and access to information and (b) social mobilization. The activities of Government at the local levels have to be transparent and the people should have the right to information regarding funding and other activities. The NGOs and CBOs can also facilitate for social mobilization of people and in particular women. Also some of the special employment programmes like DWCRA can be given to self help groups for implementation.

Need for linkages with Sectoral Programmes for Productive Employment

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34 For details on integration of poverty alleviation programmes with sectoral programmes, see Nayyar (1995).

Apart from the linkages with sectoral programmes, self help groups like SEWA can create productive employment without government funds. The Governments have the lead role in providing supplementary employment, but it is recognized that Governments can not provide for everything and that poverty can not be solved by Government intervention alone. Also, excessive dependence on the state for everything on the government has curtailed the initiatives of the people. Governments should engage in strategic planning which includes creating an enabling framework, setting of objectives, committing resources, acting as catalyst-especially for capacity building-and engaging in a process of social mobilization which aims, *inter alia*, at putting the management of certain activities into the hands of people's organizations and people themselves

5.4.Reforms in the Public Distribution System

Inspite of spending Rs.210 billion on food subsidy, many of the poor are not benefiting from the system. There is a need to have methods to reduce costs and reach the poor.

(a) *Geographical targeting is better.* As mentioned above, there is a need to have innovative programmes to minimize the errors of targeting. In this context, some studies have shown geographical targeting is better than income based targeting[35]. In fact, the limited evidence on RPDS (revamped PDS) in Andhra Pradesh and Madhya Pradesh suggest that the performance of PDS in RPDS villages was much better than that in non-RPDS villages with similar socio-economic characteristics.

(b) *Food coupon system or food credit card system could also be tried.* A food coupon system for distribution of rice and kerosene through PDS was introduced in Andhra Pradesh in 1998-99. The scheme was aimed at improving the delivery system of these two commodities. Under the scheme mere possession of card was not adequate to draw PDS rice. Physical presence of the cardholder whose photo was affixed on the card was insisted upon for obtaining the coupons. This has reduced the scope of diversion of rice and kerosene to a great extent, if not totally eliminated it. Another alternative is food credit card system, which can be used by the customers to buy subsidized foodgrains from the market, and the retailers can claim the subsidy from the government. However, private sector has to be ensured that they get reimbursements from the government without delay

(c) What do with the Excess Foodgrain stocks? There are basically four options. These are: open market domestic sale, exports, reducing issue price and use the stocks for food-for-work programmes. (a) Selling in the open market defeats the very purpose of price support operations. Traders would buy it at the depressed price, turn around and sell back the grains to the government at the procurement prices; (b) Exporting foodgrains might be feasible, and it has been done successfully recently in the case of rice. In the case of wheat it is not successful. However, exports can not completely solve the bufferstock problem. (c)The third alternative of stimulating domestic demand through reducing PDS issue price is also not cost effective. (d) The fourth alternative of using buffer stock for food-for-work programme is the best option.

(d) *Effective implementation of Food for work programmes (FFW) can improve food security.* It is known that public works programmes have many direct and indirect benefits to the poor (see Dev, 1995, 2000). Since the 1960s, we have rural public works

[35] Bigman and Srinivasan (2001) Jha and Srinivasan (2001)

programmes in India. Among the important ones are : Employment guarantee scheme of Maharashtra, JRY (Jawahar Rojgar Yojana) , EAS (Employment Assurance Scheme). But, EGS is a cash for work programme. In JRY, EAS food component as payment is very less. In public works we can have two components. One is how to utilise the available excess stocks effectively for FFW. Second one is that we should also improve the effectiveness of cash for work programmes like JRY in order to increase purchasing power for the unskilled workers. With the increase in purchasing power they can buy foodgrains in PDS or in the market. Therefore, food security does not mean that we should deal with only foodgrains. We should also deal with increase in purchasing power. Another question is how to link it with PDS. One thing is to ensure that subsidized foodgrains under PDS are reached to the workers working in FFW. They will get double benefits (under FFW and PDS). Recently announced Prime Minister's *Sampoorna Rojgar Yojana* (Rs.10,000 crores) is supposed to provide full assistance for the states to implement FFW.

(e) Improve the Effectiveness of ICDS and other nutritional programmes. As mentioned above under nutrition among children is a severe problem in India. One of objectives of Integrated Child Development Services (ICDS) is to improve the health and nutrition status of children 0-6 years by providing supplementary food and by coordinating with state health departments to ensure delivery of required health inputs. ICDS has been effective but there are some gaps in implementation as shown by several evaluations. Noon-meal programmes for children in Tamil Nadu are effective in improving nutrition of children and enrolment in schools. It is not clear why this has not been tried effectively in other states.

5.5.Policies for Reduction in Social Exclusion

There is a need to focus on socially excluded population such as SCs and STs and other vulnerable groups like migrant population, old age population, widows and child labour. Social protection policies are necessary to reduce risk and vulnerability and to improve the incomes of socially excluded and vulnerable groups.

6 CONCLUDING OBSERVATIONS

This paper provides an overview of safety nets for chronic poor. The evidence shows that there is considerable number of chronic poor in all segments of society. The highest is found among workers dependent on wages, particularly agricultural labourers and casual workers. Two categories of households seem to be important from chronic poverty point of view. They are: self employed households and wage dependent households. There are several safety net programmes to help the poor among these households. The major programmes are: Self employment programmes, wage employment programmes, PDS and nutrition programmes, national social assistance programmes.

The analysis on safety nets shows that public works wage employment programmes like EGS (Employment Guarantee Scheme), JRY and EAS seem to be more pro-poor than programmes like IRDP and PDS. The PDS seems to have wide coverage but at high cost. Comparison on the impact of PDS on the poor shows that the income gains in rural areas has improved in 1999-00 as compared to 1986-87. But, the impact on

poverty seems to be more or less similar in both the years. Antyodaya Anna Yojana for destitutes seems to be pro-poor and a promising one for expansion.

It may be noted that safety nets are important for chronic poor in reducing risk and vulnerability apart from helping them in increasing incomes. We have not looked at the programmes that help health and education of the poor.

Social exclusion is one area where there is a need to focus on Scheduled Castes and Scheduled Tribes, migrant population, old age people, widows and child labour.

In the case of market failure and higher inequality, there is a need for safety nets to help the chronic poor. However, safety nets alone can not reduce chronic poverty. Short term relief measures may not alleviate their poverty. Given the high levels of persistent poverty, Tendulkar (1992) concludes that direct programmes can be expected to give only limited relief. According to his analysis, growth needs to be more rapid to have a dent on persistent poverty. "Structural and institutional barriers to income mobility need to be overcome. Direct programmes, which need greater resources and better administration, should be integrated with the growth process" (summarized in Harriss et al, 1992).

Creation of productive employment is crucial for reduction in chronic poverty as majority is dependent on wage employment. One of the reasons for accumulation of over 60 million tonnes of food stocks with FCI is attributed to low purchasing power of the poor. Two factors could be responsible for the low purchasing power in the 1990s. First, high relative prices of food due to high procurement prices could have reduced the capacity of the poor to purchase more food grains. Second factor could be decline in employment opportunities inspite of high GDP growth. The solution to food security and reduction in poverty is to improve economic access through employment. Diversification and promotion of rural non-farm employment are needed to create productive employment.

The experience of the1990s in employment creation is not very encouraging. The growth rate of rural employment was around 0.5 per cent per annum between 1993-94 and 1999-00 as compared to 1.7 per cent per annum between 1983 and 1993-94. The daily status unemployment rate in rural areas has increased from 5.63% in 1993-94 to 7.21% in 1999-00. The overall employment growth declined from 2.04 per cent during 1983-94 to 0.98% during 1994-2000. Much of the decline in the growth was due to developments in two sectors viz., agriculture and community social& personal services. These two sectors accounting for 70% of the total employment have not shown any growth during the 1990s.

How to create more employment opportunities and improve their quality? There are mainly two approaches. One is through sectoral programmes and the other is through direct employment programmes, which are discussed in this paper. There is some overlapping in both the approaches. The elasticity of employment to GDP shows that for the entire economy it was 0.53 in the period 1977-83 and declined to 0.41 in the period

1983-94. The elasticity declined sharply to 0.15 in the during 1993-2000. Employment elasticities in agriculture and community social and personal services were zero during the same period. In the case of manufacturing it was 0.26 while in the case of services it was more than 0.50 during this period.

Agriculture still contributes 60% of the total employment in the country. In the decade 1983-94, agriculture contributed 50% of the additional employment. On the other hand, there was an absolute decline in agricultural employment between 1993-94 and 1999-00. In the process of economic development, the workers in agriculture is supposed shift to non-agriculture. However, underemployment can be removed with higher agricultural growth. Also, agriculture has still potential of absorbing workers in regions with higher incidence of rural poverty such as Orissa, Bihar, Assam, M.P., West Bengal, Uttar Pradesh.

Within agriculture and allied activities, there seems to be some diversification towards non-cereal crops. Diversification to fruits and vegetables, fisheries, animal husbandry is expected to promote employment. For example, in Maharashtra, the requirement of person days per hectare per crop season for wheat is 143 while for vegetables it is 200. The corresponding numbers for fruits and grapes are 855 and 2,510 respectively. Thus, fruits in general require nearly six times and grapes in particular over seventeen times the person days required per hectare as compared with wheat. However, risk and uncertainty is associated with diversification. Technology, infrastructure and market have to be improved in order to shift the farmers to non-foodgrain crops..

Development of wastelands will also increase lot of employment opportunities. Currently, there are about 24 million hectares of land that are categorized as culturable wasteland and permanent fallows, which is feasible to be developed and brought into cultivation. There can be two alternatives here. First, one can think of distributing these lands to panchayats and small and marginal farmers. Another alternative is to give it to corporate sector on long lease of say 20 years. Panchayats and corporate sector can develop the waste land by raising resources in the market. However, one has to make sure that corporate sector does not occupy the fertile land.

Growth in Rural non-farm employment (RNFE) can improve rural wages and also be an escape route for agricultural workers leading to an improvement in their purchasing power. The importance of the rural non-farm sector in poverty alleviation and promotion of livelihoods is being increasingly recognised. Increase in rural non-farm employment is one of the main factors responsible for the reduction in poverty in the 1980s. The percentage of RNFE in total rural employment in India increased from 16.6 per cent in 1977-78 to 18.4 per cent in 1983, to 21.6 per cent in 1993-94 and to 23.8 per cent in 1999-2000. The growth rate (compound) in RNFE during 1977-83 was 4.06 per cent per annum while it was 3.28 per cent per annum and 2.14 per cent per annum during 1983-94 and 1993-2000 respectively. In other words, during the reform period ('93-94 to '99-00) the growth rate of employment in RNFE was lower than the pre-reform period. This is a matter of concern. However, this has to be seen in the context of the low overall growth of employment (around 1 per cent per annum) during the reform period. At the same time

the expected growth in non-agriculture due to economic reforms does not seem to have materialised. As compared to the East Asian experience, the growth in RNFE in India has been much slower.

One of the challenges of the reforms now is to improve the quality of employment and incomes in the rural non-farm sector. A three- pronged strategy is needed for enhancement in the livelihoods of the rural poor. First, the Government should have policies to improve education and skills of the workers. Second, they should have several policies to increase employment for the unskilled workers. Third, the incomes of the women have to be improved by creating opportunities in the higher productivity sectors. Most of the women are confined to agriculture. There was only 0.7 per cent increase in the share of RNFE during the reform period. For the above three strategies, pro-poor growth engines have to be identified at sub-sectoral level rather than at the level of broad sectors. Public investment in agriculture and rural non-agriculture has to be improved significantly to improve the quality of RNFE. In order to improve rural non-farm sector, there is a need to look at issues such as, rural-urban linkages, sectoral and sub-sector potentials, markets, regulations and promotional policies, human capital, training, entrepreneurship, skills and finally infrastructure and technology. Rigidities in these factors have to be removed to promote rural non-farm sector. Allowing the poor to contribute to and benefit from increased growth rates will pose particular challenges as employment in India is largely in the unorganised sector.

Thus, right to employment is crucial for the reducing chronic poverty. Apart from employment, measures to improve physical (land, housing etc.) and human assets (health and education) have to be improved in a sustainable fashion in order to have dent on chronic poverty.

REFERENCES

Ahluwalia, Deepak (1993), "Public Distribution of Food in India", *Food Policy*, February 33-54.

Cornia, G. A, and F. Stewart (1995), "Two Errors of Targeting" in D. van de Walle and K. Nead (eds), *Public Spending and the Poor: Theory and Evidence*, Baltimore: Johns Hopkins University Press.

Dreze, Jean (1990): "Poverty in India and the IRDP Delusion", *Economic and Political Weekly*, Vol 25, No. 39.

Fan, S. et.al. (1999), *Linkages between Government Spending, Growth and Poverty in Rural India*, Report No. 110, International Food Policy Research Institute, Washington, D.C

GOI (1991), *Report on the Operations of the Food Corporation of India"*, Bureau of Industrial Costs And Prices, Ministry of Industry, New Delhi.

(1997), "*Report of the Hashim Committee*", Planning Commission, New Delhi.

(2000), "*Mid Term Appraisal of Ninth Five Year Plan (1997-2002)*", Planning Commission, New Delhi

(2001), "*Approach Paper to the Tenth Five Year Plan (2002-07)*", Government of India, Planning Commission, New Delhi.

(2001 a), "*Report of the Working Group on Poverty Alleviation Programmes for the Tenth Five Year Plan (2002-2007)*", Government of India, Planning Commission, New Delhi.

Hulme, D. and A. Shepherd (2003), "Conceptualizing Chronic Poverty", **World Development**, Vol.31, Number 3

Hirway, Indira and P. Terhal (1997), *Towards Employment Guarantee in India: Indian and International Experiences in Public Works Programme*, Sage publication, New Delhi.

Kauitilya (1992), *The Arthasastra*, Penguin, New Delhi .

Mahendra Dev. S (1996), "Experience of India's (Maharashtra) Employment Guarantee Scheme: Lesson for Development Policy", *Development Policy Review*, Vol.14, No.3.

Mehta, A.K. and A.Shah (2003), "Chronic Poverty in India: Incidence, Causes and Policies", **World Development**, Vol.31, Number 3

Nayyar, Rohini (1996), "New Initiatives for Poverty Alleviation in Rural India" in C.H.H. Rao and Hans Linnemann (eds), *Economic Reforms and Poverty Alleviation in India*, Sage Publications, New Delhi.

Nurkse,Ragnar (1955), *The Problems of Capital Formation in Underdeveloped Countries*, Basil Blackwell, Oxford, first published in 1953.

Parikh,K. S. (1994), "Who Gets How Much from PDS: How Effectively Does It Reach the Poor?", *Sarvekshana*, Vol.39,No.1

Radhakrishna. R and S. Indrakant (1987), "Effects of Rice Intervention Policies in India", The Case of Andhra Pradesh, Centre for Economic and Social Studies, Hyderabad.

Radhakrishna,R. K. Subbarao, S. Indrakant and C. Ravi (1997), "*India's Public Distribution System: A National and International Perspective*", World Bank Discussion Paper No.380, The World Bank, Washington D.C.

Ramaswami. Bharat (2002), "Efficiency and Equity of Food Market Interventions", *Economic and Political Weekly*, Vol 37, No.12.

Rath, N. (1995), "Garibi Hatao: Can IRDP do it?", *Economic and Political Weekly*, Vol. 20, No. 6.

Srivastava (1998), "Migration of Labour in India", **The Indian Journal of Labour Economics**,Vol.41, No.4

Tendulkar, S.D. (1992) " Economic Growth and Poverty", in Harriss, B., S.Guhan and R.H. Cassen (eds.) **Poverty in India: Research and Policy**, Oxford University Press

Tendulkar, S. D and L. R Jain (1993), *Poverty in India*: 1970-71 to 1988-89, ARTEP Working Paper. ILO, New Delhi.

World Bank (2002), "Poverty and Vulnerability in South Asia", World Bank , South Asia Region June 2002.

Appendix 1

BOX -1

Employment Generation And Poverty Alleviation Programmes

- **Swaranjayanti Gram Swarozgar Yojana (SGSY):** SGSY was launched with effect from April 1, 1999 as a result of amalgamating certain erstwhile programmes viz., Integrated Rural Development Programme (IRDP), Development of Women and Children in Rural areas (DWCRA), Training of Rural Youth for Self Employment (TRYSEM), Million Wells Scheme (MWS) etc. into a single self -employment programme. It aims at promoting micro-enterprises and helping the rural poor into Self-Help Groups (SHG). This scheme covers all aspects of self-employment like organization of rural poor into SHG and their capacity building, training, planning of activity clusters, infrastructure development, financial assistance through bank credit and subsidy and marketing support etc. The scheme is being implemented as a Centrally Sponsored Scheme on a cost sharing ratio of 75:25 between the Centre and the States.

- **Jawahar Gram Samridhi Yojana (JGSY):** JGSY was introduced in April 1999 by restructuring the Jawahar Rozgar Yojana and is being implemented as a Centrally Sponsored Scheme on a cost sharing ratio of 75:25 between the Centre and States. The programme is implemented by Gram Panchayats and works which result in creation of durable productive community assets are taken up. The secondary objective, however, is generation of wage employment for the rural unemployed poor.

- **Employment Assurance Scheme (EAS):** EAS was started on October 2, 1993 for implementation in 1778 identified backward Panchayat Samitis of 257 districts situated in drought prone areas, desert areas, tribal areas and hill areas in which the revamped public distribution system was in operation. It was subsequently expanded by 1997-98 to all the 5448 rural Panchayat Samitis of the country. It was restructured in 1999-2000 to make it a single wage employment programme and implemented as a Centrally Sponsored Scheme on a cost sharing ratio of 75:25.

- **Food for Work Programme:** This programme was initially launched w.e.f. February 2001 for five months and was further extended. The programme aims at augmenting food security through wage employment in the drought affected rural areas in eight States i.e. Gujarat, Chattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Uttaranchal. The Centre makes available appropriate quantity of food-grains free of cost to each of the drought affected States as an additionality under the programme. Wages by the State government can be paid partly in kind (upto 5 Kgs of foodgrains per manday) and partly in cash. The workers are paid the balance of wages in cash, such that they are assured of the notified Minimum Wages. This Programme stands extended upto March 31, 2002 in respect of notified "natural calamity affected districts."

- **Sampoorna Grameen Rozgar Yojana (SGRY):** Launched w.e.f. September 2001, the scheme aims at providing wage employment in rural areas as also food security, along with the creation of durable community, social and economic assets. The scheme is being implemented on a cost sharing ratio of 75:25 between the Centre and the States. The ongoing Employment Assurance Scheme (EAS) and Jawahar Gram Samridhi Yojana (JGSY) would subsequently be fully integrated within the scheme with effect from April, 2002.

- **National Social Assistance Programme (NSAP):** NSAP was introduced on 15 August, 1995 as a 100 per cent Centrally Sponsored Scheme for social assistance benefit to poor households affected by old age, death of primary bread earner and maternity care. The programme has three components i.e. National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS) and National Maternity Benefit Scheme (NMBS).

- **Annapurna:** This scheme came into effect from April 1, 2000 as a 100 per cent Centrally Sponsored Scheme. It aims at providing food security to meet the requirement of those senior citizens who though eligible for pensions under the National Old Age Pension Scheme, are not getting the same. Foodgrains are provided to the beneficiaries at subsidised rates of Rs.2/- per Kg. Of wheat and Rs.3/- per Kg. Of rice. The scheme is operational in 25 States and 5 Union Territories. More than 6.08 lakh families have been identified and the benefits of the scheme are passing on to them.

- **Krishi Shramik Samajik Suraksha Yojana:** The scheme was launched in July, 2001 for giving social security benefit to agricultural labourers on hire in the age group of 18 to 60 years.
- **Swarna Jayanti Shahri Rozgar Yojana (SJSRY):** The Urban Self-Employment Programme and the Urban Wage Employment Programme are two special schemes of the SJSRY, initiated in December 1997, which replaced various programmes operated earlier for urban poverty alleviation. This is funded on a 75:25 basis between the Centre and the States. During 2001-02, an allocation of Rs.168 crore has been provided for various components of this programme.

Appendix 2: Details of SGSY

The important features of the programme are as follows.

- SGSY is conceived as a holistic programme of micro enterprise development in rural areas;
- Social mobilization of poor in rural area is an important feature of the SGSY. The programme believes in social mobilization of the poor before providing them assistance to take up economic activities.
- The programme covers all aspects of self employment viz., organization of the rural poor into self-help groups (SHGs) and their capacity building, planning of activity clusters, infrastructure build up; technology, credit and marketing;
- The programme provides special safeguards for the weaker sections. 50% of the groups formed should be exclusively of women. 40 per cent of the swarozgaris assisted should also be women. Similarly, SC/ST constitute 50 per cent and disabled should constitute 3 per cent of the swarozgaris assisted.
- The subsidy allowed under the programme is uniform at the rate 30 per cent of the project cost subject to a maximum of Rs.7,500/- per individual swarozgari, 50 per cent of the project cost subject to a maximum of Rs.10,000/- in case of ST & SC swarojgaris. 50 per cent of the cost of the scheme subject to a ceiling of Rs. 1.25 lakhs for group project. Monetary ceiling on subsidy is not applicable to irrigation projects.
- The funds for the SGSY are shared on 75:25 ratio between central & state governments.

The total available fund, including the opening balance and state releases, was Rs. 1907.66 crores in 1999-00. The funds utilized against this are Rs.959.86 crores, which was about 50 per cent of the total available fund. The total swarozgaris assisted were 9.34 lakhs out of which individual swarozgaris were 5.86 lakhs. In 2000-01, the funds available (including state releases) were Rs.1479.44 crores against which funds utilized were Rs. 1115.28 crore. Upto the end of the financial year, since launching of the SGSY in April 1999, a total of 4.93 lakh self help groups were formed. The total swarozgaris assisted, comprising 6.87 lakh as members of the SHGs and 3.43 lakh individual swarozgaris was 10.30 lakhs.

The overall progress of the programme during the first years of its operation has been rather very slow. In spite of shift in the emphasis from individual oriented assistance to assistance on group basis, individual assistance continued to be a dominating feature under the programme. This is because group formation takes time and DRDAs have been preferring individual beneficiaries. Regarding bank credit, its flow has not been smooth during these years particularly for group activities. With emphasis on group approach, the size of group loan/investment has increased. While the modus operandi of providing collateral security for group loans should be clarified, there is also a need to enhance the loan limit for collateral security in view of the increase in the size of investment on group activities. Inadequate availability of credit has adversely affected average per family investment and credit subsidy ratio during first two years of the programme.

Appendix 3: Progress under JRY and JGSY

TableA1: Financial and Physical Progress Under JRY Since Inception

(Lakh Man days)

Year	Expenditure	Percentage of allocation	Employment Generated	Sectoral Achievement				
	2588.52	78.44		SC	ST	Others	Landless	Women
1990-91	2663.23	87.12	8745.59	3179.59	1585.08	3980.92	4197.30	2146.01
1991-92	2709.59	75.38	8092.01	3040.50	1502.60	3548.91	3589.59	1989.99
1992-93	3878.71	81.36	7821.02	2985.31	1445.51	3390.20	3544.63	1931.13
1993-94	4268.33	78.78	10258.40	3800.53	1940.84	4490.95	4650.88	2577.75
1994-95	4466.91	77.12	9517.07	1978.15	3299.69	4216.57	4080.16	2539.00
1995-96	2163.98	83.77	8958.25	3360.93	1680.87	3911.43	4058.89	2604.62
1996-97	2439.38	84.94	4006.32	1381.63	668.35	1608.23	1599.45	1106.84
997-98	2525.61	83.15	3955.89	1400.95	742.53	1788.36	1613.69	1145.35
1998-99	2035.27	72.80	3766.41	1345.49	728.00	1650.31	1557.45	1071.82
1999-2000	2217.69	93.89	2683.08	936.07	497.57	1133.22	1036.36	754.98
2000-01	699.07	43.73						
TOTAL	35114.37	79.09	76447.91	26672.89	15568.09	33622.18	33892.02	19773.06

NOTE: Includes I & II Stream of JRY from 1993-94 to 1995-96.

Jawahar Gram Samridhi Yojana (JGSY)

JRY has been restructured in 1999 and renamed as Jawahar Gram Samridhi Yojana (JGSY). The programme aims at creating need –based rural infrastructure at the village level to boost rural economy in general and improvement in the quality of life in particular. Priority will be given to develop infrastructure for SC/ST habitations, education and public health. The programme, not only develops rural infrastructure, but also provides individual assets to the poorest of the poor SCs/STs families, as 22.5 per cent funds are earmarked for them. The 100 per cent JGSY funds are provided to village panchayats to devolve greater financial autonomy. The panchayats are empowered to take up works upto Rs. 50,000 independently with the approval of Gram Sabha to ensure active people's participation at the grassroot level. 15 per cent of the allocated funds have been earmarked for maintenance of assets created under the programme for greater durability. The main emphasis of the programme is to create rural infrastructure.

Since its inception in 1999, a total of 15.7 lakh works have been completed upto March 2001 (table A2). A total of 5.98 lakh works have been completed under individual beneficiary schemes meant for SCs/STs. Around Rs.4,300 crores were spent under JGSY from 1999 to March 2001. Presently some gram panchayats are getting as low as Rs.5,000 per annum as per the criteria of allocation under the JGSY guidelines. With this meager amount it is impossible to create any meaningful infrastructure at the village level. In order to create tangible and meaningful infrastructure it is necessary that the gram panchayats at least get an allocation of Rs.50,000.

Table A2: Physical Progress Under JGSY

Year	Total	Status of Works (in Nos.)

	Mandays Generated	Works Completed	Works under Progress	Total Works	Works excl For SC/ST's	Works Disabled
1999-2000	2683.08	698448	262409	960857	256405	7753
2000-01 (Prov)	2683.17	884652	279681	1164333	342819	18755
2001-02 (Oct)	860.79	262704	414476	677180	98894	4106

Note: No targets have been fixed under JGSY as the objectives of the programme have been shifted to infrastructure development

IDENTIFYING THE CHRONICALLY POOR: SOME ISSUES BASED ON A STUDY OF BPL FAMILIES IN

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IDENTIFYING THE CHRONICALLY POOR: SOME ISSUES BASED ON A STUDY OF BPL FAMILIES IN RAJASTHAN

SUJATA SINGH

The paper highlights the plight of the rural poor in Rajasthan. It draws on data from the Evaluation of the Million Wells Scheme in Rajasthan. The focus is on the identification of BPL families and the steps that need to be taken in this direction.

Rajasthan is the largest state in the country with an area covering 3,42,239 Sq.Kms. Though rich in mineral resources Rajasthan suffers from chronic poverty, mainly an account of harsh climatic conditions. Periodic droughts especially in Western Rajasthan which accounts for approximately sixty percent of the geographical area of the state is a hard reality.

The Human Development Report (2000) placed Rajasthan in the lowest quartile so far as major indicators like literacy, per capita income etc. are concerned. It drew attention to the deprivation the population suffers from in matters of health, water supply and other basic necessities.[1]

Given the fact that Rajasthan is a predominantly rural state where out of a total area of 3,42, 239 Sq.Kms, rural Rajasthan accounts for 3,37,375 Sq.Kms and from a total population of 44,005,990, the rural population stands at 33,938,877, only 22.88 percent of the state's population live in urban areas. Out of 6768541 families in rural Rajasthan, 30.99 percent were found to be below the poverty line.[2]

The Government of India has over the decades launched various schemes to tackle the problems of hunger and poverty. The Below Poverty Line (BPL) family is the focus of these anti-poverty programmes. The Million Wells Scheme (MWS) which was launched in 1988-89 as a centrally sponsored scheme was one such atttempt towards poverty eradication.

Based on the Concurrent Evaluation of MWS in Rajasthan, the paper addresses some crucial questions:

(a) Are the programmes reaching the chronically poor?
(b) What are the lacunas in the identification process? And
(c) How best these issues can be addressed?

The Million Wells Scheme was initially a sub-scheme of the National Rural employment Programme (NREP) and the Rural Landless employment Guarantee Programme (RLEGP). With the merger of these two programmes into one wage employment programme christened Jawahar Rozgar Yojana (JRY) in April, 1989, MWS continued as a sub-scheme of JRY till December, 1995. In January 1996, MWS was made a separate independent scheme and continued as such till April 1, 1999.

The Million Wells Scheme, popularly known as "Jeevan Dhara" in Rajasthan, had been in operation in the state since 1988-89. Other schemes of minor irrigation such as irrigation tanks, water-harvesting structures, and water storage tanks (tankas) were also sanctioned under MWS. With the inauguration of Swarnjayanti Gram Swarozgar Yojana (SGSY) in 1999 the Million Wells Scheme, along with other

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[1] Human Development Report, 2000
[2] Report of the Expert Group on Identification of Households Below Poverty Line, p.12.

schemes is no longer in operation. However, the construction of water harvesting structures (Anicuts) continue to be taken up under SGSY.

Evaluation of Million Wells Scheme in Rajasthan

The study covered 31 districts of Rajasthan where MWS was in operation. Dausa district was not covered in the survey since all its blocks had been classified as falling under the "Dark Zone." Two blocks were selected from each district. Five village panchayats were then selected from each block. From each village, ten beneficiaries were selected at randon, making a total of 50 sample beneficiaries per block. Overall, 100 beneficiaries per district were selected. There were altogether 2832 beneficiaries who were interviewed – 2630 who had been benefited by open well and 202 by Group Projects. Survey research techniques were adopted for conducting the study. The survey was conducted during 1999-2000. Four different schedules were administered – the MWS beneficiary schedule, the Group Project beneficiary schedule, the District schedule and the Group Project schedule.

The district-wise position of physical target and achievement under the Million Wells Scheme for the period 1988-89 to 1998-99, for the entire State of Rajasthan shows that against the targeted 77398 wells, 57539 have been completed. This amounts to a shortfall of 19859 wells. The year-wise breakup presents an interesting picture. Whereas the number targeted was 20,000 during 1988-90, the achievement figures for the same period were as low as 13480. Again, during 91-92 only 6755 wells were constructed against a target of 12350 and a backlog of 6520 from the previous years. However, during 91-92, 92-93, 93-94 and 94-95 the achievement rate picked up wherein not only the targeted figures were achieved, the backlog from previous years was also cleared. The period 1996-1999 is marked by a steep decline in the target- achievement ratio, leading to an overall short fall of 19859 wells. The overall trend in Dungarpur appears by and large, satisfactory. Though the lion's share goes to Jaipur district, its performance does not match it.[3]

Objectives of the Programme

The primary objective of the programme was to help create assets for the rural poor, especially the Scheduled Castes and Scheduled Tribes by providing them with an open irrigation well/irrigation source free of cost.

The Secondary Objectives included :

(a) Provision of additional gainful employment opportunity for the target group.
(b) Overall improvement in the quality of life in rural areas.

Target Group

According to the guidelines of the scheme the target group would comprise of poor, small and marginal farmers below poverty line as listed in the IRDP register of the village. It was further specified that not less than two thirds of the funds utilised under the scheme in any year should be spent on poor, small and marginal farmers belonging to SCs/STs. Priority was however to be given to freed bonded labourers. The other categories included :

(i) Poor SC/ST small and marginal farmers who have been victims of atrocities;

[3] Sujata Singh, Concurrent Evaluation of Million Wells Scheme in Rajasthan, New Delhi, IIPA, 2000, p.15.

(ii) Poor SC/ST small and marginal farmers below poverty line with widows and unmarried women heading the households;

(iii) SC/ST poor small and marginal farmers who have been affected by fire, flood, earthquake and other natural disasters;

(iv) Other SC/ST poor small and marginal farmers below poverty line; and

(v) Poor small and marginal non SC/ST farmers below poverty line.

Status of Execution of Wells :

The evaluation of MWS in Rajasthan threw up some interesting findings.

Data pertaining to the status of execution of works undertaken under the Million Wells Scheme points out that overall 74.07% wells stand completed. Whereas 10.7% wells were under progress, 15.17% have been declared as failure. It may be pointed out that works being shown as completed need not necessarily imply that they are successful. Many of the wells that were considered completed had in fact dried up. They definitely required digging deeper. Another fact that came to light during the course of the survey was that works that had been started ten years back were still being shown as "Under Progress". Given the hard ground realities relating to water availability in Rajasthan, a many small farmer has given up in frustration. In Pali district, old wells are being shown as incomplete since the wells have not been dug to the required depth, in order to claim full payment. However, many beneficiaries are not digging deeper since the water gets salty if dug deeper. Herein lies the dilemma.[4]

Reasons for Failure

The failure rate is particularly high in Chittorgarh with 84%, Kota with 75.38%, Baran with 46%, Karauli with 37%, Jodhpur with 35% and Dungarpur with 32.50% wells that have been declared as unsuccessful. In fact, Jodhpur district has stopped taking up any work under the Million Wells Scheme since 1993.

Two major reasons were cited for the failure of wells. More digging was required felt 43.22% beneficiaries. Hard rock was responsible for the failure of wells, was the view of 40.20% beneficiaries. This is the overall picture for Rajasthan where hard rock as well as loose soil pose real problems.

The position of failed wells gets even more complicated when it comes to certifying by the State agency. Works are being shown as "incomplete" even in cases where they have failed. Whereas 398 wells were considered as "failure", only 25 were so certified. Ajmer with 18 failure cases had not a single one certified as such; Banswara with 31 failure cases had none certified as failure; Baran with as many as 46 failed wells, failed to certify even a single well as a failure case. Similar was the case in Kota with 49 failure cases, Karauli (37), Barmer (21), Chittorgarh (21), Dungarpur (13), Jaipur (10), Jaisalmer (9). Jhalawar (10), Jhunjhunu (2), Jodhpur (14), Rajsmand (12) and Udaipur (12), where not a single well has been certified to be a "failure" case. Pali with 14 failure cases had only one well certified as failed well. Thus, incorrect reporting can be misleading.[5]

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[4] Ibid. pp42-43.
[5] Ibid, pp42-43.

Source of Technical Assistance :

When asked to indicate the source from where the beneficiary received technical assistance, as many as 42.89% beneficiaries said they received technical assistance from none. Whereas 35.93% named the Block staff as the source of technical assistance, 18.25% named private agents including Mistry etc. as providers of technical assistance. The Village Panchayat was named by only 2.28% sample beneficiaries in the State as a whole. The role of DRDAs/ZPs was even more negligible given the fact that 0.15% mentioned that they have received technical assistance from them. Only 0.49% had taken technical assistance from "others"

During the course of the survey a common complaint heard was regarding lack of co-operation of technical staff, particularly the Junior Engineer (JE). A large number of beneficiaries complained that they have to spend from their own pockets to get the JE to visit the site. In addition to this, they have to entertain the JEN on a lavish scale. Group of beneficiaries pool their resources for this purpose.

In many places JEs are law unto themselves. This is especially the case where the Block Development Officer does not have an engineering background. The JE of Salumber block (Udaipur district) is running a parallel administration. He is proud of the fact that he had been twice suspended from service and claims to have close ties with the local dacoits.[6]

Among the major reasons for the poor performance of MWS in many parts of Rajasthan, is its poor water potential. Second, the amount of digging required can go upto 250 to 300 ft. deep. The poor economic condition of BPL families who do not have resources to take care of additional expenses that are involved, is yet another important factor.

The actual cost of the well is much higher than what was assumed. They require blasting, boring and drilling operations as well. It may be noted that though wells required these operations, they could not be undertaken because of lack of finances at the disposal of the beneficiaries.

Technical assistance was not available to the beneficiaries was very obvious to the investigators. They adopt traditional methods for locating water. Only when it comes to denying them the instalments does the technical staff, mainly the Junior Engineer (JE), step in.

MWS Group Projects

Given the mixed results the Million Wells Scheme produced and in keeping with the revised guidelines of the Ministry, which were made more flexible to include other projects under MWS, Group Projects were taken up in different districts of Rajasthan. These were initially mainly restricted to the mountainous Mewar region comprising Chittorgarh, Dungarpur, Rajasmand and Udaipur. The Group Projects consists of Water Harvesing Structures or Anicuts wherein a group of beneficiaries are covered under each project. Unlike the open well scheme which caters to individual beneficiary, the Group Project caters to a group of beneficiaries. The total number of such projects were 19 – with five in Chittorgarh, eight in Dungarpur and three each in Rajasmand and Udaipur.

Status of Execution

In terms of percentage, 60.00% Group Projects in Chittorgarh district stand completed whereas 40.00% are under construction. The figures for Dungarpur are 62.50% completed and 37.50% under progress. In

[6] Ibid, pp.50-51

Rajasmand 33.33% have been completed whereas 66.67% are still under progress. The position in Udaipur is exactly the opposite from that obtaining in Rajasamand, in that 66.67% group projects stand completed with 33.33% under progress.

None of the MWS Group Projects have been declared a failure. At least, this is the perception of the Group Project Administration. But the ground realities present a different picture altogether.

The Village Panchayat, in a majority of cases (52.63%) is the executing agency for MWS Group Projects. These are being executed under the supervision of the Sarpanch. In the case of Chittorgarh and Rajasmand, all the Group Projects are being executed by the Village Panchayat. In Udaipur 66.67% are being executed by the Village Panchayat and 33.33% by Contractor. In the case of Dungarpur, Group Projects are either being executed by Line Departments (62.50%), or by Block Staff (37.50%).[7]

Impact of Group Projects :

The benefits flowing from the Group Projects in terms of availability of water has been far from satisfactory. The combined results from four districts – Chittorgarh, Dungarpur, Rajasmand and Udaipur reveals that the benefit has been either "seasonal" or "not at all". In 52.63% cases the benefit has been seasonal and in the remaining cases no benefit has been recorded so far. These are mainly under different stages of construction. However, in one particular case in Udaipur district (Sulumber Block) the Anicut had already started leaking as a result of poor construction. This, as alleged by the beneficiaries, was built by a contractor, against the guidelines laid down by the Ministry.

An elite group has been involved selectively in the various activities whereas the bulk of the beneficiaries have provided only wage labour. In one particular case in Dungarpur an irrigation department employee has been included in the Below Poverty Line (BPL) List. As husband of the Sarpanch (Sarpanch Pati as they are popularly known in Rajasthan) he was the de facto Sarpanch and was in charge of constructing the anicut at Outiya, Village Panchayat Gangi. Several of his relatives were beneficiaries of this Group Project. Many other Sarpanchs and their relatives were beneficiaries of MWS Group Projects, as was the case with "Open Wells".

As mentioned earlier the MWS Group Projects in Chittorgarh, Dungarpur, Rajasmand and Udaipur consists of Water Harvesting Structures. These have been designed on the assumption that they would help store rain water, which in turn will result in water levels rising in individual wells, in the vicinity of the Anicuts. Water Harvesting Structures have especially found favour in mountainous districts on the assumption that they have a natural advantage in harvesting rain-water.

At the time of the survey, Dungarpur happened to be the only district where 66.67% beneficiaries indicated that the Anicut did promote irrigation in their area. In other districts, Anicuts were either in the process of being constructed or were not producing the desired results on account of Shabby construction and lack of rainfall.
The individual beneficiaries were asked to indicate the extent and nature of benefits they are deriving from the MWS Group Projects. The combined response from the four districts shows that 69.31% beneficiaries said they have not benefited at all from these projects. However, 75.00% in Dungarpur and 56.67% in Udaipur did derive benefit from Group Projects which was however seasonal in nature.[8]

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[7] Ibid, pp.60-65
[8] Ibid, p.73.

Though MWS Group Projects are to cater to the requirements of Below Poverty Line (BPL) families, many families placed above poverty line are deriving benefits from the Group Projects. The district and block administration point out that it is impossible to exclude them from deriving benefit from the Group Project given the fact that their land holdings fall within the project area,. Again, they cannot be forced to contribute towards the construction cost.

It was found that Group Projects consisting of Anicuts or water Harvesting Structures are being taken up even in places where it has not rained in years. These appear to have been taken up to utilize MWS funds irrespective of what its benefits were going to be.

The quality of construction is equally questionable. Many beneficiaries complained about the poor quality of construction. DRDA Dungarpur has already entrusted the construction of Group Projects to the irrigation department. DRDA Udaipur has also initiated steps in this direction. Wherever Group Projects have been entrusted to the irrigation department, there is a turf war between the elected and government functionaries.

The BPL List

The BPL list was the subject of controversy with many project Directors expressing concern regarding its authenticity. It is doubtful whether the poorest of the poor had been included. In fact, many villagers alleged that one had to pay money to get his/her name included in the BPL list.

In one ease, an employee of the irrigation department drawing Rs.7,500 per month has been included in the BPL list.

In many cases the beneficiaries were either the Sarpanches themselves or their relatives. Pradhans too had their people included.

Criteria for selection

The preparation of the BPL list involves several stages. The local school teacher is supposed to conduct a door to door survey to assess the economic status of a family. The check list includes : size of land holding; type of house viz. Kuchcha or pukka; wheather the house has electricity, fan, cooler and motor cycle/scooter. The list they prepare is then sent to the Gram Sabha, which scrutinizes and finalises it. Villagers alleged that, the school teacher never goes door to door. Instead, he includes those names that have been provided by the Sarpanch. The Sarpanch does the rest. Many Project Directors of DRDAs expressed serious concern regarding the selection process. A Chief Executive Officer suggested that the Centre should be involved in the selection process. Thus, there appears to be a big gap between theory and practice so far as preparation of BPL list is concerned.

During the course of the survey, many cases came to light where despite being on the BPL list and despite getting selected for MWS, many a small/marginal farmer has been excluded. The two reasons generally cited were: they had not backed the candidate who won the Sarpanchship and the JE for some reason was not giving them the instalment money.

Many beneficiaries who had borrowed from money lenders to start the work are now being harassed by them. Some has to sell their land/cattle to repay their loans.

Corruption appears to be widespread through many beneficiaries were not willing to go on record to say so. However, a total of 7.95% beneficiaries, despite the fear of victimization, let their views be recorded.

All of them stated that they had to make a payment in order to get the sanction. Many alleged that they had to give a part of every instalment to either the JE or the Sarpanch. The involvement of Panchayati Raj functionaries in the implementation of rural development programmes appears to have aggravated the problem of corruption. The trickle down in turn is getting thinner with more people demanding a share.

Women and Development

The world Development Report (2002) highlights the extremely poor literacy rate of women in rural Rajasthan. This was especially so in the case of scheduled castes and scheduled tribes. A dismal 4 per cent of scheduled tribe women in Rajasthan were found to be literate.

The study found the status of the girl child particularly pathetic. There were cases where the father when asked about the number of children, did not include the girl child. The enrollment rate of girls in schools is extremely low in the case of the Rajput Community. However. this has not received the attention of policy makers.

The participation of women in Panchayati Raj institutions has fallen for short of expectation. Sarpanch by proxy is a widely accepted phenomenon in the case of women Sarpanch. "Sarpanch Pati" as they are popularly called in Rajasthan officiate on their behalf. In some cases it is the son who represents the mother.

Perception of Project Directors :

The Project Directors of a large number of DRDAs were very positive regarding the Concurrent Evaluation of MWS. They were unanimous in their view that the unit cost provided, failed to meet the cost of construction of wells especially since these were meant for BPL families. Many other problems were mentioned by the Project Directors: such as the identification of right beneficiary; uniform norms for Rocky and Hard Soil; scattered nature of BPL land holdings that makes it impossible to undertake works like Anicuts; that in the case of water harvesting structures, recovery of proportionate cost from non-eligible farmers is not practical. According to DRDA Kota, MWS funds have been utilized for other works under JRY as there is very little scope for successful implementation of MWS.

Investigators' Assessment of the Impact of the Scheme (open well) on the Socio- Economic conditions of Beneficiaries.

The investigators were asked to give their own independent assessment as to whether the selection of the beneficiary had been made as per the Ministry's guidelines, and whether the socio-economic conditions of beneficiaries had changed after being selected for the scheme. The investigators were also asked to comment on the status of the asset. The task of the investigator was relatively simple as far as commenting on the status of the asset was concerned. The condition of the well was in front of him or her to see. However, when the question arose whether the beneficiary was selected as per the guidelines of the Ministry, the investigator had no base line data to help him/her decide what the status of the beneficiary was prior to getting the benefit of the Scheme. Similarly, on the question whether the socio-economic conditions of the beneficiaries had changed after being benefited under the scheme, there was no data with the investigator to make a comparative assessment of the socio-economic condition of the beneficiary before and after being benefited by the Scheme.

The status of the asset was rated as follows : 35.59% - satisfactory, 29.13% good and 22.81% poor. The 'poor' rating was larger for Alwar (83.00%), Bharatpur (55.00%), Chittorgarh (72.00%), Churu (55.00%) and Kota (64.62%). Except for Sawai Madhopur where in 88.00% cases the investigators found the status

of the asset to be good, in the other districts the number saying so was well below 50%. Again, status of the asset in no way reflected the viability of the wells for irrigation purposes, in the absence of lifting devises and other wherewithals to make it a success.
The remaining two items on the investigator's check list required base line data, the investigator could consult, in arriving at a decision. In the absence of these bench marks, the investigators generally noted that the selection of the beneficiary was in conformity with the Ministry's guidelines. Only in glaring cases they said otherwise. Overall in 97.03% cases the selection of beneficiary was found to be in accordance with the Ministry's guidelines, whereas in 2.97% cases it was felt that the Ministry's guidelines were not followed in the selection process. The number of cases that were found violating the Ministry's guidelines were as follows: Jodhpur (12.50%), Rajasmand (12.12%), Nagaur (11.00%), Jalaur (11.00%), Dungarpur (10.00%), Udaipur (8.57%), Sirohi and Pali (7.00% each).

The investigators were also asked to assess whether the socio-economic conditions of beneficiaries had changed for the better after being selected for the Scheme. Overall in 54.11% cases it was found to have changed. On the other hand in 45.89% cases it was found that the position of the beneficiaries had not changed. The districts where the change was noticed in more than 50% cases are as follows: Ajmer (60.00%), Alwar (99.00%), Bharatpur (99.00%), Bhilwara (54.00%), Bikaner (65.00%), Bundi (56.00%), Dholpur (63.00%), Dungarpur (52.50%), Jhalawar (88.00%), Karauli (64.00%), Rajasmand (60.61%), Sawai Madhopur (82.00%), Sikar (51.00%), Sirohi (59.00%), Sri Ganganagar (80.00%) and Tonk (97.00%). The performance fell short of expectation in the remaining districts – Banswara (57.00%), Baran (62.00%), Barmer (72.00%), Chittorgarh (72.00%), Churu (81.00%), Hanumangarh (67.35%), Jaipur (66.00%), Jaisalmer (91.43%), Jalaur (53.00%), Jhunjhunu (54.00%), Jodhpur (87.50%), Kota (75.38%), Nagaur (55.00%), Pali (63.00%) and Udaipur (51.43%). These included cases where the beneficiaries' condition had changed for the worse after the Scheme. Unable to repay the loans they had taken, many had to sell off their lands and cattle to repay the money lender.

There were altogether 896 cases where the beneficiaries were not available to be interviewed by the investigator. The reasons for this were more than one. In 64.62% cases, the beneficiaries had gone temporarily outside the village. As many as 9.71% beneficiaries were not available since they had migrated from the village in search of work. Another 9.49% beneficiaries had expired. In 16.18% cases, other reasons such as ill health were cited

Investigator's Suggestions/Comments on the Impact of MWS Group Projects :

As in the case of Open Wells, investigators were asked to record their perceptions regarding various aspects of Group Projects, such as the status of assets, selection of beneficiary and changes if any, in the socio-economic conditions of beneficiaries as a result of the Group Projects. The status of asset was found to be good only in the case of Dungarpur (55.00%). Overall, 47.03% were considered satisfactory, 8.91% poor and 27.72% were classified under "Others". This category included a large number of Group Projects that were under construction.

An overwhelming majority of sample beneficiaries (95.05%) were found to have been selected as per the guidelines of the Ministry. The only exception was Dungarpur where 16.67% beneficiaries were not found to have been selected as per the guidelines of the Scheme. Again, only in the case of Dungarpur, the socio-economic conditions of beneficiaries had changed in 65.00% cases. The condition of the rest remained unchanged. A large number of beneficiaries could not be contacted as they had gone temporarily outside the village, to engage in other economic activities. Agriculture by itself could not provide them a livelihood. A large part of Rajasthan had been reeling under severe drought conditions for the last several years. Practically, from every household, members had migrated to other states in search of work.

Investigators comments on M aintenance of Records

Two major problems that came out of the survey centered on the availability of Information and Maintenance of Records by the respective DRDAs. The DRDAs by and large performed poorly on both these counts. A large number of Investigators complained about the hardship they had to undergo for collecting information. However, in some districts information was available such as Hanumangarh, Sirohi, Udaipur, Baran, Bundi, Tonk, Bhilwara, Chittorgarh, Nagaur, Dungarpur, Barmer, Pali, Banswara and in Sawai Madhopur. The position was far from satisfactory in the following districts – Kota, Bharatpur, Jhalawar, Jalore, Churu, Sri Ganganagar, Karauli, Dausa, Jaipur, Jodhpur, Rajasmand, Jaisalmer and Bikaner. There were no comments from investigators regarding Jhunjhunu, Dholpur, Sikar, Alwar and Ajmer.

Similarly, on the question of Maintenance of Records, many of the districts fell short of expectation. Records were not properly maintained in Kota, Bharatpur, Jhalawar, Jalore, Churu, Sri Ganganagar, Karauli, Dausa, Jaipur, Jodhpur, Rajasmand, Jaisalmer, Dungarpur and in Pali. However, the position was much better in Banswara, Hanumangarh, Sirohi, Udaipur, Barmer, Alwar and Bikaner. Sirohi and Udaipur have already computerized their records. There were no comments from investigators on Jhunjhunu, Dholpur, Sikar and Ajmer districts.

The position at the block level was much worse. In many cases the beneficiary lists and other details provided by the DRDA did not tally with the information collected at the block level on the same items. In Nagaur district, a comparison of sanctioned amount for each beneficiary in Makrana block showed that the amount sanctioned as per the DRDA records was higher than what was shown in the Samiti/Block records. By and large, information regarding date of sanction and date of completion was not available.[9]

Conclusions.

The forgoing analysis reveals that the scope of open wells is rather limited in Rajasthan. As conceptualised, the Million Wells Scheme was not designed for families below the poverty line, especially in a state like Rajasthan. First, there is a sharp decline in the ground water table. Second, the economic condition of the beneficiary does not permit him to bear additional expenses. Extending canal irrigation facilities to larger areas appears to be a viable alternative. Steps may be taken to bring more areas under the Indira Gandhi Canal. At the same time attention should be paid to the warning from the Central Ground Water Board regarding serious water logging.

During the course of the survey, many cases came to light where despite being on the BPL list and despite getting selected for MWS, many a small/marginal farmer has been excluded. The two reasons generally cited were: they had not backed the candidate who won the Sarpanchship and that the JE for some reason was not giving them the installment money. Many beneficiaries who had borrowed from moneylenders to start the work are now being harassed by them. Some has to sell their land/cattle to repay their loans.

A major problem with the implementation process relates to technical assistance. A large group of beneficiaries (42.89%) indicated that they have not received technical assistance from any quarter. In fact, selection of site for digging of wells is not done on the basis of technical advice. Rather it is done on the advice of local '*Popas*' who substitute remote sensing devices. To locate water, they use a herb, which is kept behind the ear, and then the person goes around the area. It is believed that the person can thus locate the exact place where water can be found. People appear to have more faith in traditional methods.

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[9] Ibid, pp.76-82.

DRAFT

PLANNING FOR THE DEVELOPMENT OF BACKWARD DISTRICTS

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Planning for the Development of Backward Districts

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Planned development in India has been based on the notion of ensuring balance regional development. Given the enormity and diversity of the country this was an important objective in the planning exercise. The devolution of funds to States was based on a formula that gave weightage to population and income levels in order to build-in equity in central assistance to the States. Over time, we find that inequality between regions has grown rather than diminished. Even today the problem of uneven development in the country is a cause for concern. Therefore, the objective of balanced regional development continues to have primacy.

Economic and social development in India is generally analysed at the State level. However, many States have an area and a population larger than many countries of the world. These states also include distinct regions with well-defined physical, economic and social characteristics. As a result even a State level analysis does not capture different development strands operating in the state. As a result, over time there has been a shift in focus from the State as a whole to the district as a unit of planning. Though in many cases, districts also encompass fairly large area and population with diverse characteristics,

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The views expressed in this paper are those of the author & not of the organisation she represents.

it is the most appropriate level for planning purposes as it forms the core of the administrative structure through which the planned development programmes are implemented.

Analysis of backwardness in the country indicates that even in relatively richer states, there are districts which rank poorly on all indicators of development. Similarly, in poorer States, there are districts with very high development indicators. For example, disparities with respect to levels of social attainment are very different even within States. This is clearly reflected in the Human Development Reports being prepared at the State level with disaggregated data. For instance, when we consider the Human Development Index (HDI) of Maharashtra while it is 1.00 for Mumbai it is as low as 0.21 for Ghadchiroli. In fact most of the districts of Marathwada and Vidarbha have very low levels of attainment. This brings out sharply that despite a similar State Government policy regime, performance levels are very different, which could be attributable to historical factors or natural resources endowment. The table showing some of the differences across districts is in Appendix-1.

These reflect the reality that lies behind Maharashtra's very high per capita income and general belief that it is one of the most developed States of India. It is hoped that the focus of planned development in

Maharashtra would move towards policies and strategies that could promote the development of districts which are lagging behind. One of the reasons for low level of development in these areas is the fact that a large part of Marathwada and Vidarbha are drought prone, yet sugarcane is widely grown, which is very water intensive. The production of sugarcane is lucrative because of the assured market and price. However, policy intervention is required to facilitate crop diversification away from sugarcane into horticulture and other appropriate crops.

The example of Maharashtra clearly highlights the need to focus on districts for development intervention. Several Committees have identified backward districts, but with different objectives. The indicators of backwardness that were selected reflected the concerns that prompted setting up of the committees to identify the districts for special attention. The committees have either followed an index based approach for identification or have specifically identified areas with structural variables that lead to under development. Perhaps, the first attempt was made by the Committee on Dispersal of Industries, which examined the issue of industrialisation of rural and industrially under-developed areas through small and medium industries. The Committee recommended the following criteria for determining backwardness:

1) Poverty of the people as indicated by

- Low per capita income
- Low per capita consumption

2) High density of population in relation to development of productive resources and employment opportunities as indicated by the following factors:

- High ratio of population to cultivable land (50% below the natural average of per capita land holding considered as backward)
- Absence of under exploitation of other natural resources, i.e. minerals, forests and animals.
- Low percentage of population engaged in secondary and tertiary sectors (25% below the national average considered as backward)
- Low ratio of urban to rural population (districts where the ratio was less than 50% of the national average considered as backward)

3) Poverty of communications as indicated by small lengths of railways and metal roads per square mile (districts where the railway and road mileage fall below 50% of the national average considered as backward)

railway and road mileage fall below 50% of the national average considered as backward)

4) High incidence of unemployment and of gross underemployment.

5) Consumption of electric power.

Again in the context of the formulation of the draft Fourth Plan, backward areas were identified and classified into five categories. Desert areas, chronically drought affected areas, hilly areas including border areas, areas with high concentration of tribal population, areas with high density of population with low levels of income, employment, etc. Subsequently, in 1978, the Sivaraman Committee, which was set up on the development of backward areas, recommended that the block be the primary unit for identification of backward areas and that these should be situated in drought prone, desert, tribal, hill, chronically flood affected areas and in coastal areas affected by salinity.

The EAS Sarma Committee, which submitted its report in November, 1997, was given the task of identifying 100 most backward and poorest districts in the country for preparation of a special action plan for infrastructure development in these districts. It was agreed in the Committee that the criteria would have to include direct indicators of human deprivation as well as indirect indicators, which pertain to the quality of life of the people. The most direct indicator of deprivation is

poverty. However, districtwise data on poverty are not available, but they are available on the regional basis. All districts falling within a particular region were allotted the poverty ratio of the whole region on a uniform basis. Other aspects of deprivation were also included. For education the ratio of literate females to the number of females was used as a measure of educational deprivation and in the case of health it was the Infant Mortality Rate (IMR). Indicators of both social and economic infrastructure were also included in the exercise. The social indicators selected were as under:

- Number of primary schools per 10000 population.
- Number of primary health sub-centres per 10000 population.
- Number of community health workers per 10000 population.
- Percentage of villages having potable water supply to total number of villages.
- Percentage of villages with post offices.

Four parameters were selected to reflect the availability of economic infrastructure:

- Percentage of village with pucca roads.
- Number of railway stations per square kilometer.
- Percentage of villages electrified.

- Bank branches per lakh population.

Weights were assigned to indicators other than the poverty ratio. These were as follows:

1) Education (2)
   - No. of primary schools per 10000 population (1)
   - Percentage of female literates to number of females (1)
2) Health (2)
   - No. of primary health sub centres per 10000 population (0.5)
   - No. of community health workers per 10000 population (0.5)
   - Infant Mortality Rate (1)
3) Water Supply (1)
   - Percentage of village having potable water supply to total number of villages (1)
4) Transport and communication (2)
   - Percentage of village with pucca road (1)
   - No. of railway stations per square kilometer (1)
5) Power/Electricity (1)
   - Percentage of villages electrified (1)
6) Post Offices/Banks (1)
   - Percentage of villages with post offices (0.5)
   - Bank branches per lakh population (0.5)

7) Agriculture (3)

- Cropping intensity (Percentage) (1.5)
- Value of output per hectare (1.5)

8) Industry (1)

- Percentage of workers engaged in non-agricultural activities to total workers (1)

The numbers given with the brackets indicates the weight given to each indicator. Thereafter, a sensitivity analysis was undertaken with different weights assigned to the poverty ratio relative to other indicators. The results showed that of the 100 most backward areas and poorest districts in the country, 38 were in Bihar, 19 in Madhya Pradesh and 17 in Uttar Pradesh, this shows the concentration was in these three States.

To encourage development of backward districts, the Government of India provides exemption from payment of income tax to industries located in industrially backward districts. The Government identified industrially backward districts on a weighted index made up of financial, infrastructural and industrial parameters. These are reported below

Indicators

	Weights
Financial Indicators	
Per capita credit	3
Per capita deposit	2
Infrastructural	
% of urbanization	1
Phone per 1000 population	1
Per capita power consumption	2
Road per 100 Sq. Km.	1
Industrial	
Factory workers per 1000 population	3
Per capita Gross value added from manufacturing	2
Total	15

Score for each district is worked out as a percentage of all India average for each indicator. Districts which had a total weighted score of less than 250 out of 1500 were identified as industrially backward. The notification by Government of India issued on 7th October, 1997 identifies districts in two categories. Most backward districts are categorized as category 'A' Industrially backward districts. 53 districts have been identified in this category. In the 'B' category of industrially backward districts, 70 districts have been identified. Table below provides information on distribution of these districts across States.

Table – 1 Industrially Backward Districts

State	Category 'A'	Category 'B'	Total
Bihar + Jharkhan	20	13	33
Uttar Pradesh	11	24	45
West Bengal	6	3	9
Orissa	2	4	6
Rajasthan	5	7	12
Madhya Pradesh	5	13	18
Maharashtra	1	1	2
Gujarat	1	2	3
Kerala	2	-	2
Andhra Pradesh	-	2	2
Karnataka	-	1	1
Total	53	70	123

Uttar Pradesh, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand and West Bengal districts turn out to be most backward.

The drought prone areas and desert areas have been covered by specific schemes since the 1970s. Initially, 54 entire districts and parts of another 18 contiguous districts were identified as drought prone. Later in 1977-78 desert districts were identified and a scheme introduced specifically for it. The emphasis under these programmes was on soil conservation, land shaping and development, water conservation, afforestation and pasture development. These activities are inter-related and together impact favourably on the environment.

In 1994-95, these programmes were reviewed by the Hanumantha Rao Committee and a new criteria for identification was

placed forward. The districts were to be identified based on moisture index. Unit of identification was block. Based on this criterion new blocks were identified. The report also indicated that the Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP) had failed in their objectives largely because of *ad hoc* and poor planning, lack of people's participation and poor coordination between different agencies undertaking the works. The strategy recommended was the adoption of a watershed approach in order to harmonize the use of land and water resources and to plan for the development of the areas in a way that appropriate cropping patterns including cultivation of fodder, fuel wood, social forestry, horticulture along with agriculture would be made viable. *In situ* water conservation was the major focus with construction of appropriate structure to ensure this. People's participation was to be at the center of the development strategy. It was recommended that watershed associations comprising of all adult members of the watershed be formed and a functional watershed development team be selected from amongst these to follow the planning and implementation of watersheds.

The Hanumantha Rao Committee Report was accepted and very detailed guidelines were issued to the States for implementation. The watershed approach has now been adopted not only for the DPAP and DDP districts but also for other areas, which are dependent on rainfed

agriculture, and for wastelands. Several States like Andhra Pradesh, Madhya Pradesh and Gujarat have embarked on massive programmes for the development of arid districts under watershed guidelines. The watershed programmes for regeneration of degraded lands are a means of ensuring livelihood opportunities and food security for the rural poor. However, it is not confined only to the land owning class. The new paradigm envisages a social and community based approach with focus on equity and the active participation of people including women and vulnerable groups. There are social innumerable success stories with pioneering work done by NGOs. By way of illustration a few of them are cited in Appendix-2.

Other special area programmes were also introduced over the year. The Hill Area Development Programme (HADP) is being implemented in designated hill areas since the Fifth Plan. These include two hill districts of Assam, Darjeeling district of West Bengal and Nilgiris district of Tamil Nadu. 12 districts of Uttar Pradesh, which were also covered under the programme are no longer covered since these form the newly created Uttranchal State. The objective here is to ensure ecologically sustainable socio-economic development of hill areas keeping in mind the needs of the people there. The Western Ghat Development Programme (WGDP), is in existence since 1974-75. It covers the areas with an alleviation of 60 meters above sea level. This programme is being implemented in 161 Talukas in 5 States, namely,

Maharashtra, Karnataka, Kerala, Tamil Nadu and Goa. Here too, the objective is to preserve and restore the ecology. Emphasis is on watershed development with greater people's participation.

For the development of tribal regions and scheduled tribes, who represent 8% of the population, the concept of a Tribal Sub-Plan was introduced in 1973-74. It was felt that there was no system to ensure flow of funds under various Government programmes to these areas, which were commensurate with the size of the tribal areas that of the tribal population. Within the total State plan, funds are remarked for the development of tribal areas, and a sub-plan is prepared for the socio-economic development of scheduled tribes. The development of agriculture and allied sectors, forestry, infrastructure both social and physical remains a priority even in these areas. Despite the special dispensation tribal areas are still somewhat inaccessible and the level of development is lower then the adjoining areas. Tribal population living in these areas still exploited, particularly, as they suffer from alienation of land. While in some States the tribal areas have been somewhat developed, it is not really achieved the objective that was set up initially.

One of the primary concerns of development has been achievement of universal primary education. While, education is in the State list under the Constitution, Central Government too has initiated

several programmes for providing additional financial resources to the States for construction of school buildings, hiring of teachers, teachers' training and educational aids. In 1994 a new programme called the District Primary Education Programme (DPEP) was launched with the objective of operationlising the strategy for achieving universal primary/universal elementary education through district specific planning. Again the focus shifted to districts that were lagging behind. This programme was launched in 42 districts over 7 States, but later it was extended to others. At present, it is spread over 176 districts in 15 States. There are possibilities of its further expansion. Under the newly introduced Serv Siksha Abhiyan, the approach is to plan at the district level with the focus on girls, SC/STs, working children and others out of school. It is envisaged that there would be greater people's participation. This has been fairly successful in terms of member of new schools and appointment of teachers higher enrolment levels including that of girls and improved overall performance.

Population stabilisation is another of the major concerns at present. Here too, there are substantial differences among States. While some States like Tamil Nadu and Karnataka have attained replacement levels of fertility, Andhra Pradesh has also shown remarkable fall in fertility. During 1990, the decadal growth rate of population had shown a decline in most States except Bihar, which has shown a substantial

increase. Therefore, the challenge lies in facilitating a demographic transition in areas where population is still growing rapidly. The National Commission on Population (NCP) was set up in 2000 to review, monitor and give direction for the implementation of the National Population Policy, which has set the following goal.

- Universal access to quality contraceptive services in order to lower the TFR to 2.1 by adopting the small family norm by year 2011.
- Universal registration of births and deaths, marriages and pregnancies.
- Universal access to information/counseling and services for fertility regulation and contraception with a wide basket of choices.
- To reduce the IMR to below 30 per 1000 live births and a sharp reduction in the incidence of low birth weight (below 2.5 Kg.)
- Universal immunization of children against vaccine preventable diseases.
- Promote delayed marriage for girls, not earlier than the age of 18 and preferably after 20 years.
- Achieve 80 per cent institutional deliveries and increase the percentage of deliveries conducted by trained persons to 100 per cent.

- Containing of STD.
- Reduction in MMR to less than 100 per 100000 live births.
- Universalisation of primary education and reduction in dropout rates at the primary and secondary levels to below 20 per cent for both boys and girls.

The NCP ranked all the districts of the country based on a composite index, which included the following:

- Percentage decadal population growth rate
- Percentage of births of order 3 and above (in place of Total Fertility Rate).
- Percentage of current user of family planning methods.
- Percentage of girls marrying below 18 years of age.
- Sex ratio
- Percentage of women receiving skilled attention during deliveries.
- Percentage of children getting complete immunization.
- Female literacy rate.
- Percentage of villages not connected with pucca road (estimated)
- Percentage coverage of safe drinking water and sanitation (estimated).
- (a) Percentage of birth registered (estimated)

  (b) Percentage of death registered (estimated).

All the districts were ranked. Eranakulam district of Kerala recorded the highest composite index value of 88.40 while Balrampur district of Uttar Pradesh recorded the lowest composite index value of 25.05. 168 districts had a value of less than 46 and majority of these were in Jharkhand, Bihar, Uttar Pradesh, Rajasthan followed by some districts in Madhya Pradesh and the Northeast, and 157 districts had a value of 67.3 or more. These were largely in the State of Kerala, Tamil Nadu, Karnataka, Goa, parts of Punjab, Maharashtra and Gujarat.

Most recently, a Task Force was set up by the Ministry of Rural Development to identify backward districts where there was need to have a programme of intensive public works so as to generate wage employment for the poor in lean agricultural seasons. As is common knowledge we have been implementing wage employment programmes for long. However, by covering all districts in the country resources get spread thinly without making any adequate impact on the incomes of the poor. In 1993, an exercise done in the Planning Commission identified 120 backward districts for taking up intensified wage employment where there was a concentration of the poor and the under-employed. The index of backwardness adopted for this purpose gave 50% weightage to rural SC/ST population in the district and 50% weightage to inverse of per capita agricultural labour productivity.

Further adjustments were made to include districts in which majority of the block were covered by the drought prone areas programme, and the commercially and industrially advanced districts were excluded. The intensified Jawahar Rozgar Yojana (JRY) was launched in 1993-94 with additional funds flowing to each of the identified 120 backward districts. However, overtime the scheme was universalized. Therefore, it was felt that there was a need to review the list of backward districts as sthe problem of poverty and under-employment needed better targeting. There is out migration from backward districts due to unavailability of employment, especially, during lean agricultural seasons and therefore, it is necessary to provide greater employment to people at least within their own districts so as to arrest the problem of internal migration, which exacerbates the problem of the poor causing hardship and distress.

Several parameters were considered for the selection of backward districts by the Task Force which submitted its report in May 2003. Finally, the index of backwardness was based on three parameters with equal weights to each; (1) value of output per agricultural worker, (2) Agricultural wage rate, (3) percentage of SC/ST population in the districts. These were found to be most robust parameters available for the district level. Poverty ratios and unemployment rates are available only on the basis of the NSSO with each region comprising of several

districts. While 447 districts were ranked the Task Force suggested that wage employment programme be concentrated in 150 backward districts which form the core of the under developed areas. These districts fall largely in eastern and central India, namely, Jharkhand, Chhatisgarh, Madhya Pradesh, Maharashtra, and Orissa. Surprisingly, in Orissa only seven districts were identified. To the extent that there are some aberrations in the identification of districts this can be sorted out in consultation with the State Governments. (It should be noted that Bihar and Northeastern States other than Assam were excluded from this exercise).

Meanwhile the Planning Commission formulated a new scheme with the objective of putting in place "programmes and policies with the joint efforts of the Centre and States which could remove barriers to growth, accelerate the development process and improve the quality of life of the people." The Rashtriya Sam Vikas Yojana as it has been named has three components, namely, (1) backward districts initiative, (2) special plan for Bihar, and (3) special plan for the undivided Kalahandi, Bolangir, Koraput (KBK) districts of Orissa. Under the backward districts initiative, it has been decided to cover 100 districts. These have been selected from the list prepared by the Task Force 2003. The number of districts allocated to each State is based on the incidence of poverty. The list of backward districts selected is given in

Appendix-3. The main objective of the scheme is the holistic development of these backward districts characterized by low agricultural productivity and under development.

It is proposed to provide Rs.15 crore per year to each of the districts for a period of three years. This is by way of supplementary resources in order to meet some of the critical gaps in physical and social infrastructure. The modalities include the preparation of a district plan as per guidelines issued by the Planning Commission from time to time, to identify the constraints to the growth of the district in order to remove them and to build institutional capabilities to plan and implement programmes of human and social development in order to alleviate poverty and improve the living condition of the people. The focus would be on employment through agriculture, horticulture, drought proofing, minor irrigation and building of social and physical infrastructure like health and educational facilities and rural roads. The role of Panchayati Raj Institutions (PRIs) would be critical with the support of NGOs and other community organizations. People's participation would be ensured in the entire process from plan formulation to implementation and monitoring. 25 district plans have been prepared thus far. The analysis so far indicates that the core of backwardness in India lies in the central and eastern parts of the country with isolated pockets of backwardness even in some of the

developed States of the country. Large number of programmes and schemes which have been enumerated in the paragraph above have sought to address the question of lack of development. A large proportion of these districts fall in the tribal belt of the country. Tribal sub-plan has been an important instrumentality for directing resources to the development of these regions. The Governments allocative mechanisms both on the non-plan and on the plan side have tended to favour the backward regions in the formula adopted for allocation of funds. Clearly, some major ingredients for development have not been addressed. The RSVY is an attempt to understand these defining characteristic of under development and provide solution that would engender development process in these backward regions. In the paragraphs that follow I will discuss a district plan in some detail in order to highlight the kind of planning and interventions that would be required for the development of a backward district.

District Mandla of Madhya Pradesh

Mandla is predominantly tribal with the tribal population residing largely in the hilly and forest areas. The district is largely rural, over 90% of the people reside in rural areas. In the past, these tribes depended on the forest for their livelihood, but in recent times, this access has become restricted. Collection of minor forest produce, provides employment for only about 50 days in a year and it contributes

about one-tenth towards the household income. Agricultural land belonging to tribals is undulating and smallholdings are subjected to severe soil erosion. Agriculture is primitive and crop yields are poor. Even the animals are genetically inferior and the minor forest produce does not have a market. The tribal women are even more impoverished with little education. Despite the progress that State of Madhya Pradesh has made as compared to other States in India the levels of attainment are not comparable to those of other States. The district of Mandla is characterized by even worse social and economic statistics.

We all know that several Government schemes operate for agricultural and rural development, social infrastructure and connectivity. Yet some places are by-passed in the process of development. Mandla epitomizes how the process of growth can leave large communities untouched by developments around them.

Therefore, the major central issue is how to raise the income of the poor through greater employment and by ensuring sustainable livelihoods. The sectors that need to be tapped are traditional with emphasis on increased agricultural productivity, improvement in livestock, development of forest with greater access to NTFP. Given the out-migration of male workers there is feminisation of poverty and the burden falls on women. Therefore, one has to improve their work

situation. Educating the tribals, especially, the women and improving the physical infrastructure are imperatives. It is common knowledge as to what needs to be done. It has been suggested under the project that land improvement, more irrigational facilities, improved inputs, genetic upgradation of cattle, pigs and poultry and marketing facilities, horticulture development, promotion of inland fishery and sericulture needs to be promoted. Forest based activities could provide non-farm employment, for instance making rope out of grasses processing forest produce like bamboo and munj, processing fruits and seeds like amla, kathal, choronji, lemon, mangoes, etc. and allied activities like bee keeping, honey extraction, sericulture, etc. However, there is need to build capacity and upgrade skills, in order to make those participating in the rural non-farm sector, more productive. Furthermore, infrastructure, both physical and social, needs to be built up.

The Project that has been prepared for the development of Mandla districts has identified the specific works that would need to be taken up and the cost implications of the work. In most of the sectors, existing schemes provide funds for the very activities that have been identified as central to the development of the district. But it is necessary to ensure that all the available funds do not remain on paper, but that they are actually utilized during the course of the year. The funds provided under the RSVY would only bridge the gaps that exist.

However, very specific interventions would have to be made in order to break the vicious circle of poverty and backwardness. Forward and backward linkages would have to be ensured for the development of any of the identified activities. For example, in the case of horticulture, it is necessary to provide planting material, technical guidance and marketing tie-ups. Mandla has great potential for development of horticulture including mango, lime, amla, amrood, Bair, etc. Again the development of dairy, it is necessary to forge the necessary linkages and ensure that the milk is collected and sent to the chilling plant. But interestingly, in Mandla the chilling plant have become dysfunctional because of the insufficient supply of milk. The economics of working a composite dairy unit needs to be worked out and implemented faithfully.

However, an assessment of implementation of various programmes in the country suggests that inadequacy of funds is not the major bottleneck to the development of a district; proper institutional mechanisms and efficient delivery are required. It is hoped that in the Mandla experiment, greater people's participation will be forged through the PRIs, who have been given administrative and financial powers in Madhya Pradesh. In addition, some very good NGOs also operate and their assistance should be sought in bringing about greater people's participation through advocacy and awareness campaigns. Also Self-Help Groups, User Groups, and Joint Forest Management Committees

should be formed and strengthened so that they can ensure better development of the area.

The project has identified what needs to be done. Agriculture receives primacy with focus on land improvement and watershed development. Details have been spelt out. Value addition in NTFP is required with markets tied up. Forestry related employment generated activities are suggested. While, under normal schemes these activities should be possible, clearly there is need for better planning and implementation so as to impact on the livelihoods of the poor.

In conclusion one can say that balanced regional development is not enough to ensure participation of all areas and communities in the process of development. Decentralised development and planning is required at the district and sub-district levels. The Government has evolved schemes to deal with the problem of 'backward districts' defined in different ways, depending on the cause of backwardness. A composite index comprising social, economic and physical indicators of development may be too cumbersome and may still leave problems unresolved. Also, in the spirit of the Constitutional Amendment, in respect of 29 items, elected local bodies/panchayats are responsible for planning and implementation of programmes of economic growth with social justice. Through the institution of DPCs, district plans are to be

prepared from below, articulating the priorities and felt needs of the local people. Therefore, district as a unit of planning and development is a reality today. However, it is important that line departments work under the overall supervision of the panchayats. We hope in the next decade we would be able to mainstream the backward districts of today into the general development framework.

Appendix - 1

Districts	HDI 2000	PCDDP (Rs.) 1998-99 (At current Prices)	Literacy Rate (Age 7+) 2001 %	
Mumbai	1.00	45471	86.82	
Mumbai (Subn.)	1.00	45471	87.14	
Thane	0.82	33200	81.00	
Rajgad	0.70	30364	77.32	
Ratnagiri	0.44	14354	75.35	
Sindhudurg	0.60	20016	80.52	
Nashik	0.51	20636	75.10	
,Dhule	0.36	11789	72.08	
Nandurbar	0.28	11789	56.06	
Jalgaon	0.50	16449	76.06	
Ahmednagar	0.57	15251	75.82	
Pune	0.76	28000	80.78	
Satara	0.59	15563	78.52	
Sangli	0.68	20411	76.70	
Solapur	0.48	18097	71.50	
Kolhapur	0.64	20925	77.23	
Aurangabad	0.57	19365	73.63	
Jalna	0.27	12047	64.52	
Parbhani	0.43	13827	67.04	
Hingoli	0.43	13827	66.86	
Beed	0.47	15303	68.48	
Nanded	0.37	13068	68.52	
Osmanabad	0.38	12905	70.24	
Latur	0.47	13677	72.34	
Buldhana	0.41	13823	76.14	
Akola	0.44	16069	81.77	
Washim	0.36	16069	74.03	
Amravati	0.50	17168	82.96	
Yavatmal	0.22	13382	74.06	
Wardha	0.49	16952	80.50	
Nagpur	0.71	28878	84.18	
Bhandara	0.46	14467	78.68	
Gondiya	0.46	14467	78.65	
Chandrapur	0.41	19325	73.07	
Gadchiroli	0.21	17140	60.29	
Maharashtra	0.58	22763	77.27	

Appendix -2

Watershed Development in Ralegaon Siddhi

Ralegaon Siddhi Project, covering four watersheds in geographical area of about 892 hectares in Maharashtra, is one of the success stories. In a total project outlay of Rs.112.75 lakh, the State Government contributed Rs.52.75 lakh, Rs.47 lakh was borrowed from banks, Rs.11 lakh was put together by villagers through shramdan and the remaining Rs.2 lakh was raised from other sources. Result of the initiative: a series of checkdams, commented bandharas, and nullah bunds have been built at strategic locations. All these increased the infiltration of harvested water and recharged ground water. Today Ralegaon Siddhi has two percolation tanks, thirty nullah bunds, eighty-five wells, and eight borewells all of which are viable right through the year. Farmers now grow two or three crops every year including fruits and vegetables. All the soil and water conservation structures were built through community action. The villagers have stopped grazing their animals on common lands; instead, they have switched to other ways. To take care of equitable distribution of water, they have formed associations pani puravatha mandals. The success story owes much to leadership of Sri Anna Hazare who turned a once poverty stricken Ralegaon Siddhi into a self-sufficient village. It is the people's participation that gave it all element of sustainability.

Johad – Watershed in Alwar District of Rajasthan

Responding to an impending water crisis, people at Alwar acted jointly to revive a traditional technology to restore the ecological balance of the region. It was simple enough: they used 'Johad' a form of tank in which the locals stored water for lean seasons in years gone by.

Tarun Bahrat Sangh (TBS), a voluntary organisation, brought the village community together to build 2500 Johads in 500 villages in 8 blocks of Alwar district.

The Gram Sabha (i.e. village community) was responsible for selection of site, construction and maintenance of Johads and also controls the use of water from it.

Villagers contributed 70-90 per cent of the cost in cash, kind and labour. TBS mainly paid for hiring skilled labour and to buy cement, iron, diesel etc. Their involvement has given the villagers a sense of ownership and ensures maintenance of structures.

Johad is constructed in a place that receives maximum run-off for harvesting. The size of Johad is based on an anticipated quantity of run-off. Its shape is dictated by the flow of water and its pressure.

The Johad initiative has fulfilled a need for water to drink and for irrigation purposes, and restored ecological stability by increased recharge of ground water. It has increased food production, helped in soil conservation, increased the level of water in wells, increased biomass productivity and even converted two seasonal streams Aravri and Ruparel into perennial rivers.

For women in the village, no longer do they have to go through the drudgery of long, long walk, pots on their head, to fetch scarce water.

Integrated Micro Watershed Development Programme of N.M. Sadguru Water and Development Foundation in Gujarat Village

Thunthi Kankasiya is a tiny village of Gujarat, its inhabitants all tribals. Being remote, the sleepy village had hardly had any development activity about it for long.

That was until 1991. Then, groups of villagers approached 'Sadguru' with their probhlem: how to undertake land and water related activities in the village. Their first and foremost demand was to bring River Machhan water to their village to meet the need for drinking water and irrigation.

Thus began a major watershed initiative which involved conserving soil and water. In the last six years, as their efforts grew in intensity, the experiment left a considerable impact on the socio-economic milieu of the village.

In 1998, almost the entire village population was brought about the poverty line with average household income a tidy Rs.35,620 per year vis-à-vis Rs.9,000 in 1991.

Agriculture production is up to 4000 kg per hectare per year as against 900 kg per hectare in 1991.

A high migration rate of 78 per cent to 80 per cent has become a trickle of 5 per cent; and its duration – once up to none months – is just a two-month period.
In 1998-99, there were 2,00,000 trees and more in a village which barely had 50 odd trees when the experiment was launched.
Drinking water shortage is a thing of the past, what with 21 perennial wells where water is available at 30 feet against more than 100 feet earlier. There is a constant recharging due to watershed intervention.
The village has electricity, roads, health sub-centre and a three room school building.
Thunthi is not the one of its kind. There are more than 300 such tribal villages across the borders of Gujarat, Rajasthan and Madhya Pradesh falling under Mahi basin and Mahi macro watershed. They all have witnessed similar transformation under the Sadguru integrated micro-watershed development approach.
This transformation has been brought about with full involvement and participation of the local people in the form of Watershed Associations, User Groups, Self-Help Groups, Irrigation Management Committees and the like.

All-Woman Watershed Committee in Madhya Pradesh Village

Gauraiya is a multi-case village 25 Kms from Sagar District in Madhya Pradesh. This area was characterized by barren land and a feudal set-up. Traditionally, the task of fetching drinking water from far flung places fell on women.
The turning point came in 1977 when an all-woman Watershed Management Committee was formed, headed by Sita Bai. This initiative under Rajvi Gandhi Watershed Management Mission has paid unexpected and rich dividends.
The village now gets assured water supply through pipes throughout the year.
Area under cultivation has almost doubled and the average farm produce trebled in three years.
Women's Self Help Groups protect 5.5 lakh trees planted on community and Government land. Social fencing by women volunteers has also ensured the survival of 90% of those trees.
The improvement in soil quality and underground water levels has also led to regeneration of nearly three lakh teak and two lakh bamboo trees planted four years ago.
Gauraiya women have also organized seven mahila bachat samoohs (women's self help groups) with impressive bank savings ranging from Rs.15,000 to Rs.25,000.
Jagriti, a self help group of harijan women, plans to go in for cattle rearing, while some other groups have taken up a Government contract to supply porridge and dal to 150 aganwadis in adjoining villages under mid-day meal scheme.
In Gauraiya women lead and men follow. It is the change in the gender relations brought about by the empowerment of women that makes the story of Gauraiya stand apart.

Appendix - 3

Rashtriya Sam Vikas Yojana: Backward Districts Initiative

List of Districts

Sl	Name of the State	Name of the District
1	Andhra Pradesh (5)	Adilabad, Mahbubnagar, Warrangal, Chittur, Vizianagaram
2	Gujarat (3)	Dangs, Dohad, Panchmahals
3	Haryana (1)	Sirsa
4	Karnataka (4)	Gulburga, Bidar, Chitradurga, Davangere
5	Kerala (2)	Palakkad, Wynad
6	Madhya Pradesh (9)	Mandla, Barwani, West Nimar, Seoni, Shahdol, Umaria, Balaghat, Satna, Siddhi
7	Maharashtra (9)	Gadhchiroli, Bhandara, Gondia, Chandrapur, Hingoli, Nanded, Dhule, Nandurbar, Ahmednagar,
8	Punjab (1)	Hoshiarpur
9	Rajasthan (3)	Banswara, Dungarpur, Jhalawar
10	Tamil Nadu (5)	Tiruvannamalai, Dindigul, Cuddalore, Naggapattinam, Sivgangai.
11	Uttar Pradesh (20)	Sonbhadra, Raebareli, Unnao, Sitapur, Hardoi, Gorakhpur, Banda, Chitrakoot, Kushinagar, Fatehpur, Barabanki, Lalitpur, Mirzapur, Jaunpur, Hamirpur, Jalaun, Mahoba, Kaushambi, Azamgarh, Pratapgarh
12	West Bengal (8)	Purulia, 24 South Parganas, Jalpaiguri, Midnapur West, South Dinajpur, Bankura, North Dinajpur, Birbhum,
13	Chattisgarh (4)	Bastar, Dantewada, Kankar, Bilaspur
14	Jharkhand (6)	Lohardagga, Gumla, Simdega, Saraikela, Singhbhum West, Goddha
Special Category States		
15	Assam (5)	Kokrajhar, North Lakhimpur, Karbianglong, Dhemaji, North Cachar Hills
16	Arunachal Pradesh (1)	Upper Subansiri
17	Himachal Pradesh (2)	Chamba, Sirmaur
18	Jammu & Kashmir (3)	Doda, Kupwara, Poonch
19	Manipur (1)	Tamenlong
20	Meghalaya (1)	West Garo Hills
21	Mizoram (1)	Lawngtlai
22	Nagaland (1)	Mon
23	Sikkim (1)	North Sikkim
24	Tripura (1)	Dhalai
25	Uttaranchal (3)	Champavat, Tehri Garhwal, Chamoli
	Total	**100**

DRAFT

POVERTY AMONG TRIBALS IN SOUTH WEST MADHYA PRADESH: HAS ANYTHING CHANGED OVER TIME?

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Poverty Among Tribals in South West Madhya Pradesh: Has Anything Changed Over Time?

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1. Introduction:

1.1 The Context

Despite significant achievements in poverty reduction during the post independence period, nearly one third of the people in India remain poor, a large proportion of which are chronically poor in terms of duration as well as severity (Mehta and Shah, 2002). While economic growth achieved through processes of planned development since the early fifties, it has still left large tracts of spatial poverty traps, even within the relatively developed states (Shah, 2002). As a result, high incidence of poverty continues to exist in some of the less favored regions that have been bypassed by the growth strategies at macro level. South-West Madhya Pradesh (SWMP) represents one such region with low level of economic growth owing mainly to neglect of its natural resources, particularly forest, which accounting for about 38 per cent of the region's geographical area. Another important feature of the region is relatively higher proportion of tribal population (i.e. 33 %), constituting a socially marginalized community in most parts of the country. Together these factors have resulted in high incidence of poverty in the region. By the mid nineties more about 60 per cent of the households were below poverty line, most of which are likely to be chronically poor in terms of both-duration as well as severity. Does this scenario of chronic poverty imply that nothing has changed for better especially for the rural poor in this region? If not, what explains sustained high level of poverty in the region in spite of the various developmental interventions and anti-poverty programmes undertaken by the Governments over the past few decades? These are some of the basic questions that keep coming time and again in the ongoing. These question however, have remained partly unanswered because of the two major limitations- first relates the data limitations that do not permit longitudinal analysis tracking the same households over time [1]; and the second relates to the monolithic approach of looking merely at income poverty, and focusing mainly on the outcome rather than understanding the interactive processes that lead to the conditions of chronic poverty. Of course there are a few micro-level studies that have gone into examining the dynamics of poverty in specific contexts [2], there are not many studies that have looked into changes in poverty over time at regional or household level [3]. The present paper is an attempt to fill-in a part of this gap by examining the changing pattern of poverty among households in the SWMP-region and also in a micro setting of a village within that.

The central argument of the paper is that, whereas things have changed, and at times for better, its reach is fairly limited especially for the poor, and that slow pace of growth is only a part of the explanation for exclusion of certain categories of households. This means that even with a moderately faster rate of growth, it would have still left some part of the rural community, particularly landless and the small-marginal farmers, would have still remained out of its reach. This suggests a weak percolation mechanism (Pant, 2003). Shrinking asset base especially, land and forest thus, emerges as the most important factor for a household to fall into poverty in a less favoured region like SWMP. Ill-health and expenses related to that may closely follow this

leading to a perpetual debt trap (Krishna, 2003; Pant, 2003). Population growth only aggravates the problem. Migration works mainly as a coping mechanism rather than as an exit route for most of the poor having limited human as well as social capital. Exit from poverty particularly for the chronic poor, may be possible by changing the composition of growth, which *inter alia*, would call for effective political representation especially of the marginalized class. It is of course difficult to empirically examine all these postulations in an exploratory study like this [4]. Nevertheless an attempt has been made to unravel at least a part of the complex reality with the help of quantitative as well as qualitative data for households in SWMP region and a micro setting of a village within that.

1.2 Objectives:

Specific objectives of the paper are:

(ii) To examine changes in the incidence of poverty in South-West Madhya Paradesh and the factors influencing that.

(iii) To create a typology of poverty and understand its dynamics in a micro setting of a study village in SWMP region.

(iv) To draw implications for future policy

The analysis is divided into five sections including this introduction. The next section presents a brief overview of the policies and the processes that have influenced poverty reduction among households in less favoured regions such as SWMP. This is followed by an analysis of changing pattern of poverty between 1983 and 1993-94 among different categories of households in the SWMP. This analysis is further extended by identification of the major factors influencing poverty during the two time periods, and also compares it with the aggregate picture at the state level. The analysis in section 3 is based on households level data obtained from the 38th and 50th rounds of the National Sample Survey (NSS) for the rural areas. The next section 4 provides a detailed mapping of poverty among households in a predominantly tribal village in Badwani, representing relatively less developed area within the region. Subsequently the section presents a short description of the developmental interventions and their implications for households' livelihood in the study village. This exercise is based on qualitative data collected through various participatory exercises conducted in the village [5]. Section 5 summarizes major findings and discusses policy implications.

2. Macro Processes and Framework:

The recent discourse in India has highlighted the central role of agricultural growth in poverty reduction (Fan and Hazell, 2000; Ravallion, 2000; Desai and Namboodiri, 1998). The evidence from a number of study suggest that while the percolation mechanism has worked in reducing the incidence of poverty, its impact has been limited in terms of pace and coverage. To a large extent, this is linked to the strategy of agricultural growth, characterized by Green Revolution, and the prioritization associated with that. This, impinged upon the unfavourable agrarian relations and their extension to the nature of political leadership, paved the way for consolidation of some the driving forces that discriminated against certain agro-climatic conditions (like dry land); resources (like forest); socio-economic identities (like landless, schedule castes -SCs and tribes-STs); political representation (like special ethnic minorities); and regions (like geographically alienated areas in hills and interior pockets in the marginalized areas). Unfortunately, there is a often logjam of several of these discriminatory forces (Bird, et

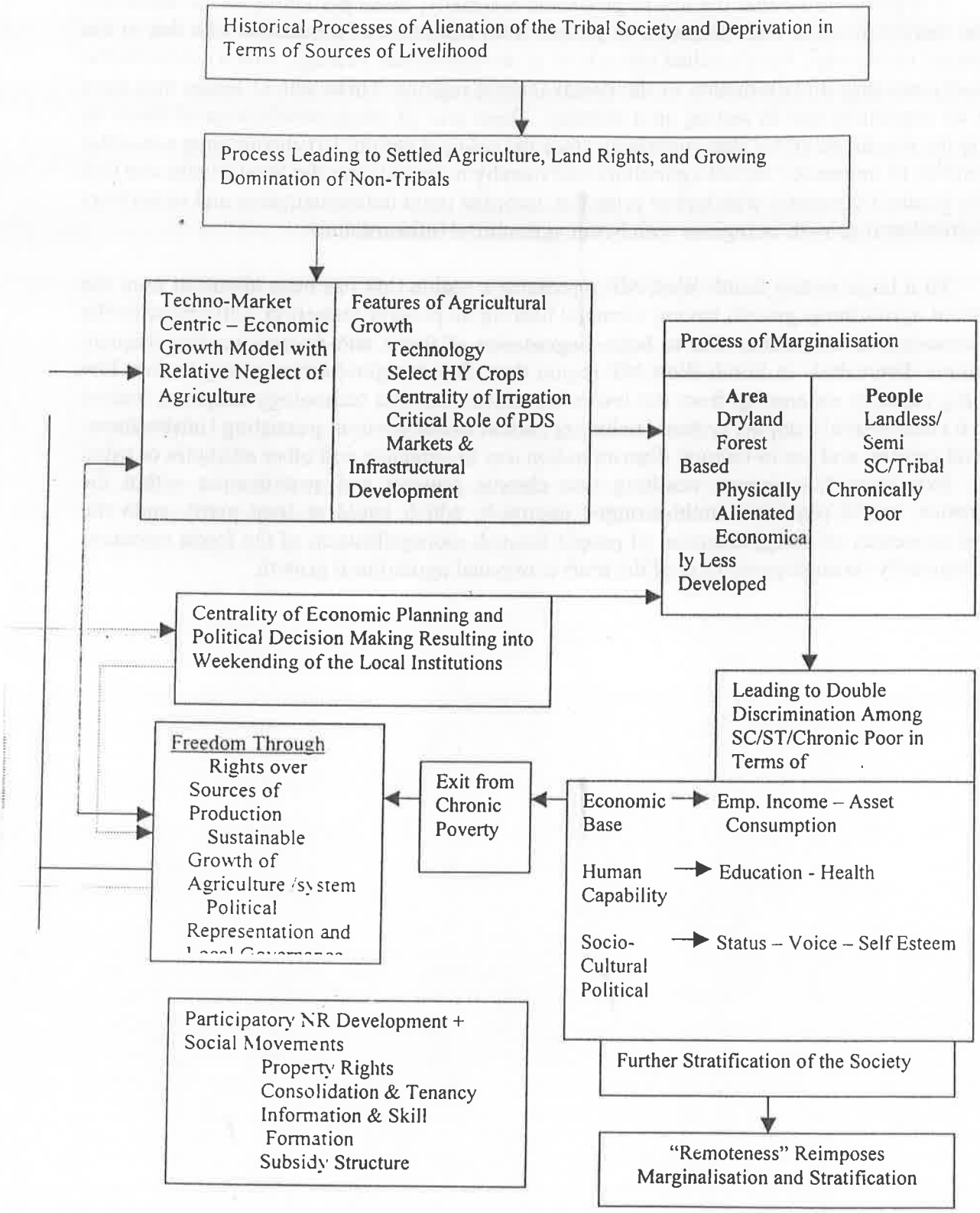
al; 2001). The Central-Eastern part of India represents a scenario such as this with low level of irrigation hence agricultural growth, forest resources, hilly regions, tribal communities, feudal agrarian relations and low political representation. The interface among the various factors could be described in a tentative framework presented in Chart I.

It may be noted that the macro processes especially, those pertaining to the social and political marginalisation and alienation of people from resources of production like that in the forest based economies, have resulted into a kind of developmental strategy, which reinforces the historically existing discrimination in the disadvantaged regions. Three sets of forces may have played an important role in setting up a strategy. These are: (i) commercialization of forest by bringing the resources under state monopoly since the colonial period; (ii) encouraging non-tribal communities to undertake settled agriculture and thereby marginalizing the local tribals; and (iii) centrally planned economy with higher priorities accorded rapid industrialization and technology based agricultural growth in regions with better agricultural infrastructure.

To a large extent South-West MP represents a region that has been alienated from the mainstream agricultural growth having a crucial bearing on poverty reduction. Unfortunately the region experiences constraints due to both- degradation of forest and dryness leading frequent crop failure. The tribals in South-West MP region thus, face marginalisation owing to their low bargaining capacity emanating from the low information base and technology adoption, limited access to institutional support system including formal credit system; persisting indebtedness; low social capital; and socio-cultural discrimination due to language and other attributes of tribal identity. Exit from this logjam resulting into chronic poverty and stratification within the communities, might require a multi-pronged approach, which could at least partly undo the historical processes of marginalisation of people through monopolization of the forest resources and subsequently through promotion of the market oriented agricultural growth.

Chart I

Understanding Severe, Long Term and Multi-dimensional Poverty: A Tentative Framework



3. Poverty in South-West Madhya Pradesh: Changes Over Time

This section examines incidence of poverty and determinants of per capita income among different socio-economic categories of rural households within SWMP region and the state as a whole. This is followed by an analysis of the major factors influencing monthly per capita expenditure (MPCE) among the households during 1993. The analysis is based on raw data pertaining to sample households covered by the two rounds of National Sample Survey on consumption expenditure conducted during 1983 and 1993-94. The analysis has been undertaken separately for the poor and also for all the households taken together. Identification of poor households is based on the official poverty lines for 1983 and 1993 using MPCE. The households have been divided into four categories consisting of those having MPCE 25 % above and below the respective poverty line for the year, and the remaining households outside this band of 25 per cent on both sides [6]. Thus, the four ways classification of households can be described as very poor, moderately poor, potential poor, and non-poor. The potentially poor households are those, that are likely to slip off the poverty line in an event of a shocks like ill-health, death or natural disasters such as droughts, floods etc. For many of the households a downward shift such as this might result into chronic poverty in duration sense, whereas for others it could be a transient phenomenon.

2.1 Changes in Rural Poverty

The comparative estimates of rural poverty in Table 1 (a & b) indicate that while incidence of poverty has declined both in MP-state as well as in SWMP-region, as large as 33 and 61 per cent of households still remained below poverty line during 1993-94. The decline in poverty was much sharper in the state (i.e. from 61.7 to 33.2 %) as compared to SWMP region (i.e. from 68.8 to 60.7 %). These estimates are at variance with the estimates of head count ratios prepared by other studies. For instance, the estimates by Sundaram and Tendulkar (2003) suggest a decline in rural head count ratio in the state from 54 per cent in 1983 to 36.6. per cent in 1993-94. Nevertheless, the higher estimate of HCR in 1983 is in conformity with that obtained by using the official poverty line (Dubey and Gangopadhyaya, 1999). Even if one uses the lower estimate of 54 per cent of HCR in 1983 as worked out Sundaram and Tendulkar, the decline in poverty is fairly substantial i.e. around 21 per cent. Compared to this, the reduction in the case of SWMP region is only about 8 per cent.

We also examined the changes in HCR across different MPCE-groups. It is observed that the incidence of poverty has declined significantly in the category of very poor both in SWMP region as well as in the state. In fact, the decline in poverty is almost entirely concentrated in the category of severely poor. The proportion of household in the next category of MPCE i.e. the poor is found to have remained more or less same. In fact the proportion of households in this category had declined marginally at the state level whereas it had increased slightly in SWMP. What is more pertinent is that the shift is substantially higher in the last category i.e. the non-poor rather than in the potentially poor. While it is difficult to ascertain the actual exit routes experienced by the two sets of poor, it is likely that the movement is gradual i.e. from very poor to poor and from poor to non-poor. It is of course, difficult to ascertain any movements in the reverse direction i.e. from non-poor to poor, since the two surveys do not cover the same households.

2.2 Poverty Among Social Groups:

Table 1 also provides estimates of poverty among different social groups viz; scheduled tribes (STs) and scheduled castes (SCs). It is observed that the pace of poverty reduction among tribals is lower as compared to all households both in the state as well as the region. However compared to the scheduled castes (SCs), the pace of poverty reduction is slightly higher. It may be noted that the percentage difference in poverty reduction between tribals and all-households is narrower than what is observed at the state level. To an extent this could be due to higher proportion of tribal population in SWMP-region vis-à-vis the state. Notwithstanding the substantial decline, the incidence of poverty still remains to be fairly high especially among STs and SCs. By 1993-94 nearly 47 per cent of tribal households in rural Madhya Pradesh were poor; this proportion was as high as 73.5 per cent in SWMP. The point once again is that about the low and differential rates of change rather than absence of poverty reduction *per se*. Given the initial high levels of poverty, especially among the marginalized areas (such as SWMP) as well as communities (like Tribals), marginal improvements are unlikely to change the plights of a large number of rural households in the region.

2.3 Changing Socio-Economic Profile in SWMP and the State:

This section examines changes that have taken place in the socio-economic indicators and identify the major factors influencing levels of expenditure among all the rural households in general and separately poor households in particular. Table 2 presents estimates of some of the important socio-economic indicators between 1981 and 1991. Some of the important observations are as follows:

i. There has been some increase in the net sown area (NSA) both at the state as well as region level. Similarly proportion of gross irrigated area (GCA) has also increased in the state as well as the region. Evidentally the increase in irrigation is higher.

ii. Per capita food production has increased over time. This could be mainly due to the increased area as well as irrigation under crops.

iii. The literacy level in SWMP increased from 28 to 35 per cent during the decade; this increase was from 28 to 44 per cent at the state level.

iv. Population growth is found to be higher in SWMP, with a slightly higher sex ratio as compared to the state. This might reflect higher incidence of out-migration in the case of the former. The region has also experienced a substantial decline in infant mortality rate (IMR), which reduced from 149 to 110 between 1981 and 1991. The reduction in IMR is relatively slower as compared to the state.

v. Finally, infrastructure development index has also undergone positive changes both at the state as well as the region level though, the change is slower in SWMP as compared to the state.

Overall, the above findings suggest slow but positive changes in the case of most of socio-economic indicators. Of course, there are intra-regional variations as the region consists the two fairly different sets of districts: (i) Hoshangabad and East Nimar having relatively better

resource endowment; and (ii) Betul and West Nimar with lower levels of socio-indicators like literacy and IMR on the one hand, and irrigation and per capita food production on the other.

2.4 Factors Affecting MPCE at among Rural Households:

To what extent, the positive movements in terms of the major socio-economic indicators influence expenditure at the household level? This has been examined by using multiple regression analysis. The purpose of the exercise is not of explaining incidence of poverty. Instead, the idea is to identify the major factors influencing the level of expenditure treating it as a continuum rather than as dichotomous categories of poor or non-poor.

Table 3 provides results of the regression analysis based on household level data for 1993-94. It is observed that three important factors influence MPCE among rural households taken together. These include landholding size, extent of irrigation, and population as reflected by size of the household. As expected the first two have a positive impact whereas the third variable, variable namely population exerts negative impact on MPCE at household level. To a large extent this confirms the most commonly observed reality in rural India (Pant, 2003). The other factors such as literacy, sex ratio (representing out-migration), and occupational diversification did not have any significant impact on household's expenditure level [7].

However, if we focus on households with MPCE below the poverty line, one finds interesting results. While size of landholding as well as households remain important variable influencing MPCE among poor, irrigation ceases to be an important factor. This might be due to the fact that most of the poor do not have access to irrigation. Another important feature in the context of the poor households is a negative impact of leasing out of land on MPCE. This suggests a widely observed phenomenon of reverse tenancy where poor households with very small landholdings are forced to lease-out their land because of the dis-economies of scale associated with operating such holdings and/or severe resource constraints. Lack of adequate financial resources or family able bodied male member in the family, as often observed among the women headed households, may force many households to abstain from cultivating their land. Lastly, literacy turns out to be a significant variable influencing MPCE among poor households. This might imply that in absence of adequate economic assets like land and irrigation, education works as a critical factor for enhancing household's economic status. The impact of education however, remains sub-dued if the household is endowed with a relatively better asset base.

The above observations however, are based on a partial analysis as it could not incorporate some of the other important variables such as ownership of livestock, incidence of morbidity, indebtedness and migration. Also the analysis did not get into examining the inter-relationships among the factors and the processes leading to chronic poverty in the region. These aspects have been addressed in the light of a micro study in Karchali village within the region.

4. Poverty and Marginalisation: Insights from A Micro-Study:

The analysis in this section is based on qualitative data collected from six hamlets in Karchali village. The analysis seeks to examine two important aspects: (i) pattern of well-being among households in the study villages and changes in the well-being status over the past 10 years; and (ii) nature of developmental initiatives, processes of exclusion, and imperatives for policy support. The first aspect has been examined through detailed wealth-ranking exercises

conducted in six hamlets in the study villages. The information pertaining to the second aspect are based on people's perceptions obtained through various focus group discussions including those following the wealth ranking exercises. In what follows we present some of the information/insights obtained through the various participatory exercises.

4.1 Pattern of Well-Being: Present and Past

Table 4 presents mapping of 212 households across different well-being categories based on the wealth ranking exercises conducted in the study village. It is observed that 60 per cent of the households in Karchali were identified as poor according to the well-being categories. This however, does not strictly correspond with the official poverty line; rather it reflects relative status of households in terms of what the village community perceived as measures of well being. Among the remaining households, 46 per cent were considered as better-off whereas 38 per cent were in the category of medium + well-being status. Incidentally none of the households were categorised as severely poor.

The next step in the wealth-ranking exercise was to ascertain the shift in well-being status among households over the last 10 years. It may be noted that the exercise listed 180 households as against 212 existed 10 years back. This implies formation of 32 new households mainly due to splitting of joint families in the events of marriage of adult sons or death of the father etc. Since most of the households have agricultural land (though not necessarily transferred to the sons of the original land owner), splitting of a joint family would imply division of landholdings and often livestock, especially bullock, between the father and the sons. This process seems to have resulted in a significant increase in the proportion of households in the category of poor.

It is indicated that the percentage of households in this category jumped from 30 per cent to 60 per cent over the last 10 years. Of course this may not necessarily mean doubling of the incidence of poverty in the sense of official definition. What it essentially means is deterioration in the status of well-being among a large number of households especially among those in the category of medium well-being status. In fact, the number of households in the category of poor increased from 60 to 128. This increase is significantly higher than the additional 32 households that came to existence during the reference period. This would imply that apart from the new households created from the already poor households, a large number of households were shifted from the medium or better-off to the category of poor.

According to the information obtained through wealth ranking exercise, of the 180 households that existed 10 years back, about 55 per cent of the households had retained their original well-being status whereas, 7 per cent had experienced an improvement and the remaining 38 per cent had deteriorated their status over the past 10 years. Of course, the 55 per cent households retaining their original well-being status also consists of those who were already poor. Moreover, retaining the original status does not necessarily imply retaining the same level of well-being within each category. It is likely that for many of the households the actual level might have changed (for better or worse) within each category. These kinds of details however, were difficult to obtain through a participatory exercise like this.

We tried to enquire the main reasons for improvement as well as deterioration in well-being status among the households. Overwhelming responses were that: (a) improvement is generally associated with access to irrigation through private sources or obtaining a salaried job; (b) deterioration is largely due to division of landholdings and at times due to indebtedness on

account of marriage or death ceremonies or illness accompanied by droughts or crop failure; and (c) those who could retain their well-being status in the better-off or medium categories have managed it because of their relatively better land and irrigation base, or due to migration, especially among the landless.

Together these responses suggest two inter-related sets of processes taking place simultaneously. First, refers to inadequacy of the developmental changes – both state initiated as well as market based. And the second pertains to the processes that lead to systematic exclusion of another fairly large sub-set of households that found it difficult to cope-up with the increased demographic pressure due to multiple deprivation faced by them.

4.2 Development, Exclusion and Policy Imperatives: A Brief Profile

This section presents a brief account of the changes that have taken place in the study village, extent to which these changes have helped at least a section of the village community, and the major problems faced in achieving effective outcomes of the developmental initiatives. Chart II provides the details based on the various focussed group discussions conducted in the village.

Chart I

Development, Exclusion and Policy Imperatives: Observations from Karchali

State Initiatives/Market Development/ Shocks	Coverage and Exclusion	Problems and Policy Imperatives
Land Settlements and Access to Forest	The state had allocted land to all the house-holds that were listed in the village at the time of settlement of the revenue village from forest area. Each household received 8 acres of land, which was already under cultivation. In the process the village community lost their access to forest and more than that their stakes in its management though, the traditional rights for collecting fodder and fuelwood continued. Over time per capita availability of land and forest resources became smaller as population increased and forests declined.	Newly created households often do not have land-titles. This affects their entitlement for credit and other benefits from the state support programmes. Basic investment for improving quality of land such as land shaping and water harvesting is missing
Irrigation and Yield Augmenting Technology	Introduction of more remunerative crop like Soyabean through extension support. Partial support to private investment in wells	Selective spread of irrigation due to goe-physical and financial constraints, given the property regime providing private control of ground water. Inadequate supply of power for energising wells Those with money/ political

		power indulge in mis-appropriation of electricity
Livestock	Bullock is are still the main source of draft power. Maintaining a pair of bullock however, is difficult for those with very small holdings. Hence, most of the livestock remain underfed and less productive	Lack of a well developed arrangement for sharing of bullocks or hiring of tractors Degradation of forest has squeezed the supply of fodder for enhancing the productivity of milch cattle
Input-Output Markets	Relatively easy access to markets due to geographical proximity. But markets are interlocked hence exploitative. Money lenders are the major source of credit but, they charge very high interest of the tune of 36-50% per annum Promotion of Self-help groups (SHGs) for saving and credit support has been introduced through extension services.	Need to improve credit worthiness through proper titles to land, also by enhancing the quality (or productive capacity) of land, and improvement in livestock. Development of markets for group-borrowing Absence of institutional support and corruption in management of SHGs.
Road and Transport	The village has a semi-tarred road, which can be used for motored vehicle. The state transport bus piles once a day	The accessibility of the state transport bus becomes difficult during rainy season
Economic Diversi-fication and Migration	Given the limited scope for economic diversi-fication within the village, migration is an important coping mechanism especially, among poor. Nevertheless, only 25 per cent of the rural households reported at least one person migrating out for a part of the year	Migration is considered a less preferred option mainly due to the harsh living conditions and loss of dignity as well as social identity. Indebtedness is often considered as a lesser evil than out-migration
Droughts and Drought Relief	Droughts have been quite frequent since the mid-eighties. The state government provides relief measures through employment schemes and also through distribution of grains at subsidised rates under the public distribution system ((PDS)	Employment schemes are far from adequate. There is a substantial scope for soil-water conservation. A watershed development project has been initiated. But its impact on drought proofing is a distant possibility as of now. PDS has a fairly good coverage
Other Amenities and Infrastructure	The village has several amenities provided mainly by the state. These include: hand pumps for drinking water (which are presently functional), flour mill, nursery and a primary school, partial	The teachers generally do not attend the school. The local power structure is not willing to address this issue for political reasons.

	electrification, forest-nursery, check dams etc. Besides these a health worker and agricultural extension workers provide information support. Finally a few welfare schemes are also in operation	Similarly extension workers also have a thin presence in the village. The benefits of welfare schemes do not reach the actual beneficiaries. The most critical constraint was reported to be lack of health support for family planning.
Local Governance	Part of a group Panchayat. The local power structure is of critical importance for allocation of developmental funds across the villages within a group Panchayat.	Creation o f a class o f n eo-elite within the community. A large proportion of the state funds are siphoned-off by the Panchayat leaders. The remaining is dis-proportionately distributed across villages
Social Movement	Adivasi Mukti Sangathan (AMS), a right-based radical movement operates in the area. But, it does not have a strong presence in the village	Mainstream political processes tend to dissipate the movement through overt opposition

Overall the above description of the dynamics of change and exclusion point out obstacles at various levels- planning, allocation of resources, and above all, entitlement to the productive resources. The people have little say in the processes that shape up their destiny and that of the future generation. In this situation the poor, at best, are reduced to passive recipients of the state's welfare measures, and at worst, become silent spectators of a relentless process of corruption and exclusion. The story of Karchali, like that from several other villages, helps assessing how tough the logjam of adversities is for the poor in a less favoured region like SWMP.

5. Major Findings and Policy Implications

The foregoing analysis dealt with poverty scenario in South West Madhya Pradesh, one of the seven rural regions in India having sustained high incidence of poverty. The central questions being addressed by the analysis are: what is the extent of poverty reduction and what are the factors influencing that? Does the persistently high incidence of poverty imply that nothing has changed in the operating environment in this less favoured region? And, finally what are the major processes of marginalisation and what kind of policy interventions are necessary to mitigate them? The important findings in this context are:

(i) Whereas incidence of poverty has declined in the SWMP region its pace is fairly slow. Between 1983 and 1993-94 poverty has declined from 68.8 to 60.7 per cent as compared to 61.7 and 33.2 per cent in the state of Madhya Pradesh

(ii) The decline in poverty is particularly slow among tribals as compared to non-tribals in both SWMP-region and also in the state. By 1993-94 73.5 and 46.7 percentage of tribals in the region and the state were found to be poor.

(iii) Landholding size, access to irrigation, and population growth continue to be the major determinants of per capita income among all the rural households taken together. However, among the poor households literacy emerges as an important factor perhaps, replacing access to an important economic asset viz; irrigation. This, of course, is a partial analysis, which didi not cover some of the important socio-political processes of marginalisation.

(iv) The village level analysis based on qualitative information from a study village suggested that more than two thirds of the households were categorised as poor as per the wealth ranking exercise and that, this proportion has increased over the past 10 years. To a large extent the increased proportion of poor households is attributed to the declining land holding size on account of the rising population pressure. Effective health support system for family planning thus, was reported as the most important un-met needs among the village community. Similarly schools are more or less defunct in the village, though people are somewhat indifferent to this situation.

(v) The village has received a number of socio-economic infrastructures but its effective reach to the poor is a major problem. Intervention with respect to crop-technology is among the most important changes. The recent developments in terms of devolution of power to the Panchayati Raj Institutions however, is yet to emerge as an empowering mechanism. As of now the situation is in turmoil with further sharpening of the power centers even within the tribal communities. The problem of the effective reach is both of – the size of the untied funds coming to the PRIs and also of its distribution across villages and households. The latter is simultaneously influenced by the intra-community dynamics and the power politics obtaining at the higher levels. Social movements also get side tracked in the process. The specific policy implications therefore could be in terms of:

Enhancing the effective access to be the basic infrastructure especially for health and education. Civil society intervention is essential to break the nexus of power at the village and the district/regional level.

Although, crop-productivity and market support have improved income of some of the landed households, the pace is too slow. The greatest struggle is for getting irrigation; people have put-in their private investment for this. However a systematic and large scale investment based on watershed development is essential to enhance productivity on a larger scale. Regeneration of forest and access to a part of this resources should also form an important component of the watershed development programme. A beginning has been made but, a lot more is needed to be done.

Migration is treated as the least preferred option mainly because of the non-conducive working conditions at the place of destination. Exploitative credit thus remains the only recourse for most of the poor. Promotion of saving and credit groups are very critical, but they require much more careful institutional support from various developmental agencies rather than being left as yet another chore for the village extension worker to handle.

What is therefore suggested is revitalizing of the existing systems – economic, social as well as political. There are no quick-fix solutions to this. The state machinery, at the most, is tuned to check further deterioration of the situation by pumping-in subsidies and minimum welfare

support such as public distribution of food. This, obviously can not be a substitute for long term of growth and holistic development building on the resources of the region. Multiple approaches therefore are needed to break the crisis of agency for change and development on a sustained basis. In absence this, the state might be able to contain hunger, but poverty for many may continue for a long time to come.

Table 1: Incidence of Poverty in MP and SWMP Region: 1983 and 1993-94

	SWMP-Region				MP State		
	MPCE Group*	38th Round	50th Round	% Change	38th Round	50th Round	% Change
All HHs	1	45.5	36.5	-19.7	38.2	12.7	-66.7
	2	23.3	24.2	-3.7	23.5	20.5	-12.8
Poor		**68.8**	**60.7**	**-11.8**	**61.7**	**33.2**	**-46.2**
Non-Poor	3	13.1	13.6	3.8	14.5	19.9	-37.2
	4	18.0	25.7	42.78	23.8	46.9	-97.0
All		100.0	100.0	-	100.0	100.0	-
Tribal HHs	1	65.7	50.1	-23.7	52.6	21.1	-59.9
	2	22.3	23.4	4.9	23.4	25.6	9.4
Poor		**88.0**	**73.5**	**-16.5**	**76.0**	**46.7**	**-38.5**
Non-Poor	3	6.4	8.8	37.5	11.1	22.0	-98.2
	4	5.6	17.7	216.1	12.9	31.4	143.4
All		100.0	100.0	-	100.0	100.0	-
SC HHs	1	50.9	32.3	-36.5	44.6	12.0	-73.1
	2	25.7	33.3	29.6	24.2	23.8	- 1.7
Poor		**76.6**	**65.6**	**-14.4**	**68.8**	**35.8**	**-48.0**
Non-Poor	3	9.4	13.8	-46.8	12.9	21.7	-68.2
	4	14.1	20.6	46.1	18.3	42.5	132.2
All		100.0	100.0	-	100.0	100.0	-

- 1=poor; 2=very poor; 3=potential poor; 4=non-poor.

Source: Raw data for the sample households covered by the 38th and 50th rounds of NSSO, Government of India, New Delhi.

Table 2:Changing Scenario in SWMP Region and the State

Variable	Region –6		M.P. State	
	1981	1991	1981	1991
Growth rate population		25.3		22.2
Sex ratio	944	939	940	930
NSA % of geographical area	42.5	43.7	42.0	44.0
Irrigated area % of GCA	11.7	22.8	11.1	17.3
Value agri-output/per hectare	739	2874	628	2170
% of tribal population	31.8	33.6	23	23
% of SC population	11.5	11.8	14	15
% of urbanization	20	21.4	20.3	23.2
% of literacy	28.5	34.9	27.9	44.2
Infrastructure development index*	65	71	62	73
I.M.R	148.7	110.2	142	104

Source: CMIE, District Profiles (1985 and 1993) Centre for Monitoring Indian Economy, Mumbai

* Obtained from Human Development Report for Madhya Pradesh (1998), Government of Madhya Pradesh

Table 3

Results of the Linear Regression for Explaining Per Capita Monthly Consumption Among Households

Variable	50th Round				
	B	Std. Error	Beta	T.	Sig.
For all Households in SWMP					
Size of landholding	5.25	1.34	0.41	3.91	0.000
Leasing out of land	-7.62	8.88	-0.09	-0.86	0.393
Size of irrigated land	8.36	2.64	0.38	3.16	0.002
Occupational diversification	-20.15	21.89	-0.07	-0.92	0.359
No. of literate persons	5.29	3.73	0.11	1.42	0.159
Size of the household	-25.03	4.22	-0.47	-5.93	0.000
Sex ratio	-11.48	11.28	-0.07	-1.02	0.311
Constant	318.12	37.63	-	8.45	0.000
Poor Households in SWMP					
Size of landholding	1.65	0.58	0.37	2,85	0.005
Leasing out of land	-5.06	2.76	-0.25	-1.83	0.070
Size of irrigated land	0.47	1.17	0.06	0.40	0.690
Occupational diversification	8.94	7.50	0.11	1.19	0.236
No. of literate persons	6.11	1.25	0.45	4.89	0.000
Size of the household	-6.29	1.67	-0.39	-3.76	0.000
Sex ratio	1.63	3.54	0.04	0.46	0.646
Constant	155.76	13.92		11.19	0.000

Source: As in Table 1.

Table 4

Distribution of Households by Well-being Categories

Well-being categories	Karchali	
	No	%
Better-off	46 (60)*	21.7
Medium	38 (60)	17.9
Moderately poor	128 (60)	60.4
Severely poor	-	-
All	212 (180)	100

* Indicate the status that prevailed 10 years back

Note: Based on Wealth Ranking Exercise

Endnotes:

1. The official estimates of poverty in India are based on the information collected for monthly per capita expenditure among sample households. These surveys conducted every five years but the households covered by the sample in each survey are not the same. Alternatively National Council of Applied Economic Research (NCAER) has collected panel data for households at two points of time. The data set however, has limited coverage at region level.

2. For a detailed review of poverty in these two sets of regions see, Shah and Guru, 2003.

3. A recent study by Krishna (2003) provides a detailed mapping of poverty and changes therein over 25 years. Using participatory tools, the study found that 28.5 per cent of the households in 35 villages in Rajasthan had escaped poverty whereas 25.9 per cent had fallen into poverty. Another study by IHD (2003) noted significant improvements among rural households in Bihar, which were surveyed during the early seventies. The study by Bhide and Mehta, using NCAER-data, found that more than half (52.61%) of the households that were poor in 1970-71 remained in poverty over a decade later. A little less than half (47.39%) of households below the poverty line in 1970-71 escaped from poverty and became non-poor.

4. The analysis is based on a pilot study conducted in South West Madhya Pradesh. For details see Sah, Shah, and Bird (2003).

5. A number of PRA exercises were conducted in the six hamlets in Karchali. This included a modified wealth-ranking exercise, resource mapping and problem analysis etc. The modified wealth-ranking exercise sought to obtain information about the well being status of each household 10 years back and also enquired the reasons for change in the status, verified by the information on some of the critical indicators of well-being such as ownership of land, irrigation , bullock, migration, and indebtedness, which were suggested by the community.

6. The estimates of MPCE are available for 1999-2000. We did not use the estimates because of the problems in comparison with the earlier surveys.

7. In a district level exercise of correlation of poverty measured through separate survey of below poverty line (BPL) in Madhya Pradesh indicated significant negative correlation with rural wage rates and human development index; and a positive correlation with proportion of forest area and tribal population, sex ratio indicating migration, and female work participation rates (See Sah, Shah and Bird, 2003).

References

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Bird, Kate, David, Hulme and Andrew Shepherd. (2001), *Chronic Poverty and Remote Rural Areas*, Paper presented at workshop on Chronic Poverty, Manchester, February.

Bhide, Shashanka and Mehta, Aasha Kapur (2003), 'Chronic Poverty in Rural India Using Panel Data: Issues and Findings', Chronic Poverty Research Centre, International Conference, April, Manchester.

Desai, B. M. and Namboodiri, N.V. (1998), "Policy Strategy and Instruments for Alleviating Rural Poverty," *Economic and Political Weekly*, Vol.33, No. 11, October, 10.

Dubey, Amaresh and Subhashis Gangopadhyay. (1998). *Counting the Poor: Where Are The Poor in India*, SARVEKSHANA Analytical Report Number 1, Department of Statistics, Government of India.

Fan Shenggen, and Hazell, Peter (2000) "Should Developing Countries Invest in More Favoured Areas? An Empirical Analysis of Rural India", *Economic and Political weekly*, Vol. 35; No.17.

Government of Madhya Pradesh (1998), Human Development Report, Directorate of Institutional Finance, Bhopal.

Krishna, Anirudh (2003), 'Falling into Poverty: Otherside of Poverty Reduction', *Economic and Political Weekly*, Vol. 38, No.6. pp. 532-542.

IHD (2003), 'Dynamics of Poverty, Employment and Human Development in Bihar (mimeo) Institute for Human Development (IHD), New Delhi.

Mehta A.K. and Amita Shah.(2002). Chronic Poverty in India: Incidence, Causes and Policies, *CPRC-Working Paper*, Manchester, U.K..

Pant, K.C. (2003), 'The Battle Against Poverty: Are We Ready for the Final Assault?', D.T. Lakdawala Memorial Lecture, Sardar Patel Institute of Economic and Social research, Ahmedabad, September 20, Ahmedabad.

Ravallion, M. (2000), What is Needed for a More Pro-Poor Growth Process in India? *Economic and Political Weekly*, Vol. 35, No.13, 1089-1093.

Sah, D.C., Amita Shah and Kate Bird (2003).*Chronic Poverty in Remote Rural Areas of Southwestern Madhaya Pradesh*, MPISSR, Ujjain and GIDR, Ahmedabad.

Shah, Amita and Baidyanath Guru. (2003). Poverty in Remote Rural Areas in India: A Review of Evidence and Issues, *CPRC Report*, Gujarat Institute of Development Research, Gota, Ahmedabad.

Shah, Amita and Sah, D.C. (Forthcoming Oct.-Nov. 2003), Chronic Poverty in South West Madhya Pradesh: Multidimensional Analysis of its Extent and Causes, in Chronic Poverty in India, IIPA, New Delhi.

Sundaram and Tendulkar, S.D (2003), Poverty in India in the 1990s: An Analysis of Changes in 15 Major States, *Economic and Political Weekly*, Vol. 38, No.14, pp. 1385-1393.

Sundaram, K. (2003), On Identification of Households Below Poverty Line in BPL Census 2002: Some Comments on the Proposed Methodology, *Economic and Political Weekly*, Vol. 38, No.9, 896-901.

DRAFT

COMMONS AND COMMUNITY: EVIDENCES FROM SOUTHWESTERN TRIBAL BELT OF MADHYA PRADESH

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COMMONS AND COMMUNITY

Evidences from Southwestern Tribal Belt of Madhya Pradesh

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The *tribals* of Southwestern belt of Madhya Pradesh are perceived to be less civic and more oriented to take collective actions in comparison to non-tribals, who are considered relatively advanced but individualistic. To bring the tribals into the mainstream, a number of area specific programmes were launched by the state to improve their agriculture, credit & input supply, health & family planning services, education *et cetera*. Notwithstanding these programmes, this tribal belt has remained one of the poorest in the state[1]. It is argued in this paper that lack of formal institutional structure and lack of progress have not discouraged formation of social capital [2] in this region. The recently acquired awareness -- with the help of civil society -- relating to loss of natural resources has strengthened the social network's capabilities in terms of associational activities, trust among the social groups and individuals, and collective actions for shared goals. The social capital in this tribal region manifests itself through social hierarchy and moves to political domain, though with varying intensity. In relatively less remote area, the stratifications created by political and economic processes have displaced the social hierarchy. But in remote rural areas, where economic hierarchy is fragile and reshuffles itself within a short span[3], the social elites get an upper hand even in non-social affairs of the. The dominance of social hierarchy in decision-making would, however, not be due to the weakness of political elites; it is rather lack of efficiency in local governance that would give a space to social norms and informal institutions in non-social affairs of the community.

The Panchayat Extension to Scheduled Areas (*PESA*) Act of 1996 has provided a new turn to the process of reforming governance in the tribal regions. The Act empowers the community to take hold of its land, water and forest resources. Introduction of *Gram* Swara*j* in 2001 by the Madhya Pradesh government further empowered the community by involving it directly in all the decision-making processes – a power that was earlier enjoyed by the *Sarpanch* alone. These changes in governance are postulated on three basic premises. First, traditional ways of tribal society could be integrated with decentralised governance through *PESA*. Second, the community would get an institutional space to govern its affairs in an accountable and meaningful manner. This means that these provisions would be able to level and homogenise the differences leading to an informed decision-making by the people at

the grassroots level. Lastly, the new system would usher in a regime of people's participation, where, governance would be more responsible and fruits of development distributed more equitably. These political reforms have thrown up a new dominant group that controls financial resources, challenging the existing hierarchy. This may disturb the apparent homogeneity of the tribal society. The emerging heterogeneity may curtail the participation of the community in the governance. On the other hand, the provisions of the *PESA* have come in direct confrontation with the earlier Acts and the then existing state departmental rules that governed the natural resources in the tribal regions. This has made the Act redundant in relation to management of the natural resources of the region.

The objective of this paper [4] is to understand the impact and efficacy of these changes. More specifically, the paper addresses to the following three sets of propositions. First, if villages were socially, politically and economically divided, dominance of any one of the groups in decentralised governance would influence the distribution of gains. Second, political reforms that give management of natural resources to community would create expectations that would be frustrated by the existing departmental laws. Consequently, the community may resist state interventions that curtail their access to natural resources. Lastly, transfer of social capital in political domain may be resisted by the economic stratification within the society.

Tribal Marginalisation

The tribal belt of the Southwestern Madhya Pradesh, also known as *Nimar*, comprises of Khandawa, Khargone and Badwani Districts, and is flanked by two-hill ranges, the *Vindhya* on its north and the *Satpura* in the south. Around 12th century, small tribal communities, Bhil and Meena who lived in the forest and cultivated small patches of land that they cleared by burning, populated Nimar. The tribal influx also started during this time, mainly from Rajasthan and Gujarat. This was the time when *Parmar* dynasty in the region was disintegrating. The state was in anarchy and tribal chiefs emerged as landowners, recognised *Garasiay* or unrecognised *Bhumihar*. Muslim invaders, unfamiliar with the region, could not control the tribal and encouraged Rajputs to settle and control them.

The *Badwani* state was established around 13th century and over time this small state with its barren soil and hilly surface escaped the coveted eyes of the Mughals, Marathas and the British Agents. Although there are no known evidences about Badwani dynasty, what is known, however, is that Sisodia Rajputs from

Udaipur were the rulers of the state (Shrivastav: 1970). As a result of the Muslim invasion of Rajasthan, Gujarat and Malwa that occurred around 1200 AD, many Rajput warriors fled and came to settle in the Narmada Valley. *Bhils* who had ruled this entire region till the eleventh century came to be gradually displaced, and could retain their rule only in the hills of Vindhyas and Satpura. The Rajput take-over reached its great heights in the fifteenth century. In order to establish their control on land, the *Sisodia* rulers hired *Bhil* warriors in their army. And thus, the local *Bhil* came under the protection and patronage of *Sisodia* rulers. Many of these Rajput rulers married *Bhil* women and the result of the union is said to be the origin of *Bhilala* tribe. The *Bhil* polity that existed before the Rajput influx was not centralised. Territory was divided into a large number of localities each under a hereditary chief called *patel.* But there was no taxation, no system of surplus extraction to make the chief richer than his band. Later as the *Bhil* were forced to accede to their subjugation, the Rajput selected some tribal chiefs to act as representatives of their authority in the villages, such that the chiefs came to be the link between their ruling political system and the traditional tribal polity. By the end of the eighteenth century, the tribal societies lived under the overarching authority of the Rajputs who were relatively more centralised in their kinship-based political organisation. But this area remained untouched by the claims of *Mughals* and their armies. Perhaps the area was perceived as being too poor to exploit (Shrivastav: 1970).

While *Mughal* supremacy eclipsed by the growing power of *Marathas,* the latter ruthlessly suppressed all resistance, including of the tribals. However, the *Marathas* did not remain united for long. The Peshwa, Holkars and Scindias fought with each other for supremacy in Malwa and Khandesh. During early nineteenth century when the rains failed and famine stalked the land, Bhil took to the hills and from their stronghold descended down periodically to loot. These guerrilla raids of the *Bhil* upon rich plains were a thorn in the flesh of the *Maratha.* The bloodthirstiness of the *Maratha* against the *Bhils* indicates that the exploitation of tribals had started long before the colonial period. A series of wars between the British and the *Maratha* -- with *British* playing off one *Maratha* faction against another -- culminated in November 1817 when the Peshwa, the Nagpur chief and Holkar rallied to form a united front against British. This alliance of the *Maratha* failed when Holkar's army was defeated in December 1817. After this defeat, Holkar ceded to the British all his territory south of Satpura. In 1918, the whole region south of Satpura hills came under direct British rule. But *Badwani state* with its chequered history kept moving in and out of British rule. In a sense the state neither accepted

British dominance nor did it come under any other rulers, Holker or Sindhia. Till 1947, the *Sisodias* could manage personal powers and hereditary perpetuity to rule Badwani [5].

Between 1820s and 1860s, there were widespread Bhil disorders all over Khandesh, Satpura and *Nimar*. When military action failed to quell the *Bhils*, the British chose to investigate *Bhil* disorders, in order to understand what caused them, through that knowledge, control them, and prevent their recurrence. Thus, a policy of pacification came to be implemented (Shrivastav: 1970). Despite British co-optation of some *Bhils* into an indigenous force like the *Bhil corps*, and their deployment against other *Bhils*, resistance continued unabated throughout the region even after 1860s. Economically, the things were a lot worse off for the Bhils.

There are other reasons for Bhil insurgency. First, the '*bania*', the trader moneylender, became ever present in tribal life, both as financier of agricultural operations and as a local agent for the collection of land tax (Baviskar: 1995). The *bania* became the instrument of worst process of tribal exploitation, in nexus with state, to extract surplus[6]. Second, with the colonial rule, the authority of the headman, *Patel*, to permit fresh clearings in the forest came to be abrogated and was instead vested in state officials. In the process, property rights were sharply redefined. Tribals were increasingly excluded from the forest and their customary use rights restricted. Land was leased to contractors whose activities turned vast tracts of forest into semi-barren land. With the expansion of the railways (1870-1910) also resulted in the widespread destruction of forests and the beginning of the process of tribal land alienation. Third, the British had tightened the system of taxation; both where they ruled directly as well as in areas managed through the Rajput rulers. This surplus extraction had added to the miseries of tribals. And lastly, collection of excise duties was given out on contract to the *bania* who would advance loans to the *Bhil* in exchange for first rights to their produce. The *bania* who were intermediaries between the administration and the people, encouraged taxpayers to grow market oriented cash crops that were more risk prone during scarcity. The increasing burden of taxation, depletion of natural resources and land alienation, and extraction of *bania* made survival even more precarious than usual, necessitating seasonal migration to the far off places during the bad agricultural years.

Bhil insurgencies consisted of looting and plunder of non-tribal villages in the plains. The *Bhil* had been pushed from the agriculturally more productive plains to the poorer hills because of British policy of encouraging immigrant *Patidar* settlement on fertile Narmada plains. From that position, the non-tribal plains below were plump and prosperous targets. This resistance, however, was not directed

against the British, but against the rich villages that could be attacked more easily and profitably (Baviskar: 1995). This is also an indicator of the distance and suspicion, born out of experience of the *Bhil*, for the non-tribals.

Around 1870 tribals were encouraged to stop shifting cultivation and settle down on forestland [7]. Most of land cultivated by *tribals*, even today, consists of a part off depleted forestland. Such encroached cultivation is essential to subsistence in land-starved economy. Encroachment though results in deforestation and soil erosion, it is the only way out when opportunities are none and resources are lacking. The necessity to encroach forestland need to be appreciated within the social frame that values agriculture and the autonomy it provides. Agriculture is the main source of livelihood of the tribals. But agriculture is difficult in the hilly terrain for, cultivation is practised without terracing the slopes. As a result, only a small part of the available land that is relatively plain has capability of retaining moisture and exploiting its yield potential. Market oriented high yielding crops like cotton, soybean and wheat are grown on these fertile plots. In rest of the slopes, that constitute bulk of the cropped area, traditional crops like maize, pulses, bajri, jowar and groundnut is grown. Agriculture is rainfed and energised wells serve less than 10 per cent of the cropped area during *rabi* for wheat. Since land productivity is poor and monsoon failures are frequent, livestock and migration constitute major coping mechanism. The ownership of livestock varies. Yardstick of wealth is the number of cattle, goats and hens that a family possesses. Goats are important assets that can be converted into liquid money during times of shocks. The forest by and large has depleted but wherever accessible is the source of fodder, fuel, fibre, fruit, house-building materials, medicines *et cetera*.

Demographic pressures amongst the tribals have resulted in rapid fragmentation of agricultural land. The fragmentation of land has become a source of chronic poverty in the community. With poor resource base, seasonal migration provides much needed stability to the households. There has been a long tradition of tribal migration in search of employment from the region. While market mechanisms have become more dominant, agricultural productivity depends on the availability of fertile land and use of seed-fertiliser technology on it. Fertile lands in the tribal villages are scanty. Thus, seasonal migration becomes necessary for monetary supplement to the limited production base. During scarcity years, even well off tribals have to resort to migration. It is a necessity for about half of the households that have low access to land assets.

Contemporary Movements

Colonial marginalisation of tribal interests in the *Nimar* valley has already been discussed in the preceding sections. After independence, the ways of administrative set-up did not change, though the rational of development [8] did. Independent India inherited an economy pervasive of intense poverty. Agricultural production was stagnating and productivity was falling (Blyn: 1966). Industrial sector was small and its traditional manufacturing and trade was stunted. Moreover, the trade and infrastructure were designed to feed its colonial interests. Modern industry was discouraged and the regime flooded the Indian market with low cost industrial goods that further depressed indigenous industry. The capability of the industry to absorb the work force was marginal. Reduced death rates and increased pressure from growing population fragmented the land and landless class increased rapidly. The system of collecting agricultural tax reinforced these tendencies. Consequently, agriculture -- the dominant sector of country -- was characterised by a large labour-force tilling small and fragmented plots with seed varieties just capable to feed its growing population.

This scenario was responsible for a desire and hence choice of development strategy in India. Few pressing ideologies also influenced the choice. First, false optimism with respect to capabilities of agriculture originated due to good rainfall, and achievement of low targets fixed during 1951-56; Second, structural constraints of agriculture were wrongly identified as *`slack' between* average and higher levels of yields that some farmers have achieved (India: 1959). It was wrongly presumed that the agricultural technology existed in the country and the *`slack '* was due to inadequacy of supplies and the manner of its usage; and lastly, was the tendency to equate modernisation with industrialisation.

The debate over the development strategy after independence was guided by these considerations. The prime need before the country was to `accelerate the rate of material capital formation'. The limiting factor in this regard was low saving. It was argued that shortage of saving was mirrored in the inadequacy of production of capital goods. And thus came forward theory behind Mahalanobis plan that considered source of growth was capital goods and the means of growth were allocation of resources for their acquisition. The more resources so allocated, the faster production capacity would grow (Mellor: 1976). The underlying assumption was that with a faster growth in production, benefits would trickle down to the masses and thereby ensuring distributive justice. But the growth remained too little to trickle down.

The situation further deteriorated with respect to distributive justice when second generation problems of new agricultural technology started emerging in mid 1970s. The new agricultural strategy created islands of prosperity amidst mass of poverty. Inequality across group of people and across locations got intensified. Tribals, marginal farmers and landless labourers were losers and so were the areas that remained outside the purview of new agricultural technology. The lopsided investment in Research and Development between irrigated and dry farming technology affected the tribal adversely who depended on dry farming. This capital-intensive approach resulted in inequality and concentration on the one hand and insensitivity and violent social disruption on the other. Alienation, deprivation and inequality, it can be argued, are inherent in the strategy of Indian development.

This pattern of development has fundamentally altered three crucial bases of production: water, land and forest[9]. Moreover, the tendency of the government to consolidate its power over resources is also shown in its support for large irrigation projects. These interventions have further affected tribal interests adversely. The critical relationship between the tribal, environment and development led to ideologically driven struggles that brought together concerns for conserving nature with issue of justice. The tribal of Madhya Pradesh, including of *Nimar*, has a history of revolts (Dubey: 1998). In contemporary Madhya Pradesh despite numerous interventions by state, movements against state policy have been quite successful. Small informal loans supplied by *bania* during scarcity or input credit on failed crops with vivaciously high interest rates end up tribal debtor losing his land. The immigrant *Patidars* are settled on the fertile alluvial lands in the Narmada plains whereas hilly unfertile dry lands are left to the tribal. The rapidly increasing tribal population moved into the forests that, since Independence, have come to be fully under state control. Tribals who cleared forest areas for cultivation now face charges of encroachment[10]. Control over forest is a major contention that has brought into play civil society institutions like the *Adivasi Mukti Sangathan* (AMS). On the other hand, displacement due to large dams in the region has rationalised the presence of the movements like *Narmada Bachao Andolan* (NBA), an NGO that has provided alternatives in existing development paradigm.

Development, environment and governance have been contested in these struggles in tribal South-western Madhya Pradesh. These concepts have different meanings for the tribals and the state. This mismatch in the definition is contested by everyday practices; violent sometimes but in more sublime way bring out the contradictions of state actions relating to access to natural resources. State as the authority of development, rationalises its action through projects of national interest

and through interventions that rest on out-dated mode of land acquisition, makes the tribals powerless. The struggles against state are placed within the discourse of ecology and development as the case is with *Narmada Bachao Andolan* or are located against state's force and repression as in the case of *Adivasi Mukti Sangathan.* These struggles are able to mobilise *Bhil, Barela and Bhilala,* and have gained support from a number of institutions outside the region (Baviskar: 2001). The success of these initiatives is mixed in weakening of the state repression and development initiative.

The *Adivasi Mukti Sangathan* attributes tribal oppression to their powerlessness before state and market. Corrupt revenue officials, brutal policemen and foresters, poor education facilities and failing health services make up a system that marginalises tribal. In the last three years, the political activities of AMS have brought it into direct confrontation with these power elite. The AMS has successfully compelled the government to retrieve tribal lands and other property that had been taken over by moneylenders. The campaigns of the AMS forced the government to suspend several corrupt revenue officers, policemen and forest officers.

To counter the AMS, the non-tribal deputy chief minister of Madhya Pradesh, Subhash Yadav, organised the *Adivasi Samaj Sudhar Shanti Sena* (ASSSS) in 1997. Commercialisation of country liquor replacing home made *Moudee*[11] has assumed notoriety in the *Nimar* tribal belt. The anti-liquor campaign of AMS had resulted in the closure of legal and illegal liquor vends in around 250 villages with considerable losses to both vendors and their protectors. One such 'injured party' was *bhanjgadia patel*, the hereditary tribal headman, of Kabri village and the block Congress committee president. The AMS took the battle to *bhanjgadia*'s own door when its members in Kabri declared that no liquor would be sold in the village during *Indal*, the most important tribal festival. The campaign turned violent and had to face state repression. The incident was reported in media as rivalry between two tribal groups. Unlike *Narmada Bachao Andolan*, the *Adivasi Mukti Sangathan* is declared by the state an armed struggle that is trying to misguide tribals (Baviskar: 2001).

The campaign of the Narmada Bachao Andolan started with Sardar Sarovar Project in Gujarat[12] in late 1980s and took a decisive form in Madhya Pradesh with the construction of 400 MW hydroelectric plant at Maheshwar. This project would submerge 61 villages, about 5000 hectare of rich agricultural land in *Nimar* plains that would adversely affect livelihood of 2500 submerging households. The NBA started mobilising project affected persons (PAPs) in the submerging villages for futility of this unsustainable pattern of development that results environmental destruction as well as serious relocation and rehabilitation (R&R) problems from mid 1990s. The successful campaign around these issues forced the Madhya Pradesh

government to review the project and suspend the work on the project in early 1998. The success of NBA campaign had three major factors. First, the Maheshwar campaign was an extension of a larger process against the state's unsustainable approach of development that brought together national and international NGOs, environmentalist and the PAPs. Second, it brought in forefront the issue of involuntary displacement, outdated mode of land acquisition, and human rights violation of the PAPs. Lastly, all through out the campaign was projected as non-violent struggle of tribals against environmental distraction.

The differences in these two struggles are acute. While Narmada Bachao Andolan campaign was instrumental in making the state realise its mistakes, the *Adivasi Mukti Sangathan* turned out as a violent campaign between fighting groups of tribals to gain supremacy over each other. Despite these differences, the effect of the two campaigns within the tribal community of *Nimar* has been binding. The campaigns created social capital in the form of closer ties between the communities, despite serious economic differences. When it comes to non-tribal intervention in their affairs, no outsider shall be able to create space, no matter how harmless it could be to their land and livelihood, if there is even an iota of misgiving. Notwithstanding the changes around them, this suspicion is neither unjustified nor detrimental to tribal livelihood.

Commons and Community

Depletion of tribal resources -- land, forest and water -- has a history. After independence tribals have lost control over forest because of the Forest Laws. The *PESA* transferred the power to manage natural resources, including land, water and forest to the community in accordance with its tradition and in harmony with the provisions of the constitution and with due regard to the spirit of other relevant laws for the time being in force. This section argues that even after reforming political governance, the existing forest laws have not allowed the control of forest to pass to the community.

Kirchali had a dense forest adjoining the village about 20 years back. Today it is a depleted thin forest about a km away. Depleted though, the remains are still sufficient for meeting the timber, fodder and fuel needs of the villages around the forest, including Kirchali. As the forest falls under control of forest department, the administration of the forest does not fall within the purview of *Gram Panchayat*. Entry to forest has been restricted and any use -- in the form of wood, minor forest produce, fuel and fodder -- is deemed as illegal by the forest department. Pospur, on

the other hand, is surrounded from all the four sides by steep hills. A few decades back the area had forest but today it is barren. The forest department is trying to rejuvenate this forest by creating undisturbed natural rooting environment and also by sapling plantation. The upper hills are under the administration of forest department, whereas the lower reaches including valley is administered through *Panchayat*. The lower reaches are the only land that can be brought under agriculture. The community, a few years back, had access to upper reaches of the hills for grazing animals as well as for wood but now the entry to the upper hills has been restricted. This was done mainly to restrict the entry of the cattle that destroyed the forestation, as unrestricted movements helped gully formations and erosion of thin topsoil that holds the vegetative growth.

In these villages, the institutional forest and watershed committees, as a part of *Gram Panchayat*, are in place. But these committees are not empowered to control the structure created by forest department. These resources, though being within villages are out of the reach of the community. Though the control of these resources should have been with the *Gram Panchayat* and its committees, forest laws govern their management. The community in Kirchali is, nonetheless, using the forest resources, illegally. The villagers are not too resentful of this access loss to forests. But in Pospur, the community is much more agitated about the restrictions and more aware about its rights. The distress also provided support to protest against access failure to natural resources. But their inability to manage their resources is, however, neither because of their illiteracy or lack of awareness about the laws. In a sense, *PESA* is a legislative Act that has nor *locus standi* of its own; the overlapping power of the state forest department is crucial impediment in passing control of forest to the community, without reforming it the grassroots situation may not change.

About half of hundred two villages falling in the *Pati Janpad* are out side the control of decentralised governance. These villages are called *Van Gram,* are administered by the forest department. Unlike *Panchayat* administered villages that get a life long lease of the land, agricultural land in a *Van Gram* is allocated to individual households at maximum 6.25 acres for 15 years and the lease is renewed afresh by the forest department. The forest officer of the range manages land, water and forest in these *Van Gram*. Community's access to forest for timber, fodder and fuel is much better in *Van Gram* than forests falling under Panchayat administered villages. Community is aware about the denial to control their resources and the consequent hardships caused by it. But it accepts the superiority of laws of the Forest Department.

The access failure to natural resources needs to be viewed within the context of the efforts of PESA to empower the community as well as discredit the state receives due to its repressive ways. Discrediting of the state the state originated due to a flux of tribal migration into these virgin hills, even as late as during early 1950s, in search of arable land that has put the community as well as the commons into an impasse. Both the livelihood and the commons have transformed over the years into a new politics of environment. Tribals who cleared areas under the control of the Forest Department for cultivation now face the charge of being encroachers and destroyers of forests. Control over land, especially forestland, is highly challenged by the *Adivasi Mukti Sangathan*. On the other hand, the process of empowering community was a new approach of managing commons; it was meant for changing laws to accommodate community participation in governance of the commons. The theoretical strength to these steps has been provided by the seminal work of Gadgil and Guha (1992):

That (a) the use of natural resources with a monopolistic command by a few influential castes in the society was in fact a prudent way of natural resource use for, it provided checks against over exploitation by others; (b) the traditional societies had non-exploitative and harmonious relationship with nature whereas modern society has subordinating relationship with it; (c) the fissures in a traditional society are naturalised by non-competitive nature of their interests; (d) any violation in the traditional use of nature is an aberration rather than the traditions; and (e) an opportunistic behaviour by traditional communities is an infection of the modernity. Implicit in the formulation are first, variations of uses and abuses of commons arising from the binary nature of local, traditional, women and tribal versus outsider, global, state and market. The traditional amounts to sustainable use of commons, whereas commercial exploitation by state is implicit in the arguments (Agrawal and Sivaramakrishnan: 2001). Secondly, the naturalising non-competitive behaviour of the society reflects that conflicts over the resources were actually conflicts over sustainability of resources. The dichotomy, thus, provided strength to two differing ways. The civil society took a leaf out of the ecological history of India and attributed powerlessness of tribals before state and market as the cause of tribal access failure to natural resources. This resulted in the NBA and AMS mobilisation of tribals against repressive markets and state. The other process influenced by the construct was the appealing aspect of traditional communities with conservation; and so started joint management where communities have become equal partners in

management of natural resources like forest and water or in Madhya Pradesh that *PESA* gave control of commons to the community.

The above frame, however, de-links the environmental politics from communities' livelihood struggles. The uniform tribal character as protector of nature artificially homogenises and hides the social identities and conflicts. On the other hand, treating livelihood and environment simultaneously could provide understanding on how both apply to each other, so that one can ask what do we mean by sustainable; sustainability of livelihood or environment!

It can be argued that economic growth adversely affects the natural resources because of critical interactions between livelihood, technology and nature. But the implications of environmental degradation are conceptually different in remote tribal economies than in the dynamic non-Remote Rural Areas. In the former situation (RRAs), the livelihood processes influence nature not because of over-use *per se* but because of share survival of different participants. Stagnation and low level of economic activities are, thus, the cause of degradation. This calls for developing new opportunities that create *interest* for protecting nature. In the latter situation (non-RRAs), nature degrades owing to uncertainty of availability of natural resources to various segments of the society. Over-use of nature is not because of availability of resources *per se* but owing to mistrust and uncertainty about their availability. In order to maximise his or her returns in this uncertainty, everyone over-uses the nature. Regeneration rests on sharing information with trust between community, classes and social groups that have varying perceptions about the access to commons.

It will be worth understanding how these macro processes are influencing the micro realities.

Governance and Social Capital

Unfreedom

The political leadership in Pospur-Gupsee village Panchayat is with a woman *Sarpanch* from Gupsee village. She surrogates the political interests of her husband who is a representative of Pati *Taluka (Janpad) Panchayat*. He, a seasoned political figure in the tribal area, guides her in her political affairs. Though the Panchayat headquarter is in Pospur, the village is neglected with respect to amenities, facilities, investment and agricultural infrastructure. A large part of investment is diverted to Gupsee [13]. Moreover, Pospur is not intensely divided on economic lines. On the other hand, though the affairs in Kirchali-Ramkula *Panchayat* are no different[14], the individual initiatives in technology transfer in agriculture have resulted in significant

prosperity to a few in the village. Since both the *Panchayat* and the *Sarpanch* are located in Ramkula, Kirchali, like Pospur, is also discriminated against. The community keeps itself detached from the affairs of governance in both the villages.

Economic stratification in Kirchali is well-developed and visible when one moves in the villages during early *rabi* season. The two hundred plus household village looks deserted and unmanned, except for about thirty households that are engaged in wheat and gram cultivation; pre-sowing irrigation and sowing of the crops are the major activities that engaged some of the family members. These households have perennial source of irrigation, obtained at a very high cost and risk. Kirchali is an un-electrified village enclosed from two sides by Ramkula and Surana villages that have electric connections. Individual initiatives have resulted in intensive investment in irrigation and energising the farm in order to reap economic gains. Two families, the *Patels* and the *Bhagats*, took the early initiatives in investment in agriculture in Kirchali. They have strong political clout and could get cheap institutional credit for a risky agricultural investment in digging well and energising it. Demonstration of economic gains attracted others to come forward for such investment; a substantial investment is involved in such transfer of agricultural technology that includes digging well in rocky terrain, drawing electricity line from some distance, investment in new seed varieties and yield increasing fertilisers. All this has to be borrowed at a high interest and sizeable risk [15]. The risk involved in digging of well in Kirchali is high. But the economic incentives in the form of cropping pattern changes and increase in yields keeps the desire to invest alive. Half of the wells in Kirchali provide water only up to November. The perceptions on size and certainty of economic gains of investment attract new entrepreneurs; as such, there are individual attempts to draw electricity even from a distribution point that lies two km away. The community in Kirchali is stratified on economic lines; there are about 25 wealthy families with perennial irrigation while 100 poor households have less land and no irrigation facility. The middle constitutes of average farmers. Each group has its own agenda; the rich want cheap labour, modern yield increasing inputs and investment so that their agricultural income is protected. The poor, on the other hand, want employment and labour opportunities nearby so that they need not have to migrate. Such economic stratification has not yet developed in Pospur. The irrigation well failures are very high in Pospur, and its implications -- repayment of loan to *bania* at an exuberant interest -- are disastrous. Consequently, there are only a few irrigated farms in Pospur; the economic homogeneity of the community is, by and large, undisturbed.

Sen (1999) has conceptualised that unfreedom -- economic, political, social, transparency and security -- can pull people into poverty. Sen's proposals of unfreedom include both inability of the community to exercise its rights freely as well as opportunities of individuals to operate freely for, poverty can manifest by unavailability of services at the macro level as well as access denial at the micro level. Political unfreedom can surface by micro processes of lack of freedom to choose who governs as well as macro principles of how to govern. Political freedom, it can be argued, could create an environment that helps community participate freely in the process of governance: choose the leaders that are committed; plan and manage their resources for local development; criticise the approach and monitor the functions of those who are governing. If the political process is free, it can help fulfil the expectation of the community. Political freedom, thus, can be operationalised as freedom to individuals to (a) choose who governs them; (b) be governed in a participatory process; (c) plan and manage their natural resources; and (d) be able to criticise and organise protests against uniformed decisions so that gains are equitably distributed within the community. One can use the findings of this chapter to evaluate the extent to which each of these freedoms has successfully been attained.

Findings of the paper reveal that the process to choose those whom the individuals want them to govern is free and fair. People have used their franchise in deciding who would govern them freely. But the process created fissures in a homogenous community with social, political and economic interests. Once the political leaders took over their responsibility, the process of decentralised governance, instead becoming participatory, became highly centralised. The gains of the decentralised governance have been too few and highly iniquitous. Community's expectations remained unfulfilled and participation slowly dwindled. The role of Sarpanch, and the exclusive group of his people sharing interest, has made people lose their faith on *Panchayat*. Political decentralisation has not only fractured the homogeneity of the tribal but has also made governance highly centralised.

The community does monitor how the governance is neglecting it. But it, however, does not get enough opportunity to register its protest about such governance. It is only once in five year that they get the freedom to punish bad governance by rejecting those involved in such governance. Nevertheless, the community has no freedom in the process of planning programmes it needs. The blame for this unfreedom to decide what and how the local development should take place falls at various levels. First, the process of centralisation at the Panchayat level is too overpowering for community to exert pressures for participatory process to begin. Secondly, the quantum of financial allocation is too thin to meet the demands

of the community. Third, the desire of the bureaucracy and the elected representatives, at higher echelons, to control the activities and finance of the *Gram Panchayat*, does not allow the independences to the *Panchayat*. Lastly, existing laws that govern the natural resources obstruct the process of giving their control to the community.

Creation of Social Capital

The main support for social capital formation in tribal region comes from the pattern of settlement of villages. Each of the hamlets comprises of close relatives who easily forge their social solidarity norms and frame of *Jati Panchayat* [16]. This form of settlement pattern, where social relationship converts into association, is capable of debating issues at community level. This apart, following processes is instrumental in creating social capital and its varied manifestations. First, presence of left-oriented civil society that helped easing economic repression. Second, dependence on informal community legal structure that binds together people. Lastly, lack of development of the region and livelihood struggles gave space to social elites to oversee emerging political and economic leadership.

The space available to social hierarchy in non-social decisions has emerged not because of enactment of *Gram Swaraj* or *PESA* for, these processes had marginal impact on community involvement in development decisions. State inaction in this region has helped the practice of informal community consultation. The informal community consultation in development is more recent phenomenon forced by civil society mobilisation in the area. This mobilisation was the result of development-induced displacement, awareness campaign on depletion of natural resources and repression of tribal rights by the state [17]. State failures made the contemporary movements succeed in mobilising community to protest against the access failure to natural resources on the one hand and tribal exploitation on the other. The influence of *Narmada Bachao Andolan* and *Adivasi Mukti Sangathan* in mid-1990s has changed the political discourse of the region significantly. Earlier, the newly emerged political hierarchy, through state apparatus, would take every decision without even consulting the individuals that were affected. Such changes came first in the form of agitations of activists for redressal of tribal grievances. In late-1990s, the situation improved further; individuals themselves started going to concerned officials in *Taluka Panchayat* [18] for all decisions that affected them. But the more recent changes go a step further. When the state-run watershed project in Pospur, through Pospur-Gupsee Gram Panchayat, gave a perception to the local community that their access to natural resources are being adversely affected by the structures,

the social hierarchy prevailed over the political hierarchy and the community asked the project authority to wind up the project. The community had the last word. The debate was not only on access failure to natural resources but also about the presence of outsiders in the village. The fear of outsider has brought the community together.

The consequences of development initiatives are rooted in the tribal psyche; the fear of displacement due to Sardar Sarovar Project is wide spread in the region. Also imprinted in their psyche are the state repressions on the issue of natural resource management. Both of these experiences -- former contemporary and the latter historical -- are painful. Response to outsiders is cautiously guarded, though varies in both the villages. While the inhabitants of Pospur are vocally against any outside presence, the community in Kirchali is more tolerant to outsiders. Community in Kirchali, as compared to Pospur, seems to be much more calculative for prospective gains accruing to them because of outside interventions. Although in both the situations social hierarchy -- forced by the community at large and also because of pressures of a few well to do influential -- resists outsiders, the nature and extent of economic stratification guides their behaviour. Apprehensions about outsiders in Kirchali are related to considerations of possible economic gains that individuals could get but in Pospur the considerations are to protect the community. The attitude of the social hierarchy in Pospur is loaded with caution and apprehensions that outsiders would acquire their resources. Community leaders are polite but firm in asking not to disturb them[19].

Notwithstanding the catalytic role of civil society in creating social capital, the relationship between civil society and governance could be vicious as well as virtuous, as would be seen. The question is under what conditions the social capital manifests itself in the political domain in a virtuous pattern.

Informal Institutions

The second process that helped social capital formation is weak institutional arrangements like constitutional and legal framework, and administrative structure in the region. These institutions in a tribal society have both formal as well as informal features. Experiences with these formal institutions [20] have also resulted in lack of faith of the community in these institutions. Moreover, remoteness to state in terms of non-availability of legal agencies and their fairness has resulted in dispute resolution by communities' own informal structures. The community institutions control decision on petty crimes, land disputes originating from short-term land transitions, divorce and socially unaccepted relations. This is partly because the legal

apparatuses in the area are lacking and partly because traditionally the effective ways of settling these disputes are customary. The village social justice committee[21] created under decentralised governance has recognised this role of the community. This kind of dependence on informal non-legal structure that exercises its power through social hierarchy also strengthens the social bond within the community.

Though the informal legal and institutional arrangements exist in both Pospur and Kirchali, the role of economic and political leadership has been different in these two villages. Consequently, the local community has become overpowering in Pospur. In Kirchali, where state presence is regarded necessary in providing electricity to energise wells[22], economic leadership dominates. The individualistic approach towards economic prosperity, which consolidates productivity gains, is regarded more important than social processes. The community initiatives do not pose any challenge to economic leadership. In short, social capital exists in the tribal areas, albeit in dormant stage.

Social Exchanges under Market Failure

Lastly, the state and market failures have influenced differently life and livelihood of the tribals in both Pospur and Kirchali. As compared to Kirchali, the relative remoteness of Pospur and its poor agriculture has resulted in much trust and cooperation for survival. The individualistic approach in Kirchali also made livelihood struggles less painful; relatively few households resorts to migration in Kirchali than Pospur. The interaction between economy and society has a positive influence in every day livelihood struggles in Pospur. On the other hand, in Pospur the interaction between economy and the polity is marginal. Livelihood struggles have forced about a third of the households to migrate outside the village for almost over seven months[23]. This hardship is also the cause of a process of developing trust and cooperation. Migration pushes agricultural land into short-term institutional arrangement like leasing, renting or mortgage. These short-term land transactions are between trusted close groups. Short-term land transitions are economic arrangements between the migrant family and the family that manages his land in migrant's absence. But it also provides necessary representation to the migrant in social spheres; it acts as *social exchange* [24].

The contract that governs the land transitions through non-market institutions significantly varies across households. The urgency to come to contractual relationship between the two parties -- the migrant and the tiller -- decides the arrangements that would guide the economic exchange. In last few years, the short-term land transitions, both in Pospur and Kirchali, have increased fivefold. Crop

failure is one reason for this development but equally pressing is fragmentation of land when family divides. Small land holdings during droughts are not only uneconomical to operate but also have a cost that makes alternative livelihood options difficult to negotiate. Consequently, the owner enters into an agreement with a prospective tenant so that he earns some rent as well as uses his family labour properly. Short-term land transactions, however, are negotiated not only within village but also within closely related families. Thus, the owner is free to move out of village with his family in search of some employment opportunities. Such movements help the small landholder optimise returns to his family labour. The economic gains to a tenant, apart from sharing the output, is in the form of claiming rental value for his bullock use and interest on capital used to purchase out of pocket inputs. During the absence of the landowner, the tenant is morally bound to inform the owner about important events that affect him; such events are sickness of aged parents, social events, and situations that have employment implications. During a crisis, close relatives do provide support to the remaining members of the owners' family as a matter of custom. On the other hand, the tenant spends money, when necessary, on behalf of the migrant [25]. In the process, land in exchange engenders a symbolic presence of the migrant household in the village and his representation in social hierarchy without his being physically present. The power to till land of a migrant protects economic interest of both the migrant and the tenant but in the exchange, the migrant also obtains control over his social interests. The most preferred arrangement[26] is crop sharing because it makes migrant's links with the community preserved. In order to force the contract in terms of labour use and sharing output[27], the migrant has to make a number of trips to village, especially during peak harvest season. That re-establishes his severed interests in the social set up in his absence.

Expressions of Social Capital

The social capital in Pospur, nonetheless, seems to be developing and providing dominant support to traditional social hierarchy to exert its power on political hierarchy. In the process, programmes that could have positive economic implications to the well being of the community are resisted. The relationship between community and the society in the village did provide impetus to dormant social capital to mobilise but in local development affairs, the social capital could only manifest in the form of resistance to development. This is something to admire as well as to criticise. Does it not mean that the social capital, in its negative aspect, puts people aloof from outside world and development? This seems to be keeping the community frozen in time and deny the social capital a space in development. The

criticism seems to be partially true. Inasmuch as the state repression and access failure to common resources are the basic constraints in well-being, the importance of emerging social capital cannot be overemphasised as an important force behind their united struggle. But, the desire for change is also present in Pospur. This has resulted in diverting the social trust and solidarity in the community in the form of emerging organisations that take advantage of non-tribal institutions, technology, markets and programmes.

The increasing popularity of *self-help groups* in Pospur is an indication of parallel leadership that is emerging. The first is the traditional social leadership that helps the social capital preserve natural resources by blocking explorative non-tribal entry in the village. Another is organising tribals to take advantage of existing government programmes through *self-help group*[28], that too against the wishes of the traditional social elites. Though both processes have extended social base, the latter is not the legitimate successor of the former. Despite the fact that both forms of social leadership are exploring a new base of social relations, the latter does not directly contest the supremacy of traditional social elites and their ways of employing the social capital. There is remote possibility of various forms of leaderships coming together but there is a possibility that, like Kirchali, the traditional leadership may be influential only in social processes; the economic processes may be governed by newly emerging leadership. It shall, however, be difficult to define operation of *self-help groups* in Pospur as an indicator of social capital formation because these groups do surrogate the interests of individuals. As a result these groups are seen as decelerating the trust within the community. Since these groups function more as economic units, they stratify the community on economic lines. And thus, the associational value of self-help group is colonised by the competitiveness of economic enterprise. The economic stratification counters the process of trust building in the community. Such an association creates a process where the moral capabilities of the community reach its limits to act as an impartial source of virtuous agency. Self-help groups, thus, should not be regarded as a source of social capital. This, in fact, is seen as a process that erodes homogeneity that is a prerequisite for social capital to manifest [29].

The social capital as it manifests in Pospur may not be operationalised by indicators like community engagements with organisations and associations like religious *bhajan mandalies*, farmers' organisation and *self-help groups*. It has to be observed in day-to-day involvement of community in the affairs of the village. As noted earlier, the homogeneous social hierarchy has a potential to create space for community involvement in politicising a debate. But it does not ensure participation

in the decision-making. For, a vibrant social structure is present in both Pospur and Kirchali but it is only in Pospur that one witnesses the manifestations of social capital. Moreover, the way the social capital is employed in Pospur only strengthen the fact that (a) social capital may not necessarily manifest in virtuous imperatives; (b) all associations may not likely create trust and cooperation in the society, some with economic interests inbuilt may even stratify the society.

These findings are in variations with what Pai (2001) has tried to establish. She observes that social segmentation emerges as a significant context determining development of trust and social capital between groups. Findings of this study reveal that trust and social capital within tribal context is omnipresent. Economic segregation and its intensity play a dominant role in manifestation of social capital. It remains unutilised under some conditions, is used in virtuous pattern in some and vicious in others. These findings, however, corroborate observations of Rudolph (2000) that not all associations are likely to create trust and cooperation with positive implications.

Emerging Trends

Social capital in tribal context is omnipresent. Its utilisation in development decision-making and more importantly its pattern of manifestation would be contextual to the milieu where it is operational. Findings of this study reveal that (i) factors like the pattern of settlement, importance of social norms, and failure of state have helped to perpetuate the trust and cooperation in the community, (ii) civil society has played a significant role in making this capital available for wider use, and (iii) complexities of economic stratification and efficiency of decentralised governance are contextual for social capital to manifest. Three different forms of leaderships have emerged in this tribal society: the traditional, the emerging economic leadership and the political leadership. All the three have created their own space in the community. But their relevance is contextual to their ability to deliver. The efficiency of working of political decentralisation is not different in both the villages but the political leadership is unable to use social capital for the betterment of condition of people in both Pospur and Kirchali. Not so much because of the nature of the leadership but because the policy and programmes it has introduced are inappropriate and non-effective. What, however, is different in the two villages is the individualistic economic efforts in Kirchali that have paid sizeable benefits as compared to Pospur. The dormancy of social capital in development decision making in Kirchali is significantly influenced by intense economic segregation that has given

a strong message to community that well being is a function of individual efforts. In contrast, in economically homogenous Pospur, the social capital is much more vibrant.

But the trust and concerns for fellow members in both the villages is in perpetual conflict with political hierarchy which is self-serving. In Pospur, this conflict has vibrant expression of vicious as well as virtuous pattern of social capital. On the other hand, in Kirchali the social capital has remained uninvested and dormant. Despite the fact that the social capital has positively influenced non-social events since early 1990s, its manifestations in governance have been marginal. One wonders as to why the social capital could not be transferred in the sphere of governance. Answer to this question could be found in an analysis of (a) the nature of benefits that decentralised governance could potentially give to the community; and (b) is it worthwhile to put so much faith in a process that can never address the livelihood problems of the marginalised. Community at large finds the benefits not worth wasting their days' labour [30].

In the remote rural areas, market and state failure has invited intense community participation in informal institutions. This has helped in developing and perpetuating social capital; the informal institutional arrangements that replace markets and formal legal institutions, more often than not, result in mutually beneficial exchanges that helps creation and perpetuation of social capital. The civil society has given the community the needed support for trust and cooperation to be visible in different spheres. The inability of the community to invest its social capital for local development has its roots within the weaknesses of economic and political elites that are individualistic and brings heterogeneity. Given this milieu, if the economic inequality is marginal, the community is more likely to invest its social capital. But if the economic inequality is intense, the social capital remains dormant and under-utilised. Evidences also establish that virtuous and vicious investment of social capital can take place simultaneously.

Following features of social capital are discerned from the study:

> Social capital in a traditional society is omnipresent but remains dormant. Once activated by the catalytic action of civil society, complexities of economic stratification guide its manifestation.
>
> Social capital not only enhances the efficiency of institutional arrangements that have emerged due to market failures but also strengthens the trust and cooperation between groups.
>
> Social capital need not always bring efficiency in governance; it could work in a vicious pattern, obstructing options that are virtuous in nature.

Virtuous and vicious patterns of social capital can manifest simultaneously in one place.

Transfer of social capital from social sphere to political sphere is possible only if gains of decentralised governance are large and equitable.

Findings of the study reveal that: social capital need not always bring efficiency in governance; it could work in vicious pattern, obstructing options that are virtuous in nature. In economically homogeneous and relatively remote rural areas the social capital is much more vibrant. But the transfer of social capital from social sphere to political sphere is possible only if gains of governance are large and equitable. The trust and concerns for fellow members is in perpetual conflict with political hierarchy which is self-serving. As the representative democracy could not prevent the macro processes subsume the micro-variability of the economy, most likely the participatory democracy is a feasible option to safeguard the interests of this closed economy. The participatory democracy has capabilities to convert cumulative unfreedom to distributive unfreedom. *Gram Swaraj* has failed in theory but *Gram Swaraj* must succeed to harness capabilities of the social capital.

NOTES

1 In terms of development, the tribal concentrated pockets of Madhya Pradesh fall at the bottom twenty percent. The Tribal Development Department of Madhya Pradesh intervenes in the area through its tribal sub-plans and the centrally sponsored schemes.

2 Social capital comprises of systems of norms, institutions and organisations that promote trust and cooperation in a community. It is considered a form of capital because it helps in accelerating the process of well being and healthy decision making in the community. Putnam (1993) is the best-known exponent of the concept, though both neo-institutional economists like North and sociologist like Bourdieu was early proponent of this concept. Durston (1998) argues that five important features of social capital:

In economic exchange, social capital reduces transaction cost arising when dealing with outsiders in unregulated environment; it helps in honest and efficient governance. Social capital strengthens each time it is activated; social capital, like culture, is perpetuated and it could take a virtuous or a vicious path. Repeated social interaction virtuous or otherwise strengthens civic participation or non-participation; and social capital developed in culture or religious spheres is transferable to political or economic spheres.

3 Agriculture being the main economic activity, division of family due to marriage of a son, leads to weakening of economic hierarchy. The newly formed households are relatively resource deficient and rely on social network for support not only in social interactions but also for economic survival; also see Sah et. Al. (2003), for details.

4 This research is a part of larger study on multi-dimensional poverty in remote rural areas (Sah, Shah and Bird: 2003). Macro findings have identified Southwestern tribal belt of Madhya Pradesh as one of the economically poorest region in the country. Badwani district in the region has been selected for in-depth study to understand why and how people in Remote Rural Areas are trapped in chronic poverty. Two Janpads, one relatively developed Sendhwa and one resource poor Pati, are selected for the study. One village from each of the selected *Janpad*, Pospur from Pati, and Kirchali from Sendhwa, were selected based on the relative remoteness; Kirchali is relatively less remote compared to Pospur. Both quantitative and qualitative methods were used in collecting data.

5 Rajput rulers of Badwani were treated with honour by *Mughals* and were given their original powers. These rulers in early 18th century, however, assisted *Maratha* invasion in the Malwa. British took over the state briefly in 1861 to 1873. From 1894 till 1910, the state was administered directly under the British Political Agent. During the First World War, the then Prince of the Badwani state, Ranjit Singh, served the forward line of France. In recognition, he was granted powers to rule again. In 1921 again, the prince received, with hereditary perpetuity, some more criminal powers. After is death, his minor son Devi Singh, was invested with administrative powers. Till independence, the Sisodias ruled the state. In 1948, the state was merged in India. For details, see, (Shrivastav: 1970).

6 The interest rate charged by the *bania* in the region is as high as 50 per cent for four months. A shock in the form of death of bread earner, prolonged illness or failed crop result in the tribal debtor losing his assets; land, silver and animals. The riches and affluence of trading *bania* community in towns of *Pati, Sendhwa* and trading centres like *Chacania, Dhanora et cetera* can be traced to exploitation of tribal by them.

7 In contemporary *Nimar* hills, a large part of cultivation is on encroached forestland. *tribals* do not want to talk about when they settled on these upper hill lands. It is, however, recalled that the most recent tribal influx in the hills has been in last 75 to 100 years. A significant proportion of the resettled households have acquired land

rights by 1970s. But about 10 per cent of encroaches are still fighting for their rights. Vast tracks of the *Nimar* hills are still uninhabited. Population pressures may encourage tribals to settlers on these tracks for survival, fuelling a new confrontation with state. The British made shifting cultivation illegal, reserved the forests and established sources of revenue there (Morse and Berger: 1992).

8 The economic critique of colonial past legitimised the option to govern the new nation state; in order to legitimise their political authority, the Congress assumed the role of central allocator with an aim to remove inequality by a process that resulted in rapid economic growth. The process required efforts and sacrifice by citizens. The *dalits*, the small and marginal farmers, the landless labourers and the tribals were the groups that made the sacrifices.

9 This is how Madhavi, the *Adivasi Mukti Sangathan* activist, rationalises the tribal movement against state repression, see, for details, chapter 3, Sah *et. al.* (2003).

10 The scale of problem is reflected in the fact that in the *Nimar* hills many villages are identified as forest villages, i.e., lying outside the revenue system. In Pati taluka of Badwani district out of 106 villages, 46 are identified as forest villages. Rights of tribals in the forest villages are highly restricted by Forest department.

11 Commercialisation of liquor is a recent phenomenon. As forests have dwindled and opportunity cost of fuel wood increased many folds, *Moudee* – the home made brew made out of *Mouda* flowers -- making has become costly affair. Consequently, purchase of country liquor has replaced Moudee brewing. Bania has also started liquor supply. A section of Tribal population, about 5 to 7 percent, is alcoholic. Country liquor is cheap but is a cause of indebtedness for these households.

12 Sardar Sarovar Project, a large irrigation project costing the state Rs 80 thousand Million in 1986-87 prices, is one of 30 major, 135 medium and 3000 minor dams planned on Narmada river. These projects will displace a large number of families from Madhya Pradesh. Resettlement and rehabilitation of state of the project affected persons has been, casual, to put it mildly (Sah: 1977; 2002).

13 Political leadership in the village is thoroughly corrupt; the popular saying in the village is that during the first year the elected *Sarpanch* renovates his house. Second year an investment in motorcycle takes place followed by investment on agricultural infrastructure -- well and energising it -- next year. Diesel engine arrives next year and a tractor the fifth year.

14 Kirchali is a part of Ramkula-Kirchali Panchayat. The Sarpanch is from Ramkula. The political affaires of the Sarpanch are dealt as if that is his private business.

15 Ramesh, an educated *tribal*, who had to leave his *Talati* training in early 1990s, and the *Patel* with their economic clout and nearness to *Sarpanch*, invested in drawing electricity connections from the nearest distribution point from village Surana. They also are agency between community and the Ramkula-Kirchali Panchayat *Sarpanch* and corner a substantial portion of IRDP loans and subsidy meant for the community. Over period of time other villagers, like Vesta, Girdhar, Jagdish and Ristan came forward and invested on well and energising it. Vesta purchased electric motor (Rs 3200) two years back and invested Rs 6000 for drawing electricity. He repaid the loan within two seasons. In 2001 when the availability of water from the river bed became uncertain, Vesta thought of investing in digging the rocky fields for water and completed the well (an investment of Rs 10,000). He got water but not for the whole crop season. Vesta intends to invest some more capital for deepening the well. Since his land is irrigated all the borrowings were repaid within two seasons. He was talking a ratio of 2 kg seed resulting in 22 quintals of wheat.

16 In fact, *caste Panchayat* along with *traditional village Panchayat* are the two tribal institutions that promote community participation in all social decision-making. See, Sah *et. al.* (2003), chapter 3, for details.

17 Conflicts over natural resources between the state and the community in this tribal belt have a long history. However, the exploitation of natural resources is also from within. But the solidarity created by *outside* (state and *bania*) exploitation did bind the society. Two of the most active NGOs that are mobilising the tribal in the area are *Narmada Bachao Andolan* and the *Adivasi Mukti Sangathan*. While the former is mobilising the tribals on failures of development paradigm adopted by the state, the latter is organising them against natural resource depletion, state repression and their rights. See, Sah *et. al.*(2003), chapter 3, for details.

18 A discussion with the Chief Executive Officer of Pati *taluka*, where the Advasi Mukti Sangathan is active, brings out the fact that awareness about tribal rights has grown in the area significantly over last 7-8 years. Earlier a tribal would come to the taluka Panchayat always accompanied by the activists of AMS, now they come for any work their own.

19 Even during the fieldwork of the study, because of the nature of the investigation where land, assets, livelihood *et cetera* were being discussed, the community was apprehensive of outsiders' presence. There was a perception, in both Kirchali and Pospur, that such investigation is part of state activities to understand pre-submergence situation so that resettlement package can be identified for individual households. In Kirchali the community accepted the team after discussions on the nature, scope and implications of the study. But in Pospur the situation became ugly and at one stage the social leadership forced the team to abandon its work. In no uncertain terms it was told to the team that the community is happy in Pospur living as they are, earning their livelihood based on thin agriculture, some on-farm labouring and migration. Fortunately, a group of economic leaders, especially those who have had benefits of *self-help group*, could feel that the study is not for acquisition of land. The social hierarchy in Pospur had strong message: '*Please leave us as we are. We do not need any outside help for our livelihood. We are content with our life and livelihood despite poor agriculture, hard labouring and degrading migration. Do not disturb us*'.

20 This is especially true for forest guards and the police. What is commonly discussed in the village is that traditional local conflict resolution methods are far more just for, the police will settle the dispute by taking money from both the parties and would be biased against the group that has given less bride.

21 Eight committees deal with decisions relating to agriculture; health; infrastructure; education; social justice; defence; development; and assets. The political decentralisation has accepted the role of traditional leaders in both Pospur and Kirchali. Traditional leaders are a crucial part of Village Security Committee that deals all disputes emerging in the village.

22 In Kirchali, individuals are investing over Rs 20,000 for digging wells in rocky terrain with high risk of failure and in drawing electricity line from the nearest Distribution Point. There are over thirty individuals that have such connections. This process, though brought economic success to individuals, has stratified the society on economic lines. Remoteness of Pospur, its difficult terrain, high risk and initial failures in such investment has made the village more homogenous.

23 The remoteness of Pospur and poor agricultural base has resulted in relatively large population to rely on migration as a coping mechanism compared to less remote Kirchali. For details, see Sah *et. al.* (2003), chapter 6.

24 Tribal economy is based on reciprocity. Apart from performing economic transaction under market failure conditions, the short-term land transaction,

especially share cropping and fixed rent, also create social trust that works as metaphor for social return in exchange of economic gains. This latter (social) function of this exchange is an important as its formal (economic) function of exchange.

25 A sharecropper, Ramesh, said that I will have to look after the aged parents of my close relatives in his absence in any case, but I will have to bring a doctor and spend Rs 30-50 in an injection or two in case I have leased-in their land.

26 A large number of variations exist when the contracts are agreed upon. With share cropping at one end and mortgage of land at the other, a large number of fixed rent contracts fall in the middle. Depending upon bargaining power of different participants, urgency of the deal to materialise, and perception of cost of enforcing the contract, terms and conditions vary even in a village.

27 Moral hazards are involved in sharecropping: The tribal who is leasing out land would like to ensure that the tenant, as agreed, has applied labour and inputs on the field for he has to share the out-of-pocket cost. Similar is the case when the crop would be harvested and shared for, the landowner has to ensure that he receives the crop output portion as agreed. For enforcing these, the landowner migrant has to either make a number of visits to the village or leave all these monitoring in trust on the other party. In this area the first option is more prevalent, not because of lack of trust but because it re-establishes his ties with the community.

28 In Pospur, seven '*Self-help Groups*' comprising around 10 members each are in operation. Member of these groups contribute Rs. 50 to Rs. 100 per month. One of the 'Self-help Group' has provided loan of Rs. 20,000 to a farmer in order to get his mortgaged land back from a trader. Another 'Self-help Group' has over Rs. 20,000 in a nationalised bank and are in process of receiving a loan of Rs 0.3 million fro goat rearing.

29 It has been argued that associations that draw on inherited identities and solidarities need to be taken into account as associations that may generate social capital. Rudolph (2000) suggests that only those organisations that are egalitarian, non-interest oriented and voluntary associations would create collaborative and cooperative conventions that can and do mediate between individual and social whole or individuals and the state.

30 Migration keeps a sizeable workforce out of the village for over 6 to 7 months. Moreover, iniquitous distribution of benefits and unfulfilled expectations of the community from the decentralised governance make them empathic towards the institution. See, Sah *et. al.* (2003), chapters 6 and 7, for details.

REFERENCES

Agrawal A and Sivaramakrishnan K, (2001), 'Introduction: Agrarian Enviro
Agrawal A and Sivaramakrishnan K, *Social Nature: Resources, Rep*
Rule in India, Oxford University Press, New Delhi.

Baviskar, A, (1995), *In the Belly of the River: Tribal Conflicts over Dev*
Narmada Valley, Oxford University Press, Delhi.

Baviskar, A, (2001), 'Written on the Body, Written on the Land: Violence an
Struggles in Central India', Institute of International Studies,
California, Berkeley.

Blyn G, (1966), *Agricultural Trends in India, 1891-1947: Output, Availability and Productivity*, University of Pennsylvania.

Bowles S and Gintis H, (2000), 'Social Capital and Community Governance', (memio), Department of Economice, University of Massachusetts, Massachusetts.

Dubey K.C, (1998), 'Tribal Uprising and Social Movements in Madhya Pradesh', in eds., Singh K. S, *Antiquity to Modernity in Tribal India, Volume 4:Tribal Movements in India*, Inter India Publications, New Delhi.

Durston J (1998), 'Building Social Capital in Rural Communities', Social development Division, UN Economic Commission, Santtiago, Chile.

Gadgil M and Guha R, (1992), *This fissured Land: An Ecological History of India*, Oxford University Press, Oxford.

India, (1959), *Report of India's Food Crisis and Steps to Meet it*, Ministry of Food and agriculture, GOI, Delhi.

Mellor J.W, (1967), *The New Economics of Growth: A Strategy for India and the Developing Word*, Cornell University Press, Ithaca.

Morse, Bradford and Thomas Berger, (1992), *Sardar Sarovar: The Report of the Independent Review*, Resource Futures International, Ottawa.

Pai S, (2001), 'Social Capital, Panchayats and Grassroots Democracy: Politics of Dalit Assertion in Uttar Pradesh', *Economic and Political Weekly*, Vol. 36, February 24.

Putnam R D, Leonardi R and Raffaella Y. N, (1993), *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton University Press, Princeton.

Rudlph S.H, (2000), 'Civil Society and the Realm of Freedom', *Economic and Political Weekly*, Vol. 35, May 13.

Sah D.C, (1997), 'Second generation Problems of Involuntary migration: Evidences from Sardar Sarovar Project', *Indian Journal of Agricultural Economics*, Vol. 52 (4).

Sah D.C, (2002), 'Crop Commercialisation and Migration', in eds., Shah G and Sah D.C, *Land Reforms in India, Volume 8: Performance and Challenges in Gujarat and Maharashtra*, Sage Publications, New Delhi.

Sah D.C, Shah Amita and Bird Kate, (2003), *Chronic Poverty in Remote Rural Areas of Southwestern Madhya Pradesh*, Madhya Pradesh Institute of Social Science Research and Gujarat Institute of Development Research, Ujjain (mimeo).

Sen Amartya, (1999), *Development as Freedom*, Oxford University Press, Oxford.

Srivastav P.N, (1970), *West Nimar: Madhya Pradesh District Gazetteers*, District Gazetteers Department, Madhya Pradesh, Bhopal.

Wade R, (1988), 'Why Some Indian Villages Cooperate', *Economic and Political Weekly*, Vol. 33, April 16.

COMMONS AND COMMUNITY

Evidences from Southwestern Tribal Belt of Madhya Pradesh

D.C. Sah *

Summary

Marginalisation of Tribal of Southwestern Madhya Pradesh dates back the British rule. After the independence, the new pattern of development fundamentally altered three crucial bases of production: water, land and forest. In remote tribal areas, market and state failure have invited intense community participation in informal institutions that govern land-man relations, law and dispute resolution. This has helped in perpetuating trust and solidarity within the community. The civil society institutions like *Adiwasi Mukti Sangathan* and the *Narmada Bachao Andolan* has played a significant role in making the dormant social capital available for wider use. But the complexities of economic stratification and inefficiency of decentralised governance are contextual for social capital to manifest. Despite the fact that the social capital has positively influenced non-social events since early 1990s, its manifestations in natural resource management have been marginal. Analysis reveals that (a) the process of centralisation at the *Panchayat* level is too overpowering for community to exert pressures for participatory process to begin; (b) the quantum of financial allocation is too thin to meet the demands of the community; (c) the desire of the bureaucracy and the elected representatives, at higher echelons, to control the activities and finance of the *Gram Panchayat*, does not allow the independences to the *Panchayat*; and (d), existing laws that govern the natural resources obstruct the process of giving their control to the community.

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OPERATIONALIZING MULTIDIMENSIONAL CONCEPTS OF CHRONIC POVERTY: AN EXPLORATORY SPATIAL ANALYSIS

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Operationalizing Multidimensional Concepts of Chronic Poverty: An Exploratory Spatial Analysis

Aasha Kapur Mehta, Ramakrushna Panigrahi and Sashi Sivramkrishna[1]

1. Introduction

Disparities and spatial inequalities in development exist at all levels of disaggregation – between countries, states, regions, districts, blocks and even within cities, towns and villages. No single indicator can capture the complexities of development. Therefore, for purposes of assessing performance and providing policy direction, indices are constructed by aggregating performance with regard to several indicators.

The poor suffer deprivation in multiple ways: low levels of income, illiteracy, relatively high levels of mortality, poor infrastructure, lack of voice and poor access to resources such as credit, land, water, and forests. Human and gender development indices improve on income-based indicators as measures of well being by moving beyond income centered approaches to measuring development and incorporating capabilities such as *being* healthy or literate into the development index. However, most of the research based on these indices has been conducted at the inter-country and inter-state level. A given state may perform extremely well on all indicators but there may be districts within that state that are among the most deprived in the country. Although availability of data is an issue, it is important to highlight intra-state disparities by identifying the most underdeveloped districts and *talukas* (subdistricts) so as to target projects and policies to the poorest of the poor regions of the country. This paper attempts to extend the study of spatial inequalities in human development to smaller spaces at the intra state, district and *taluka* levels. Indices are estimated for 397 districts in India and 175 *talukas* in the state of Karnataka. Attention is drawn to the need to articulate uneven regional development as regional **inequalities** and as regional **patterns** of development.

The paper revisits some of the prior research by the authors with regard to computing multidimensional indicators, adjusted human development indicators (AHDI) and articulating **patterns** of development using the Kohonen Self-Orgaizing Map (K-SOM) by applying them to the 397 districts. It tries to:

- identify areas in chronic poverty at the district level by using multidimensional indicators that could reflect persistent deprivation, such as illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure.
- operationalise multidimensional concepts and methods at the district and below level
- identify patterns of development that can input into policy.

Section 2 identifies the states and regions of India that have experienced greater incidence of long duration or persistent poverty, severe poverty and multidimensional deprivation. Section 3 raises methodological issues in the context of construction of indices. Sections 3 identifies

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deprivation at the district level and looks for patterns of uneven development. Section 4 extends the analysis to the the sub district level or taluka level for the state of Karnataka. Section 5 identifies the poorest districts in India and poorest talukas in Karnataka. We then identify priority areas for action and conclude the paper.

2. Spatial distribution of the Chronically, Severely and Multidimensionally Poor: A State level Description

The incidence of poverty in India has declined continuously from 54.9 percent to reportedly 26 percent of the population and from 321.3 million to reportedly 260.2 million during the period between 1973-74 and 1999-2000 (Table 1).

Table 1: Incidence of Poverty in India – Percentage of Population and Number of People Below the Poverty Line 1973-74 to 1999-2000

Year	Percentage population below the poverty line	Number of poor (In millions)
1973-74	54.9	321.3
1977-78	51.3	328.9
1983	44.5	322.9
1987-88	38.9	307.1
1993-94	36	320.3
1999-2000	26.1	260.2

[Source: Planning Commission Draft Ninth Five Year Plan (1997-2002) and Government of India, Poverty Estimates for 1999-2000, Press Information Bureau, 22nd February, 2001.]

Chronic poverty in the duration, severity and multi dimensionality sense characterises several parts of India. Pockets of severe poverty exist at the regional level even in the more developed states. The proportion of the poor who suffer long duration and inter-generationally transmitted poverty is likely to be significantly higher in those parts of the country that suffer greater incidence of severe poverty and multidimensional deprivation.

2.1 Poverty over time

Those in poverty are unevenly distributed across the country with concentration of poverty in some states. 71.65% of India's poor and half of the population are located in six states. These are Uttar Pradesh (including Uttaranchal), Bihar (including Jharkhand), Madhya Pradesh (including Chhatisgarh), Maharashtra, West Bengal and Orissa. Between 50 to 66 percent of the population of seven states (the six mentioned above and additionally Assam) was living below the poverty line in 1973-74. Twenty years later 35 to 55 percent of their population was still in poverty. In Bihar, Orissa, Madhya Pradesh, Assam and Uttar Pradesh *persistently* high levels of poverty, in excess of 30 percent, have occurred for several decades.(Mehta and Shah, 2003)

Table 2: Incidence and Concentration of Income Poverty in Selected States of India.

State	State share of India's Poor 1999-2000	Population 2001	Percentage of the Population of the state that is in poverty 1973-74	1993-94	1999-2000
Assam	3.63	2.59	51.21	40.86	36.09
Bihar*	16.36	10.69	61.91	54.96	42.6
Madhya Pradesh*	11.47	7.91	61.78	42.52	37.43
Maharashtra	8.76	9.42	53.24	36.86	25.02
Orissa	6.50	3.57	66.18	48.56	47.15
Uttar Pradesh*	20.36	17	57.07	40.85	31.15
West Bengal	8.20	7.81	63.43	35.66	27.02
All India	100.00	100.00	54.88	35.97	26.1

* including the districts in the now newly formed states.

[Government of India, Poverty Estimates for 1999-2000, Press Information Bureau, 22nd February, 2001 and March 1997 and Government of India, 2001 Provisional Population Tables.]

2.2 Severe Poverty over time

Of the 260 to 320 million people who are below the poverty line (depending on whether the 1993-94 or 1999-2000 estimates are used) a large subset consists of those who are substantially or severely below the norms identified as necessary for survival. In 1993-94, 15.2% of the rural population and 14.85% of the urban population were estimated to be earning incomes that were less than or equal to three fourths of the poverty line (severely poor). Approximately 134 million people can be considered to be chronically below the poverty line in the severity sense.

Table 3: Estimates of Very Poor and Poor in Rural and Urban Areas in the States: 1993-94 (as Percentage of Population)

	Rural		Urban	
State/Regions	**Very Poor**	**Poor**	**Very Poor**	**Poor**
Andhra Pradesh	4.18	15.89	16.78	38.34
Assam	13.12	45.00	1.16	7.74
Bihar	27.67	58.17	14.14	34.65
Gujarat	6.67	22.29	11.18	27.93
Haryana	9.32	28.02	5.02	16.37
Karnataka	11.11	29.89	22.13	40.18
Kerala	9.42	25.68	10.08	24.50
Madhya Pradesh	17.11	40.72	25.69	48.35
Maharashtra	16.17	37.90	18.72	35.08
Orissa	21.77	49.79	22.99	41.72
Punjab	3.12	11.85	2.22	11.40
Rajasthan	8.66	26.48	12.98	30.53
Tamil Nadu	12.67	32.55	18.67	39.78
Uttar Pradesh	19.55	42.31	16.91	35.34
West Bengal	13.62	40.87	7.51	22.38
All India	15.26	37.23	14.85	32.28

[Source: K.L. Datta and Savita Sharma, Level of Living in India, Planning Commission, 2000.]

The incidence of *severe* rural poverty was higher than average in 5 out of 7 income poverty states - Bihar, Orissa, Uttar Pradesh Madhya Pradesh and Maharashtra. In other words a higher percentage of people in rural areas in these states have a level of income that is less than three fourths of the poverty line than the all India average. (Table 3). Urban poverty was also especially severe in these states and additionally in Andhra, Karnataka and Tamil Nadu.

2.3 Multidimensional Poverty

Comparing state rankings of population below the poverty line and human development index estimated by the Planning Commission for 15 states shows income poverty incidence and performance on human development indicators seem to follow a similar pattern for most of India's 15 large states the exceptions being Andhra, Kerala, Rajasthan, Tamil Nadu and Maharashtra. Low attainments on literacy result in Andhra's rank plummeting from 2 on proportion of population below the poverty line to 9 /10 on HDI and Rajasthan's from 6 to 11/9. Conversely, Maharashtra's rank improves from 10 on poverty to 4 on HDI, Tamil Nadu's from 8 to 3 and Kerala's from 5 to 1 primarily due to high levels of literacy and significant reductions in infant mortality in these states. The HDI ranks for the different states remain fairly stable for most states between 1991 and 2001. 5 out of the 7 high income poverty states- Orissa, Madhya Pradesh, Uttar Pradesh, Assam and Bihar have the lowest five ranks on human development as well. What this reflects therefore is convergence of deprivation in multiple dimensions or *multidimensional* poverty.

Table 4: State Rankings: HDI and Population below the Poverty Line

Rank	Ranks of states based on Population below poverty line in 1993-94	Ranks estimated for HDI in 1991	Ranks estimated for HDI in 2001	Difference in HDI Rank between 1991 and 2001
1	Punjab	Kerala	Kerala	0
2	Andhra Pradesh	Punjab	Punjab	0
3	Gujarat	Tamil Nadu	Tamil Nadu	0
4	Haryana	Maharashtra	Maharashtra	0
5	Kerala	Haryana	Haryana	0
6	Rajasthan	Gujarat	Gujarat	0
7	Karnataka	Karnataka	Karnataka	0
8	Tamil Nadu	West Bengal	West Bengal	0
9	West Bengal	Andhra	Rajasthan	+2
10	Maharashtra	Assam	Andhra	-1
11	Uttar Pradesh	Rajasthan	Orissa	+1
12	Assam	Orissa	MadhyaPradesh	+1
13	Madhya Pradesh	MadhyaPradesh	Uttar Pradesh	+1
14	Orissa	Uttar Pradesh	Assam	-4
15	Bihar	Bihar	Bihar	0

[Source: Planning Commission Press Release, March, 1997 and Planning Commission, National Human Development Report, 2001]

Estimates of human and gender development indices at the state level on the basis of the HDI, GDI, GEM and HPI indices have been estimated by researchers in India (see CPRC

working paper 7). Kerala, has the highest rank on all four indices, Maharashtra also performs well. Punjab and Haryana have high scores on human development but perform poorly on gender indicators. 5 out of the 7 high income poverty states - Orissa, Uttar Pradesh, Bihar, Madhya Pradesh and Assam – have the lowest ranks or perform equally poorly on HDI, GDI, GEM and HPI. Rajasthan ranks better on income poverty but performs dismally on all four multidimensional indicators.

3. Methodological Issues

As pointed out in the introduction, no single indicator can capture the complexities of development. Therefore, indices are generally estimated by aggregating performance with regard to several indicators. This requires the identification of variables to be included in the index, the range to be used for scaling and weights to be allocated to the different variables. Decisions in this regard tend to be arbitrary and driven by availability of data. Changes in any of these factors can yield very different results. In addition there is the issue of choice of method to be used in estimating the index. Among the criticisms levelled against use of composite indices is the argument that in the process of averaging indicator index values to yield a composite index, information is lost or wasted (Ravallion 1996).

In spite of these drawbacks, measuring inequalities could be important for some purposes. For instance, in the disbursement of non-specific equalization grants and budgetary allocations, or for advocacy purposes[1] (Lok-Dessallien - www), it is useful for government organizations, NGO funding organizations and NGOs to have a ranking of regions based on a composite index, at least as a first step. Single indicator based development indices and maps also provide important information for targeting of plans policies and projects (PPPs).

The UNDP's HDI, has broken the dominance of the Gross National Product (GNP) as *the* index of development. A single index - just one number - has proved useful in this achievement, which may not have been possible with any set of tables (Sen,1999). The HDI shows the distance a country has traversed towards the maximum possible value of 1 and it enables comparison with other countries. However, it is argued that the ranks of countries (space) depend on two extreme values and changes in these values can change the ranks given to different countries/states/regions/districts/talukas. We therefore calculate an adjusted value of each index so that the values obtained are not sensitive to changes in the ranks with changes in the minimum – maximum limits used. The method for calculating the AHDI is modified on the basis of Panigrahi and Sivaramakrishna, 2002.[2]

The method proposed to calculate the AHDI first scales down each indicator index value proportionately so as to equalize the spread for all indicator index values to that of the minimum spread in indicator index values. This scaling down of indicator index values will mean that $aHDIj \leq HDI_j$. For instance, suppose country j has reached index values of 1 for all three indicators. Then if, say, $1 < e$ and $1 < g$, the $aHDI_j$ will not be equal to 1. The closer 1, e and g are in value, the smaller will be the difference between HDIj and $aHDI_j$. However, since the $aHDI_j$ values can be lowered significantly compared with HDI_j values, we then scale up the $aHDI_j$ to $AHDI_j$ by the constant, v. This makes the AHDI values comparable with the HDI values. Unlike HDI-based rankings, AHDI-based rankings are invariant to change in limits. At the same time, unlike the Borda Count method, the AHDI meets the objectives of HDI.

However, it is also argued that in the construction of a composite index, the process of averaging indicator values leads to wastage of information; in particular information that maybe of specific use to development organizations.

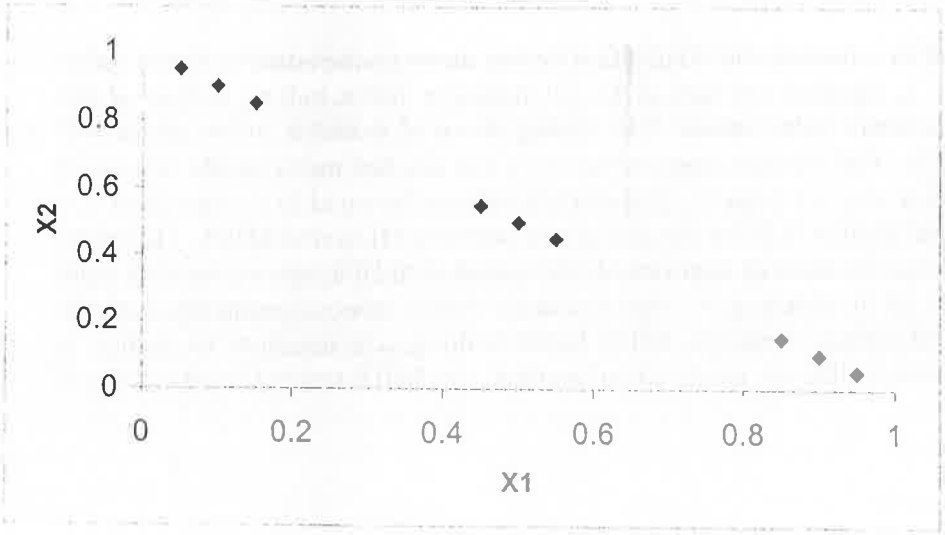
- "Aggregation wastes information; it can be important to know that region A is doing well in the income space, but not in basic health and schooling, while in region B it is the reverse" (Ravallion, 1996).

We use a contrived data set (Table 5) for nine regions ($R_1, R_2, \ldots, R_9$) and two indicators, X_1 and X_2, given equal weights to illustrate this. The corresponding composite index, I, is given by $(X_1 + X_2)/2$ – similar to the method adopted by HDI. In the next column, the Borda score, B^3, is calculated and presented. Using either of the two methods, we find that **on average**, all nine regions are equally developed. This may be important information to development organizations. However, there is another piece of information so easily apparent in Figure 1 (plot of data in Table 5) but not extracted by the composite indices or Borda count, namely, the existence of three clusters of homogeneous regions. In other words, using composite indices we lose information on *similar* regions within a cluster and *differences* between clusters.

Table 5: A Contrived Data Set, Composite Index Value (I), Borda Score (B) and Rank

Regions	X1	X2	Composite Index Value	Borda Score	Rank
R1	0.05	0.95	0.5	10	1
R2	0.1	0.9	0.5	10	1
R3	0.15	0.85	0.5	10	1
R4	0.55	0.45	0.5	10	1
R5	0.5	0.5	0.5	10	1
R6	0.45	0.55	0.5	10	1
R7	0.85	0.15	0.5	10	1
R8	0.9	0.1	0.5	10	1
R9	0.95	0.05	0.5	10	1

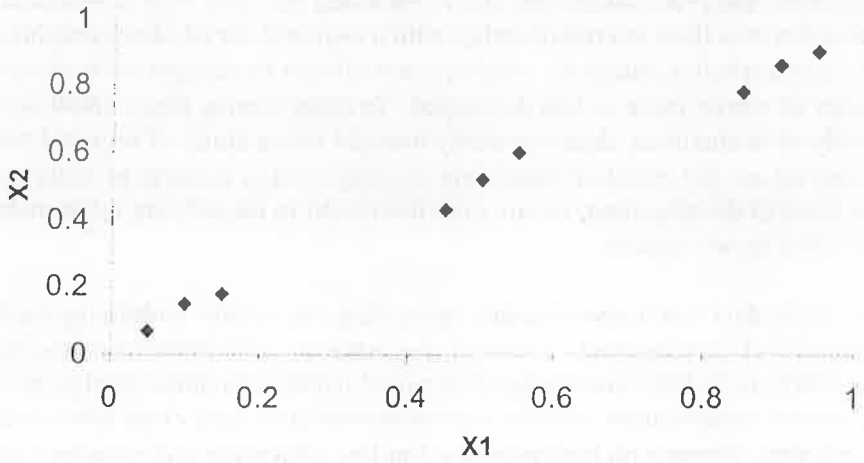
Figure 1: Scatter Plot of X1 and X2 from Table 1



The composite indices of development are almost equal for the States of Kerala and Punjab in India: 0.775 for Kerala and 0.744 for Punjab based on 1991 data (Krishnan 2000). However, what remains concealed in this index is the fact that per capita State domestic product of Kerala is less than half that of Punjab (Indian Rupees 4618 and 9643 respectively in 1991-92). On the other hand, female literacy and infant mortality rates in Kerala are 86.9% and 17 respectively whereas in Punjab they are at 49.7% and 61 respectively (Krishnan 2000). These wide differences in development variables are not captured by the composite index; instead, they get averaged out. Capturing the regional differences between Kerala and Punjab States could be useful and important information to development organizations for more efficient and effective Plan, Policies and Projects (PPPs). For instance, a health project could have a different impact in Kerala and Punjab due to the differences in education levels in the two states.

It is important to point out that the process of averaging does not distort or conceal information where data is distributed as in Figure 2[4]; where regions are usually more developed than others for all indicators.

Figure 2: Scatter Plot of X1 and X2 for a Positively Correlated Distribution



On the other hand, the methods used to explore regional *patterns* of development, like factor analysis, require more specialized skills. This fact has limited its appeal amongst a larger audience. Artificial intelligence, in particular the Kohonen Self-Organizing Map (K-SOM), as we will see, is not only a proficient tool to decipher patterns in development but its user-friendliness could promote its acceptance amongst policy makers and development practitioners in targeting PPPs.

3.1 Smaller Spaces Analysis using K-SOM Method

Use of HDI and AHDI provide information regarding average or overall development of each taluka, but do not delineate homogeneous regions. Constructing composite indices from several indicators of development, especially for small spaces, like districts or *talukas*, are

more likely to face problems from averaging and render rankings quite irrelevant to PPPs (Lok-Dessallien - www). Concentrating only on single indicators of development is important but does not "reduce" data – the very purpose of constructing a composite index. With reference to our example in Table 1, disaggregating information would mean mapping X_1 and X_2 separately using arbitrary cut-off index values to cluster regions into different levels of development. We need a technique to reduce the data set into three clusters; each cluster containing regions with similar combinations of X_1 and X_2 and at the same time, segregating different clusters. However, before discussing techniques and methods, we must understand the nature of information that we are trying to extract from the data set. The notion of development *patterns* is introduced for this reason.

3.2: Regional *Patterns* in Development:

Patterns in development neither rank regions nor measure their levels of development, but enable extraction of information regarding regions with similar combinations of development indicators. In other words we need to construct a summary map that relates data to locations, provides a truly geographical representation of information and identifies or illustrates spatial patterns and relationships (Cowlard 1998).

Development planners and practitioners are often concerned not only with development or poverty indicators but also their interrelationship with a region's social, demographic, cultural and physical attributes; attributes which cannot always be categorically classified as good or bad, better or worse, more or less developed. In other words, they cannot be ranked. Unlike in the study of inequalities, these are easily brought into a study of regional patterns of development since we are not intent on measuring development or poverty or ranking regions in terms of their level of development; we are only interested in identifying relationships between the variables across regions.

Exploring multivariate data could reveal certain interesting and useful underlying patterns in the spatial distribution of development. Consider, for instance, a children's health project. Its effectiveness will benefit from knowledge of regional patterns in demography, education, health, income, gender, urbanization, women's occupational structure, child labor and social (caste/tribe) parameters. Areas with high incomes, but low education and women's status, may require a different program design and implementation strategy as compared to a region where education levels and status of women are better, but incomes low. Policy design requires not only identification of the poorest or least developed regions but also those that are most likely to benefit from interventions thereby making them efficient and effective. The study of development patterns is essential to such efforts.

What we then often look for is a reduction in data, *keeping intact* information on regional *differences* – without these differences getting averaged out. As we have shown above, composite indices and single indicator mapping fail in identifying patterns in development. In fact, patterns in data are concealed, wasted or ignored by the methods used to identify regional inequalities. In the context of Table 1, the three distinct clusters in the data set must be identified, i.e. neither reduced to a single index value in the process of averaging (composite index) nor ignored (single indicator mapping).

3.3: The Kohonen Self-Organizing Map:

Though artificial intelligence, in particular neural network techniques, has found widespread application in the sciences and engineering, it's use has remained rather limited in economics and confined to specific areas like finance (Skapura 1995, Deboeck 1998, Deboeck and Kohonen 1998, Shumsky and Yarovoy 1998). An in-depth introduction to artificial intelligence and neural networks is beyond the scope of this paper and can be found elsewhere[5] (Ginsberg 1993, Aleksander and Morton 1995, Skapura 1995, Nilsson 1998). The artificial intelligence technique chosen for our study here is the Kohonen Self-Organizing Map (K-SOM). The K-SOM is an unsupervised learning technique that clusters data based on a distance function without any *a priori* information on the number of clusters. The (artificial) intelligence of the algorithm is that it discerns something similar to what the human brain sees in the data set. In the present context, the algorithm is able to group or cluster regions with similar combinations of indicators based on information within the data set itself. Once again, a technical understanding of the Kohonen Self-Organizing Map algorithm is beyond the scope of this paper. Interested readers may refer to Beale and Jackson (1990), Kohonen (1990), Aleksander and Morton (1995), Kaski and Kohonen (1996), Beveridge (1996), Frohlich (1999), Germano (1999), Deboeck (2000).

Applying the K-SOM technique to the data set in Table 5[6] clusters the data into 3 distinct sets, namely, (R_1, R_2, R_3), (R_4, R_5, R_6), and (R_7, R_8, R_9), which can be readily transformed into a development map.

It is important to reiterate here that the number of clusters was not specified *a priori* as in the K-means algorithm. Moreover, the difficulty encountered by non-specialists in using and interpreting the results of factor analysis is absent. The development practitioner can take a "black-box" approach to obtain the clusters of homogeneous regions – a vital input for their PPPs.

In our contrived example, a composite index (I or B) makes possible ranking of regions (equal rank of 1). The K-SOM, on the other hand, neither measures development nor ranks regions; it only identifies the spatial pattern of development. However, average indicator values for each cluster, could provide information on the general level of development of regions in the cluster. The K-SOM algorithm, by extracting information on regional differences in development from the data set, could be a useful tool[7] in PPP formulation and intervention.

In sections 4 and 5, we have applied all the three methods of HDI, AHDI and K-SOM to smaller spaces i.e. to 397 districts at All India level and further to even smaller spaces, i.e., 175 talukas in the state of Karnataka, India.

4. Deprivation at the District Level: Identifying inequalities and Patterns of uneven regional development at All India Level

Applying all the three methods of identifying regional inequalities and patterns of development discussed in the previous section, we analyse multidimensional indicators for 397 districts of India based on data for the early 1990s. Choice of variables was determined by data availability at the district level and by whether they reflect long duration deprivation. For example, persistent spatial variations in the infant mortality rate could be considered to

be a reflection of persistent deprivation to the means of accessing good health or an outcome indicator of chronic poverty. This could be due to inability to get medical care due to lack of income or lack of available health care facilities in the vicinity or poor quality of drinking water resulting in water borne diseases that cause mortality or lack of roads and public transport that enable quick transportation to hospitals in case of emergency or all of the above. Similarly, illiteracy could be considered to be a persistent denial of access to information, knowledge and voice. Low levels of agricultural productivity may reflect poor resource base, low yields due to lack of access to irrigation and other inputs, poor quality of soil resulting from erosion or lack of access to resources for investment because of lack of collateral or adverse climatic or market conditions. Poor quality of infrastructure reflects persistent denial of opportunities for income generation and growth.

We therefore use multidimensional indicators at the district level that could reflect persistent deprivation, such as illiteracy, infant mortality, low levels of agricultural productivity and poor infrastructure to help sharpen the identification of areas in chronic poverty and map these spatially. For the construction of indices and maps, we have used the following surrogates to represent income, education and health.

Income

1. Agricultural Index
2. Infrastructural Development Index

Education

1. Literacy Rate
2. Female Literacy Rate
3. Percentage of Population (11-13) attending school

Health

1. Infant Mortality Rate

Data pertaining to these variables at the district level for India was used to construct indices and to analyse the regional inequalities and patterns of development using HDI, AHDI and K-SOM methods in the sections below.

4.1 District level analysis using HDI Method

Each surrogate for income has been assigned a weight of (0.33)/(2) = 0.165. For health, since the only indicator we have considered to represent health is infant mortality rate, this is assigned a weight of 0.33. In the case of education, we have assigned weight of 0.33/3=0.11 to literacy rates, female literacy rates as well as to percentage of population (11-13) attending school. All variables chosen have a definite bearing on development, either positive or negative.

Following the UNDP procedure of weighted average, we have constructed the HDI of the 397 districts at all India level and ranked them. The results are in presented in Table 1 in the Appendix. The HDI values are in column 7 and the HDI ranks are in column 8 of Table A1 in Appendix. On the basis of these HDI ranks, we construct the development (inequality) map presented in Map 1 where the districts have been assigned six levels of development: very high, high, high-middle, middle, low-middle and low. However, the cut-off points to define these levels of development are arbitrary and are stated in the key to Map 1[8]. From the

HDI ranks we consider the districts with lowest HDI values (i.e., index value less than 3.0) as the most deprived at the all India level. These districts, their HDI values and ranks are listed in Table 6 below.

Table 6: The 55 most deprived districts in India (HDI value< 3.00)

	State	District	HDI	HDI Rank
1	Uttar Pradesh	Bahraich	0.204	397
2	Uttar Pradesh	Budaun	0.205	396
3	Orissa	Kalahandi	0.226	395
4	Madhya Pradesh	Damoh	0.229	394
5	Uttar Pradesh	Gonda	0.230	393
6	Bihar	Kishanganj	0.233	392
7	Orissa	Koraput	0.236	391
8	Madhya Pradesh	Shahdol	0.240	390
9	Bihar	Araria	0.245	389
10	Madhya Pradesh	Panna	0.248	388
11	Madhya Pradesh	Rajgarh	0.248	387
12	Uttar Pradesh	Basti	0.250	386
13	Madhya Pradesh	Tikamgarh	0.250	385
14	Madhya Pradesh	Chhattarpur	0.252	384
15	Rajasthan	Barmer	0.256	383
16	Madhya Pradesh	Guna	0.257	382
17	Rajasthan	Tonk	0.261	381
18	Madhya Pradesh	Rewa	0.261	380
19	Madhya Pradesh	West Nimar	0.262	379
20	Madhya Pradesh	Raisen	0.263	378
21	Uttar Pradesh	Hardoi	0.263	377
22	Bihar	Palamu	0.263	376
23	Madhya Pradesh	Shivpuri	0.264	375
24	Madhya Pradesh	Sidhi	0.265	374
25	Uttar Pradesh	Shahjahanpur	0.267	373
26	Madhya Pradesh	Betul	0.268	372
27	Madhya Pradesh	Satna	0.270	371
28	Madhya Pradesh	Jhabua	0.271	370
29	Rajasthan	Bhilwara	0.271	369
30	Madhya Pradesh	Bastar	0.273	368
31	Orissa	Phulbani	0.278	367
32	Rajasthan	Sirohi	0.278	366
33	Uttar Pradesh	Sitapur	0.279	365
34	Assam	Dhubri	0.282	364
35	Madhya Pradesh	East Nimar	0.283	363
36	Rajasthan	Jalor	0.283	362
37	Orissa	Ganjam	0.285	361
38	Bihar	Sitamarhi	0.286	360
39	Uttar Pradesh	Pilbihit	0.286	359
40	Uttar Pradesh	Siddrathnagar	0.287	358
41	Madhya Pradesh	Ratlam	0.287	357
42	Madhya Pradesh	Sehore	0.287	356
43	Uttar Pradesh	Etah	0.288	355
44	Uttar Pradesh	Banda	0.288	354
45	Rajasthan	Banswara	0.290	353

46	Rajasthan	Jhalawar	0.294	352
47	Madhya Pradesh	Shajapur	0.294	351
48	Uttar Pradesh	Lalitpur	0.295	350
49	Rajasthan	Pali	0.295	349
50	Madhya Pradesh	Datia	0.296	348
51	Rajasthan	Dungarpur	0.297	347
52	Madhya Pradesh	Sagar	0.297	346
53	Uttar Pradesh	Bareilly	0.298	345
54	Uttar Pradesh	Rampur	0.299	344
55	Madhya Pradesh	Surguja	0.299	343

[Source: Estimated by the authors]

It may be noted that, out of these 55 most deprived districts, only one is in Assam, 4 are in the state of Bihar, 23 are in the state of Madhya Pradesh, 4 in Orissa, 9 in Rajasthan and the remaining 14 in the state of Uttar Pradesh. This reconfirms the fact that most of India's backward districts are in the BIMAROU (Bihar, Madhya Pradesh, Rajasthan, Orissa and Uttar Pradesh) states. Map 1 provides a visual picture of spatial inequalities in India at the district level on the basis of the HDI method. It shows the contiguous location of most of these 55 districts across the central belt of India from the western to the eastern parts of the country.

MAP1 comes here

From Map 1, the developed districts and the poor districts are distinctly depicted to have a clearer understanding of the uneven regional inequalities of Indian districts. As it can be seen, the districts coloured in *brown* are the most deprived and are located mostly in the states of Madhya Pradesh, Uttar Pradesh, Rajasthan, Orissa, Bihar and Assam. The second most deprived districts have not been coloured or are *white* in colour. It may be noted that apart from these five states, even states like Maharashtra, Karnataka, Gujarat, Haryana, Punjab and Himachal Pradesh have districts representing *low* levels of development though they are not among the *most deprived* districts.

The most developed districts are in Kerala, Tamil Nadu, Maharashtra, Punjab, Haryana, Himachal Pradesh and a few districts in West Bengal, Andhra Pradesh and Karnataka. All the districts of Kerala represent highest levels of development because of their high scores of index values in *education*. The districts coloured in red are omitted from our analysis due to lack of data.

However, as mentioned in the methodology section, the rankings based on the UNDP procedure are not robust due to choice of fixed maximum and minimum indicator values. In the following section, we modify HDI results and present the AHDI results of regional inequalities of 397 districts in India.

4.2 District level analysis using AHDI Method

The AHDI method, is applied using the same variables and same weights as the UNDP method. The change in method from HDI to AHDI leads to the ranks of some districts decreasing by as much as 28 and of others increasing by as much as 38 places.The AHDI method is robust and therefore, presents a better description of the most deprived state.

The AHDI values are in column 9 and the AHDI ranks are in column 10 of Table A1 in the Appendix. On the basis of these AHDI ranks, we construct the development (inequality) map presented in Map 2 where the districts have been assigned six levels of development: very high, high, high-middle, middle, low-middle and low as was in the case of the Map1 using HDI values. As was done in the case of HDI, from the AHDI ranks we consider the 55 districts with the worst ranks as the most deprived districts of India. The districts identified as most deprived are presented in Table 7 along with their AHDI values.

Table 7: The 55 most deprived districts in India based on AHDI values

No	State	District	Adj HDI	AHDI Rank
1	Uttar Pradesh	Bahraich	0.228	397
2	Uttar Pradesh	Budaun	0.238	396
3	Madhya Pradesh	Damoh	0.248	395
4	Orissa	Kalahandi	0.254	394
5	Madhya Pradesh	Shahdol	0.255	393
6	Uttar Pradesh	Gonda	0.257	392
7	Bihar	Kishanganj	0.258	391
8	Orissa	Koraput	0.261	390
9	Madhya Pradesh	Rajgarh	0.268	389
10	Madhya Pradesh	Panna	0.270	388
11	Bihar	Araria	0.272	387
12	Rajasthan	Barmer	0.273	386
13	Madhya Pradesh	Chhattarpur	0.276	385
14	Madhya Pradesh	Tikamgarh	0.278	384
15	Madhya Pradesh	Guna	0.278	383
16	Uttar Pradesh	Basti	0.279	382
17	Madhya Pradesh	Rewa	0.282	381
18	Bihar	Palamu	0.284	380
19	Madhya Pradesh	Sidhi	0.284	379
20	Madhya Pradesh	West Nimar	0.285	378
21	Madhya Pradesh	Betul	0.286	377
22	Rajasthan	Tonk	0.286	376
23	Madhya Pradesh	Shivpuri	0.289	375
24	Madhya Pradesh	Raisen	0.289	374
25	Madhya Pradesh	Satna	0.290	373
26	Madhya Pradesh	Bastar	0.293	372
27	Uttar Pradesh	Hardoi	0.297	371
28	Madhya Pradesh	Jhabua	0.297	370
29	Rajasthan	Bhilwara	0.302	369
30	Madhya Pradesh	East Nimar	0.303	368
31	Orissa	Phulbani	0.305	367
32	Rajasthan	Jalor	0.308	366
33	Uttar Pradesh	Shahjahanpur	0.309	365
34	Rajasthan	Sirohi	0.310	364
35	Assam	Dhubri	0.312	363
36	Madhya Pradesh	Ratlam	0.313	362
37	Uttar Pradesh	Sitapur	0.314	361
38	Bihar	Sitamarhi	0.314	360
39	Uttar Pradesh	Banda	0.315	359
40	Madhya Pradesh	Sehore	0.315	358

41	Madhya Pradesh	Sagar	0.316	357
42	Madhya Pradesh	Surguja	0.318	356
43	Orissa	Ganjam	0.319	355
44	Rajasthan	Banswara	0.320	354
45	Uttar Pradesh	Siddrathnagar	0.321	353
46	Rajasthan	Pali	0.321	352
47	Rajasthan	Jhalawar	0.322	351
48	Madhya Pradesh	Shajapur	0.325	350
49	Rajasthan	Dungarpur	0.325	349
50	Uttar Pradesh	Lalitpur	0.325	348
51	Uttar Pradesh	Etah	0.328	347
52	Madhya Pradesh	Rajnandgaon	0.329	346
53	Madhya Pradesh	Mandla	0.331	345
54	Bihar	Sahibganj	0.331	344
55	Madhya Pradesh	Datia	0.331	343

[Source: Estimated by the authors]

From the above table, we find that *most deprived* districts are in the BIMAROU states. 52 out of 55 districts were found to be most backward in terms of both HDI and also AHDI ranks. The districts common to both HDI and AHDI method are taken to be the most deprived districts in India. The three districts of Bareilly, Pilibhit and Rampur in the HDI list and Mandla, Rajnandgaon and Sahibganj in the AHDI list have been excluded from the list of 52. These 52 districts and their ranks and index values are listed in Table 8 below.

Table 8: Most deprived districts in India (Common to both HDI and AHDI methods)

No	State	District	HDI	HDI Rank	Adj HDI	AHDI Rank
1	Uttar Pradesh	Bahraich	0.204	397	0.228	397
2	Uttar Pradesh	Banda	0.288	354	0.315	359
3	Uttar Pradesh	Basti	0.250	386	0.279	382
4	Uttar Pradesh	Budaun	0.205	396	0.238	396
5	Uttar Pradesh	Etah	0.288	355	0.328	347
6	Uttar Pradesh	Gonda	0.230	393	0.257	392
7	Uttar Pradesh	Hardoi	0.263	377	0.297	371
8	Uttar Pradesh	Lalitpur	0.295	350	0.325	348
9	Uttar Pradesh	Shahjahanpur	0.267	373	0.309	365
10	Uttar Pradesh	Siddrathnagar	0.287	358	0.321	353
11	Uttar Pradesh	Sitapur	0.279	365	0.314	361
12	Rajasthan	Banswara	0.290	353	0.320	354
13	Rajasthan	Barmer	0.256	383	0.273	386
14	Rajasthan	Bhilwara	0.271	369	0.302	369
15	Rajasthan	Dungarpur	0.297	347	0.325	349
16	Rajasthan	Jalor	0.283	362	0.308	366
17	Rajasthan	Jhalawar	0.294	352	0.322	351
18	Rajasthan	Pali	0.295	349	0.321	352
19	Rajasthan	Sirohi	0.278	366	0.310	364
20	Rajasthan	Tonk	0.261	381	0.286	376
21	Orissa	Ganjam	0.285	361	0.319	355
22	Orissa	Kalahandi	0.226	395	0.254	394
23	Orissa	Koraput	0.236	391	0.261	390
24	Orissa	Phulbani	0.278	367	0.305	367

25	Madhya Pradesh	Bastar	0.273	368	0.293	372
26	Madhya Pradesh	Betul	0.268	372	0.286	377
27	Madhya Pradesh	Chhattarpur	0.252	384	0.276	385
28	Madhya Pradesh	Damoh	0.229	394	0.248	395
29	Madhya Pradesh	Datia	0.296	348	0.331	343
30	Madhya Pradesh	East Nimar	0.283	363	0.303	368
31	Madhya Pradesh	Guna	0.257	382	0.278	383
32	Madhya Pradesh	Jhabua	0.271	370	0.297	370
33	Madhya Pradesh	Panna	0.248	388	0.270	388
34	Madhya Pradesh	Raisen	0.263	378	0.289	374
35	Madhya Pradesh	Rajgarh	0.248	387	0.268	389
36	Madhya Pradesh	Ratlam	0.287	357	0.313	362
37	Madhya Pradesh	Rewa	0.261	380	0.282	381
38	Madhya Pradesh	Sagar	0.297	346	0.316	357
39	Madhya Pradesh	Satna	0.270	371	0.290	373
40	Madhya Pradesh	Sehore	0.287	356	0.315	358
41	Madhya Pradesh	Shahdol	0.240	390	0.255	393
42	Madhya Pradesh	Shajapur	0.294	351	0.325	350
43	Madhya Pradesh	Shivpuri	0.264	375	0.289	375
44	Madhya Pradesh	Sidhi	0.265	374	0.284	379
45	Madhya Pradesh	Surguja	0.299	343	0.318	356
46	Madhya Pradesh	Tikamgarh	0.250	385	0.278	384
47	Madhya Pradesh	West Nimar	0.262	379	0.285	378
48	Bihar	Araria	0.245	389	0.272	387
49	Bihar	Kishanganj	0.233	392	0.258	391
50	Bihar	Palamu	0.263	376	0.284	380
51	Bihar	Sitamarhi	0.286	360	0.314	360
52	Assam	Dhubri	0.282	364	0.312	363

[Source: Computed by the authors]

Map 2 comes here.

As was the case in Map1, the districts coloured in *brown* are the most deprived and reflect the unevenness of development. Map 2 also shows that the most deprived districts are in the central belt of India and are located in the BIMAROU states. Districts which are *low* in development (white) are spread over Karnataka, Punjab, Haryana, Himachal Pradesh, Maharashtra, Gujarat, Assam and West Bengal. All the districts of Kerala are highly developed followed by Tamil Nadu, Punjab, Haryana and a few districts of other states.

The HDI and AHDI take linear aggregation of all the variables. We have used the K-SOM method to map the patterns of regional development for the districts in India in the following section.

4.3 District level analysis using K-SOM Method

Map 3 is a poverty (pattern) map constructed using the K-SOM technique, with the same indicators and weights as taken above in the construction of composite indices so as to allow comparability of the results from the two methods. The K-SOM algorithm, without any *a priori* information on the number of clusters, identified twelve distinct groups of regions. Table 9 shows the average values for the variables in each cluster.

Map 3 comes here

The map based on K-SOM algorithms presents *patterns* of development of the districts of India. It is clear that it has identified the regions based on their *levels* of development and not lost any data in the process of *averaging out* the indicator values. The district of Madras is an outlier due to a very high in infrastructural index value and so forms a separate cluster.

Cluster 2 has a higher development level than most others clusters, but when we look at other clusters, no definitive ranking is possible. 17 districts comprising all the districts of Kerala along with Kanyakumari district of Tamil Nadu, Kodagu and Dakshin Kannada of Karnataka together form cluster 2 characterized by very high performance on education, health and infrastructure. The *pattern* of development thus, is not restricted to political boundaries of the states.

The clusters are simply similar patterns and are not ranked. For instance cluster 5 performs better than cluster 3 on all counts – literacy, schooling, infant mortality, agricultural productivity and infrastructure. However, a ranking of clusters with a Borda count of average values of indicators could be performed to indicate regional levels of development.

Cluster 3 consists of 57 districts including 20 from Maharashtra, 12 from Gujarat, 8 from Karnataka, 5 from Haryana, 3 from West Bengal, 2 from Uttar Pradesh and Assam and 1 each from Andhra, from Tamil Nadu and Orissa so the patterns may be similar in very different parts of the country. Districts in cluster 3 have relatively lower literacy and female literacy and half the agricultural productivity of districts in cluster 5. Cluster 4 consists primarily of districts from Himachal Pradesh. Clusters 5 and 6 comprise 53 and 24 districts respectively. Both do extremely well on agricultural productivity and on infrastructure though 5 is better than 6 in this regard. Cluster 5 performs better than 6 on literacy and infrastructure. Cluster 6 has low levels of female literacy and includes districts such as Chittoor and Nellore in Andhra, Hisar, Jind and Sirsa in Haryana, Bhatinda, Faridkot, Ferozepur and Sangrur in Punjab, as also some of the districts in Tamil Nadu, Assam, West Bengal and Uttar Pradesh.

The state of Tamil Nadu is mostly coloured *blue* along with districts from other states and represents another *level* of development. The districts of Karnataka, Maharashtra and Gujarat are mostly coloured *green* representing a separate cluster of districts with a different *levels* of performance with regard to the indicators under consideration.

From Map 3, it is interesting to note that in almost all the clusters, *levels* of development are contiguous as the districts at the boundary of the neighboring states represent same *levels of development*. This map evidently shows the *patterns* of development and deprivation of districts in a clearer fashion as compared to the methods of HDI and AHDI. For specific PPPs, it is easier to pick up a cluster in which all the districts represent *similar levels in development*. Though any definite ranking is not possible among the clusters, one can identify the most deprived clusters from the following table where cluster-wise average values of each indicator are presented.

Clusters 10, 11 and 12 comprise 125 districts and are clearly the most deprived with the poorest performance in education, health and infrastructure and with relatively low levels of agricultural productivity. However, clusters 10 and 12 have the poorest record on female and male literacy and schooling with cluster 12 reflecting the highest levels of deprivation in this regard. Clusters 11 and 12 have the worst infant mortality rates with cluster 11 performing

worse than 12. Clusters 10, 11 and 12 together consist of 36 districts of Madhya Pradesh, 26 districts of Bihar, 18 districts from Rajasthan, 24 districts of Uttar Pradesh, 8 from Orissa, 4 from Andhra, 3 from Assam, 2 each from West Bengal and Karnataka and 1 each from Maharashtra and Gujarat. The concentration of districts among the most deprived then is from Madhya Pradesh, Bihar, Rajasthan, Uttar Pradesh and Orissa and all of these except Rajasthan are high income poverty states (see table 1). Rajasthan suffers from relatively lower income poverty but is among the highly deprived states on multidimensional indicators.

Table 9: Cluster Wise Average Value for Each Indicator

	1	2	3	4	5	6	7	8	9	10	11	12
1	82.22	85.83	60.82	70.54	63.62	47.15	48.52	58.66	43.34	35.03	41.67	27.02
2	75.81	81.22	47.76	59.93	52.39	34.32	34.31	44.70	27.06	19.80	25.54	14.12
3	85.36	92.06	74.26	87.77	76.65	59.93	61.32	74.24	57.99	47.50	56.25	35.77
4	32.70	35.00	59.90	63.50	59.60	66.00	93.70	105.60	61.80	83.60	118.70	112.60
5	1.42	13.20	5.08	0.22	10.52	11.00	7.92	2.92	5.18	4.52	4.33	5.81
6	443.70	137.10	96.30	124.20	129.90	113.50	99.80	97.10	91.30	87.40	84.90	85.00

[Source: Computed by the authors]

Key:

1. Literacy Rate
2. Female Literacy Rate
3. Percentage of population (11-13) attending School
4. Infant Mortality Rate
5. Agricultural Productivity
6. Infrastructural Development Index

From the district level analysis, it is evident that, the most deprived districts are concentrated in the BIMARU states. All the three methods applied above confirm to the fact that chronic poverty exist in these states in its acute form. However, for any specific PPPs, we suggest that the policy makers use the pattern map that presents districts with *similar* levels of development.

5. Deprivation at the level of smaller spaces: A Taluka level analysis for the state of Karnataka.

Unevenness of development becomes more and more prominent as we move to smaller spaces. This section extends the analysis to even smaller spaces i.e. the taluka or below district level for the state of Karnataka in India. We first apply the UNDP procedure to explore the inequalities in development for Karnataka and identify the poorest talukas of the state and then point out the limitations of this procedure and suggesting use of the K-SOM technique to analyse the pattern of regional development at the taluka level using the same database and same number of variables for determining spatial inequality of development in the state.

Due to non-availability of data on variables such as GDP per capita at the taluka level we use multiple input surrogates for each indicator of development – income, health, education and social equality.

Income

1. Percentage of Urban Population to Total Population
2. Percentage of Workers to Total Population
3. Percentages of Agricultural Workers to Total Workers
4. Total Cropped Area to Net Area Sown
5. Gross Irrigated Area to Gross Cropped Area
6. Population per Registered Factory
7. Population per Commercial Banks
8. Population per Co-operative Society
9. Total Road Length per 100 Sq. Kilometers
10. TRMV per lakh (One hundred thousand) Population
11. Population per Post Office
12. Telephone lines per *Lakh* (One hundred thousand) Population

Health

1. Population per Medical Institutions
2. Bed per lakh Population

Education

3. Literacy Rates

Social Equality

4. Percentage of SC & ST Population to Total Population
5. Sex Ratio

The taluka level analysis for the state of Karnataka is done using all three methods of HDI, AHDI and K-SOM algorithms as mentioned above.

5.1 Taluka level analysis using HDI Method

Each surrogate for income has been assigned a weight of (0.25)/(12) = 0.02. For health, each indicator is assigned a weight of (0.25)/(2) = 0.125. In the case of education, we have assigned weight of 0.25 to literacy rates since that is the only indicator to represent Education index. For Social equality each indicator is again assigned a weight of (0.25)/(2) = 0.125. All these weights are assigned in the spirit of UNDP weight as we felt that such weights will best describe the index of development. All variables chosen have a definite bearing on development, either positive or negative.

We first construct the development (inequality) map presented in Map 4 where the talukas have been assigned six levels of development: very high, high, high-middle, middle, low-middle and low. The cut-off points to define these levels of development are stated in the key to Map 4[9].

From the HDI methodology of taluka level study, we have taken the most deprived talukas of Karntaka state based of HDI values and rankings. The HDI values and rankings of the talukas are given in Table A2 in the Appendix. We have considered those talukas to be most deprived that have an HDI value less than 4. Though, ideally we should have kept the cut-off point as 3, only 2 talukas have an HDI value below 3 and hence, we took HDI value of 4 as the cut-off point for the talukas. They are presented in table 10 below.

Table 10: Most deprived talukas in Karnataka (HDI value< 4.00)

Sl.No	Taluka	HDI Value	HDI Rank
1	H.B.HALLI	0.397	132
2	BAGEPALLI	0.397	133
3	SIRA	0.397	134
4	MADHUGIRI	0.396	135
5	HADAGALLI	0.396	136
6	GUDIBANDA	0.395	137
7	MALUR	0.395	138
8	T. NARASIPURA	0.391	139
9	HOSPET	0.390	140
10	H.D.KOTE	0.389	141
11	CHAMRAJNAGAR	0.388	142
12	YELABURGA	0.388	143
13	CHINTHAMANI	0.386	144
14	CHALLAKERE	0.385	145
15	NANJANGUD	0.383	146
16	ALAND	0.380	147
17	RAIBANG	0.379	148
18	KUSHTAGI	0.378	149
19	SINDHANUR	0.376	150
20	AFZALPUR	0.375	151
21	KANAKPURA	0.374	152
22	KOLLEGAL	0.373	153
23	RAICHUR	0.372	154
24	GANGAVATHI	0.372	155
25	BANGARPET	0.371	156
26	CHITTAPUR	0.366	157
27	SEDAM	0.365	158
28	AURAD	0.364	159
29	LINGASUGURU	0.363	160
30	SHORAPUR	0.359	161
31	H.P.HALLI	0.358	162
32	YELANDUR	0.357	163
33	ANEKAL(BU)	0.356	164
34	JEWARGI	0.342	165
35	CHINCHOLI	0.339	166
36	YADGIR	0.333	167
37	SIRAGUPPA	0.332	168
38	PAVAGADA	0.331	169
39	MOLAKALMURU	0.329	170
40	SANDUR	0.329	171
41	SHAHAPUR	0.324	172
42	MANVI	0.320	173
43	KUDLIGI	0.264	174
44	DEVEDURGA	0.258	175

[Source: Computed by the authors]

As can be seen from the above table, the districts in the north-east region of the Karnataka states are the most deprived districts while the coastal districts are the most developed ones. To get a clear understanding of regional inequalities of development of talukas in Karnataka state, we present Map 4 which is based on HDI values and rankings.

Map 4: Poverty (Inequality) Map of 175 Talukas of Karnataka State of India

From Map 4, it is evident that the development at taluka level is spread across the coastal region of Karnataka. The talukas coloured in *yellow* represent highest level of development while the talukas coloured in *brown* and *white* are the most deprived. It is evident that the talukas neighbouring Andhra Pradesh are the least deprived, especially the Hyderabad-Karnataka region. Also, the talukas of Mysore are most deprived contrary to the popular notion that Mysore district is one of the most developed district in the state. The levels of development is self-evident in Map 4 and present a clear picture of most deprived talukas of the state.

As mentioned earlier, we have updated the HDI values and subsequent rankings by using AHDI method in the following section.

5.2 Taluka Level analysis using AHDI method

Using the same data, we had used AHDI method to bring robustness to the rankings of talukas as AHDI method is more practicable for rankings. The variation of rankings are as high as from –25 to +25 ranks. Consequently, the shuffle in rankings results in changing the positions of the most backward talukas in the state. On the basis of AHDI, we have developed an inequality map which is considered more robust than the HDI method as the choice of fixed maximum and minimum indicator values do not affect the rankings. From the AHDI rankings we have identified the most backward talukas in Karnataka state which are presented in the table 11 below. To keep parity with HDI analysis, we have chosen 44 most backward talukas based on AHDI rankings. However, as we find, a few talukas have got more than AHDI value of 4.

Table 11: Most deprived talukas in Karnataka based on AHDI values

Sl. No	DISTRICTS	AHDI Values	AHDI Rank
1	SINDHANUR	0.425	132
2	GOWRIBIDANUR	0.425	133
3	GANGAVATHI	0.424	134
4	RAICHUR	0.423	135
5	YELABURGA	0.422	136
6	HADAGALLI	0.422	137
7	CHAMRAJNAGAR	0.420	138
8	NANJANGUD	0.419	139
9	KUSHTAGI	0.417	140
10	RAIBANG	0.416	141
11	CHINTHAMANI	0.416	142
12	HUMANBAD	0.415	143
13	SIRA	0.414	144

14	BASAVAKALYAN	0.413	145
15	BAGEPALLI	0.412	146
16	MALUR	0.412	147
17	MADHUGIRI	0.411	148
18	H.D.KOTE	0.409	149
19	SHORAPUR	0.407	150
20	GUDIBANDA	0.400	151
21	KANAKPURA	0.395	152
22	SEDAM	0.393	153
23	LINGASUGURU	0.393	154
24	KOLLEGAL	0.392	155
25	BANGARPET	0.392	156
26	ALAND	0.391	157
27	SIRAGUPPA	0.388	158
28	AFZALPUR	0.388	159
29	CHALLAKERE	0.387	160
30	YELANDUR	0.386	161
31	CHITTAPUR	0.385	162
32	H.P.HALLI	0.383	163
33	ANEKAL(BU)	0.375	164
34	AURAD	0.372	165
35	MANVI	0.370	166
36	YADGIR	0.369	167
37	SHAHAPUR	0.358	168
38	CHINCHOLI	0.357	169
39	JEWARGI	0.353	170
40	SANDUR	0.348	171
41	PAVAGADA	0.344	172
42	MOLAKALMURU	0.344	173
43	DEVEDURGA	0.311	174
44	KUDLIGI	0.297	175

[Source: Computed by the authors]

Based on these AHDI values and rankings, we have presented the regional disparities of development in Map 5 which is comparable with Map 4. Map 5, as it is based on AHDI provides a better picture of regional inequalities of development of 175 talukas in Karnataka state.

Map 4 here

From Map 5, it is evident that the levels of development are similar to that in Map 4. However, Map 4 presents a more robust picture of the most deprived talukas in the state. Once again, the Hyderabad-Karnataka region is found to be the most deprived part of the state. It may be noted that in Map 5, the talukas which have same level of development are geographically juxtaposed together. Specifically, the most developed ones, in *yellow* and *orange* colour are juxtaposed geographically barring Bangalore and Bellary. It is evident that, AHDI provides a better understanding in identifying regions of chronic deprivation due to the robustness in its ranking of talukas which is reflected in Map 5.

Table 12: **Most deprived talukas in Karnataka (Common to both HDI and AHDI methods)**

SL No.	Talukas	HDI Values	HDI Ranks	AHDI Values	AHDI Rank
1	AFZALPUR	0.38	151	0.388	159
2	ALAND	0.38	147	0.391	157
3	ANEKAL(BU)	0.36	164	0.375	164
4	AURAD	0.36	159	0.372	165
5	BAGEPALLI	0.40	133	0.412	146
6	BANGARPET	0.37	156	0.392	156
7	CHALLAKERE	0.38	145	0.387	160
8	CHAMRAJNAGAR	0.39	142	0.420	138
9	CHINCHOLI	0.34	166	0.357	169
10	CHINTHAMANI	0.39	144	0.416	142
11	CHITTAPUR	0.37	157	0.385	162
12	DEVEDURGA	0.26	175	0.311	174
13	GANGAVATHI	0.37	155	0.424	134
14	GUDIBANDA	0.40	137	0.400	151
15	H.D.KOTE	0.39	141	0.409	149
16	H.P.HALLI	0.36	162	0.383	163
17	HADAGALLI	0.40	136	0.422	137
18	JEWARGI	0.34	165	0.353	170
19	KANAKPURA	0.37	152	0.395	152
20	KOLLEGAL	0.37	153	0.392	155
21	KUDLIGI	0.26	174	0.297	175
22	KUSHTAGI	0.38	149	0.417	140
23	LINGASUGURU	0.36	160	0.393	154
24	MADHUGIRI	0.40	135	0.411	148
25	MALUR	0.40	138	0.412	147
26	MANVI	0.32	173	0.370	166
27	MOLAKALMURU	0.33	170	0.344	173
28	NANJANGUD	0.38	146	0.419	139
29	PAVAGADA	0.33	169	0.344	172
30	RAIBANG	0.38	148	0.416	141
31	RAICHUR	0.37	154	0.423	135
32	SANDUR	0.33	171	0.348	171
33	SEDAM	0.37	158	0.393	153
34	SHAHAPUR	0.32	172	0.358	168
35	SHORAPUR	0.36	161	0.407	150
36	SINDHANUR	0.38	150	0.425	132
37	SIRA	0.40	134	0.414	144
38	SIRAGUPPA	0.33	168	0.388	158
39	YADGIR	0.33	167	0.369	167
40	YELABURGA	0.39	143	0.422	136
41	YELANDUR	0.36	163	0.386	161

[Source: Computed by the authors]

From table 11 above, we find that most of the talukas, which were found to be most backward in terms of HDI values and ranks, are also found to be in AHDI ranks barring 6

talukas. Therefore, we take only the talukas which are common to both HDI and AHDI method, to be the most deprived talukas in Karnataka state. They are listed in Table 12.

5.3 Taluka Level analysis using K-SOM method

The K-SOM technique has been used in the study of country-level development by Kohonen and Kaski (1996) and Deboeck (2000). However, as we have stated above, the data distribution of country-level indicators is likely to follow a pattern as in Figure 2. This would mean that results obtained using a composite index and the K-SOM are quite similar. Moreover, these country-level studies do not articulate the essential difference between inequalities and patterns of development, the latter forming the *raison d'etre* of using the K-SOM technique.

We use the K-SOM technique for a study of regional disparities at a level of relatively smaller spaces using the same data from official source i.e. Directorate of Economics and Statistics, Bangalore, Karnataka as in HDI and AHDI methods.

Table 13: Cluster-Wise Average Value for Each Indicator

Indicators	Cl.1	Cl.2	Cl.3	Cl.4	Cl.5	Cl.6	Cl.7	Cl.8	Cl.9
UP to TP	70.02	48.1	29.31	0.62	21.62	13.99	15.13	14.23	8.74
W to TP	35.46	37.38	47.69	69.42	43.33	44.57	45.09	45.52	45.74
AW to TW	21.69	51.25	33.79	53.54	67.98	58.09	75.29	73.22	74.01
TCA to NAS	110.4	112	138.7	132.5	124.7	110.8	120.2	110.8	114.1
GIA to GCA	24.44	18.27	30.18	5.64	35.37	20.60	37.25	20.28	24.11
P per RF	1971	5943	9038	516	19835	14295	19546	32744	124286
P per CB	8355	13281	7995	1907	15019	10433	24545	17135	20488
P per CS	3827	1808	3610	147	1794	2064	3128	2461	2309
TRL	125.5	86.9	79.9	79.5	83.3	67.7	233.7	56.8	76.2
TRMV	12581	4390	4376	36781	2026	2169	1379	1138	1006
P per PO	16314	5979	4066	1460	5620	3437	4959	4888	4132
T per LP	3344	1026	1966	12061	467	735	477	334	282
P per MI	32170	37282	19480	9244	20493	14941	24661	18222	14362
Bed per LP	160.4	92.1	89.2	704.2	50.1	72	38.8	41.6	44.6
Lit Rates	68.04	58.03	72.06	54.63	49.95	59.41	36.08	41.19	47.32
SCST to TP	17.85	20.4	10.54	8.99	23.77	16.35	22.03	32.54	19.78
Sex Ratio	905	938	1064	936	950	978	973	956	976

Key:

UP to TP: Percentage of Urban Population to Total Population
W to TP: Percentage of Workers to Total Population
AW to TW: Percentages of Agricultural Workers to Total Workers
TCA to NAS: Total Cropped Area to Net Area Sown
GIA to GCA: Gross Irrigated Area to Gross Cropped Area
P per RF: Population per Registered Factory

P per CB: Population per Commercial Banks
P per CS: Population per Co-operative Society
TRL: Total Road Length per 100 Sq. Kilometers
TRMV:
P per PO: Population per Post Office
T per LP: Telephone lines per *Lakh* (One hundred thousand) Population
P per MI: Population per Medical Institution
Bed per LP: Hospital Beds per *Lakh* population
Lit Rates: Literacy Rates
SCST to TP: Percentages of SC and ST Population to Total Population
Sex Ratio: Sex Ratio

Map 6 is a poverty (pattern) map constructed using the K-SOM technique, with the same indicators and weights as taken above in the construction of composite indices so as to compare the results from the two methods. The K-SOM algorithm, without any *a priori* information on the number of clusters, identified nine distinct groups of regions. Table 13 shows the average values for the variables in each cluster. It is clear that Cluster 1 has a higher development level than most others clusters, but when we look at Clusters 2 and 3 no definitive ranking is possible. Cluster 2 is better off for some indicators whereas Cluster 3 is better off for others.

Map 6 here

We can make good judgment of the K-SOM algorithm from the results of our present study of 175 talukas of Karnataka state. From Map 6, consider the following:

- The K-SOM based map has been able to identify two talukas viz. Bangalore North and Bangalore South of Bangalore city. Hubli taluka has been identified as one unique cluster (i.e. cluster number 4) because of its unique value for the number of hospital beds.

- Another interesting result in Map 6 is that, most of the district headquarters are grouped in cluster 2. However, rest of the district headquarters are falling in other clusters due to the similarity of indicator values of specific talukas.

- From the *patterns* map 6, we can identify the talukas with similar development without losing any information on each of the indicators especially in the context of specific PPPs.

This application illustrates the difference in results obtained when we consider development inequalities and development patterns. In practice, development planners and practitioners often have to work with smaller spaces with several development variables as well as socio-cultural, environmental, physical and other indicators relevant to a specific PPP. As Rao and Babu (1996) argue:

> One type consists of those which are resource poor and do not possess adequate development potential. The other type consists of those which have rich natural resources ... but owing to historical and political factors could not exploit the resources for development purposes and, therefore, remained backward. These

differences in the nature of the sub-regions are important while formulating a regional plan ..."

The flexibility offered by considering patterns of development, allows for PPPs to take into account variables that could be of relevance to them.

Plans, policies and projects to reduce regional imbalances need to study *both*, inequalities in and patterns of development. The composite index has become an attractive tool to development practitioners to study inequalities. On the other hand, the complexity in the techniques to study patterns of development has limited application in PPP formulation. The K-SOM artificial intelligence algorithm is a user-friendly tool that could provide insights into development patterns, an invaluable input for optimal targeting of PPPs.

VI. Conclusions

Plans, policies and projects to reduce regional imbalances need to study *both*, inequalities in and patterns of development. The composite index has become an attractive tool to development practitioners to study inequalities. On the other hand, the complexity in the techniques to study patterns of development has limited its application in PPP formulation. The K-SOM artificial intelligence algorithm is a user-friendly tool that could provide insights into development patterns, an invaluable input for optimal targeting of PPPs. From our analysis of smaller spaces both at district and taluka levels, we can conclude that the development intervention should take into account both studies of inequalities and patterns of development in the context of identifying the poorest of the poor or most deprived areas of a region. So the areas at all India level, which are commonly most deprived in all three methods should be considered as poorest of the poor districts. The same is also applicable in the case of talukas in the Karnataka state. The application of all three methods reduces any bias in the process of reducing data, and therefore, we suggest all the three methods should be applied and the identification of the most deprived areas should be examined carefully for successful targeting of PPPs.

References:

Agarwal Bina. (1997), Institute of Economic Growth, Delhi, India, Gender, Environment, and Poverty Interlinks: Regional Variations and Temporal Shifts in Rural India, 1971-91, World Development, Vol.25, No.1, pp.23-52.

Aleksander, I. And Morton, H. (1995). An Introduction To Neural Computing, Second Edition, (International Thomson Computer Press, Inc., London)

Atkinson, G.R., Duborg, R., Hamilton, K., Munasinghe M., Pearce, D. And Young C. (1999). Measuring Sustainable Development: Macroeconomics and the Environment. (Edgar Elgar, Cheltenham)

Beale, R. And Jackson T. (1990). Neural Computing: An Introduction. (Adam Hilger, Bristol)

Beveridge, M. (1996). Biological Neural Networks.
Http://www.Dcs.Napier.Ac.Uk/Hci/Martin/Msc/Node6.Html

Census Of India (1994) Housing And Amenities: A Database On Housing And Amenities For Districts, Cities And Towns. (Occasional Paper No.5 Of 1994, Government Of India).

Cmie (Centre For Monitoring Indian Economy)(2000) Profiles Of Districts (Cmie Private Limited, Economic Intelligence Service, October, Mumbai, India).

Cowlard, K.A. (1998). Decision-Making In Geography: A Handbook Of Method And Practice. (Second Edition, Hodder & Stoughton, London)

Dasgupta, P. (1993). An Inquiry Into Well-Being And Destitution. (Clarendon Press, Oxford)

Datt Gaurav, Ravallion Martin (1996), India's checkered History in Fight Against Poverty: Are There Lessons for the Future? Economic and Political Weekly, Special Number.

Deboeck, G.J. (1998). Financial Applications Of Self-Organizing Maps. *Www.Dokus.Com*

Deboeck, G. (2000): Self-Organizing Patterns In World Poverty Using Multiple Indicators Of Poverty, Repression And Corruption. (1818 Society, World Bank), *Http://Www.Dokus.Com/Papers_On_The_Web/Poverty.Htm/*

Deboeck, G. And Kohonen T (1998). Visual Explorations In Finance Using Self-Organizing Maps. (Springer)

Deichmann, U. (1999). Geographical Aspects Of Inequality And Poverty, Text For The World Bank's Site On Inequality, Poverty And Socio-Economic Performance, *Http://Www.Worldbank.Org/Poverty/Inequal/Povmap/*

Directorate Of Economics And Statistics (1995). Taluka Level Indicators. Government Of Karnataka, India.
Frohlich, J. (1999). Neural Networks With Java, *Http://Rfhs8012.Fh-Regensburg.De/~Saj39122/Jfroehl/Diplom/E-Index.Html*

Germano, T. (1999). Self-Organizing Maps, *Http://Davis.Wpi.Edu/~Matt/Courses/Soms/*

Ghosh, P.K., Kundu Amitabh and Shariff Abusaleh (2002), Indexing Human Development in India: Indicators, Scaling and Composition, National Council of Applied Economic Research, Working Paper Series No.83.

Ginsberg, M. (1993). Essentials Of Artificial Intelligence. (Morgan Kaufman Publishers, Inc., San Mateo).

Government of India, Report of the Committee, (1997), To Identify 100 Most Backward and Poorest District in the Country, Ministry of Rural Areas and Employment.

Government Of Karnataka (1999): Human Development In Karnataka 1999 (Planning Department, Bangalore).

Government Of Madhya Pradesh (1997) Madhya Pradesh Human Development Report.

Granados, A.J. And Peterson, P.J. (1999) "Hazardous Waste Indicators For National Decision Makers", Journal Of Environmental Management, 55:4, 249-263.

Haq, Mahbub ul, (1996), Human Development Paradigm for South Asia, Mainstream.

Haan, Arjan de and Lipton Michael (1998), Poverty in Emerging Asia: Progress, Setbacks, and Log-jams, Asian Development Review, vol.16, no.2

Henninger, N. (1998) Mapping And Geographical Analysis Of Poverty And Human Welfare – Review And Assessment (Report Prepared For The Unep/Cgiar Initiative On Gis, World Resources Institute, Washington, D.C.) *Http://Www.Povertymap.Net/Pub.Htm*

Kaski, S. And Kohonen T. (1996) Exploratory Data Analysis By The Self-Organizing Map: Structures Of Welfare And Poverty In The World, In Refenes, A-P, Mostafa, A.Y., Moody, J. And Weigend, A.(Eds), Neural Networks In Financial Engineering (World Scientific, Singapore).

Kohonen, T. (1990). Self-Organization And Associative Memory (Third Edition, Springer-Verlag)

Krishnan, T.N. (2000) The Route To Social Development In Kerala: Social Intermediation And Public Action, In Mehrotra, S. And Jolly, R. (Eds), Development With A Human Face: Experiences In Social Achievement And Economic Growth (Oxford University Press, Oxford, England)

Kurian N.J. (2000), Widening Regional Disparities in India, Some Indicators, Economic and Political Weekly.

Lok-Dessallien, R. Www, Review Of Poverty Concepts And Indicators, Seped Series In Poverty, *Http://Www.Undp.Org/Poverty/Publications/Pov_Red/*

Mahanty Ghanshyam (2000), Human Development in Andhra Pradesh: A District Level Analysis, The Indian Journal of Labour Economics, Vol. 43, No.2.

Mehta, Aasha Kapur and Amita Shah, (2001) Chronic Poverty in India: Overview Study, (coauthored), Working Paper No. 7, Chronic Poverty Research Centre, University of Manchester.

Mehta, Kapur Aasha (1996), Recasting Indices for Developing Countries: A Gender Empowerment Measure, Economic and Political Weekly, Vol. XXX1, No.43,

Mehta, Aasha Kapur and Amita Shah, (Forthcoming, March, 2003) Chronic Poverty in India: Incidence, Causes and Policies, (coauthored) World Development.

Nilsson, N.J. (1998). Artificial Intelligence: A New Synthesis. (Morgan Kaufman Publishers, Inc., San Mateo).

Panigrahi, Ramakrushna and Sashi Sivaramakrishna. (2002) An Adjusted Human Development Index: Robust Country Rankings with respect to choice of fixed maximum and minimum indicator values, Journal of Human Development, Vol 3 No. 2.

Patel, Surendra J. (1991), Growing Regional Inequalities in Gujarat, Economic and Political Weekly, Vol.26 (2b).

Ravallion, M. (1996) "Issues In Measuring And Modeling Poverty", The Economic Journal, 106:Pp.1328-1343.

Rajakutty, S., S. Acharya And T. Haque (1999). India's Rural Development Report 1999: Regional Disparities In Development And Poverty (National Institute Of Rural Development (Nird), Hyderabad)

Rani, Geetha P., (1999) Human Development Index in India: A District Profile, Vol.XLI, No.1, pp.9-30.

Rao, H. And M. Devendra Babu (1996): Intra-Regional Disparities In Hyderabad-Karnataka Region: An Analysis, In Aziz, A. And Krishna, S. (Eds) Regional Development: Problems And Policy Measures (Concept Publishing Company, New Delhi)

Sivaramakrishna, Sashi and Ramakrushna Panigrahi, Articulating Uneven Regional Development for Micro and Macro Planning, Journal of Human Development, forthcoming.

Shivkumar, A.K. (1994) "Human Development Index For Indian States", Economic And Political Weekly, Vol. Xxvi.

ShivKumar, A.K. (1991), UNDP's Human Development Index: A computation for Indian States, Economic and Political Weekly

Shumsky, S.A. And A.V. Yarovoy (1998) Kohonen Atlas Of Russian Banks, In Deboeck, G. And Kohonen, T. (Eds) Visual Explorations In Finance Using Self-Organizing Maps (Springer).

Skapura, D.M. (1995). Building Neural Networks. (Acm Press, New York).

The Ecologist (2001) "Keeping Score", 31(3), Pp. 44-47.

UNDP(United Nations Development Programme)(1999) Human Development Report 1999 (New York, Oxford University Press).

Vani, B.P. and Vyasulu Vinod (1997), Development and Deprivation in Karnataka: A District-Level Study, Economic and Political Weekly.

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[1] An example of such advocacy could be State reorganization within a country.

[2] 1. In the case of the UNDP three indicator (life expectancy at birth, education and income) based calculations:

i). let

$l = L_b - L_k$, where L_b is the maximum actual LEB index value, say, of country b, and L_k is the minimum actual LEB index value, say, of country k

$e = E_m - E_n$, where E_m is the maximum actual EDN index value, say, of country m, and E_n is the minimum actual EDN index value, say, of country n

$g = G_p - G_q$ where G_p is the maximum actual GDP index value, say, of country p, and G_q is the minimum actual GDP index value, say, of country q.

ii). Take the minimum of (1,e and g). Let us suppose that $1 < e$ and $1 < g$ (i.e. 1 is the minimum or least value among 1,e and g).

iii). Then let $e^* = 1/e$ and $g^* = 1/g$.

iv). Adjust L_j, E_j and G_j as follows.

Since 1 is minimum, let:

$aL_j = L_j$ for all j

$aEj = e^* E_j$ for all j

$aGj = g^* G_j$ for all j

v). $aHDI_j = (aL_j + aE_j + aG_j)/3$

vi).Choose $\max_j (aHDI_j)$ and $HDI_j)$

vii). Let $v = (HDI_j)/\max_j(aHDI_j)$

viii). Let $AHDI_j = v(aHDI_j)$

ix). Rank countries according to AHDI with higher values getting a better rank.

[3] The Borda Score or Borda Count of a region is the sum of its ranks for each indicator; higher the score lower the rank of a region in terms of overall development.

[4] Here R_i+1 is "better than" R_i (for all i) with respect to all indicators X_j (in this case, X_1 and X_2).

[5] Several interesting and informative articles are also available on the Internet.

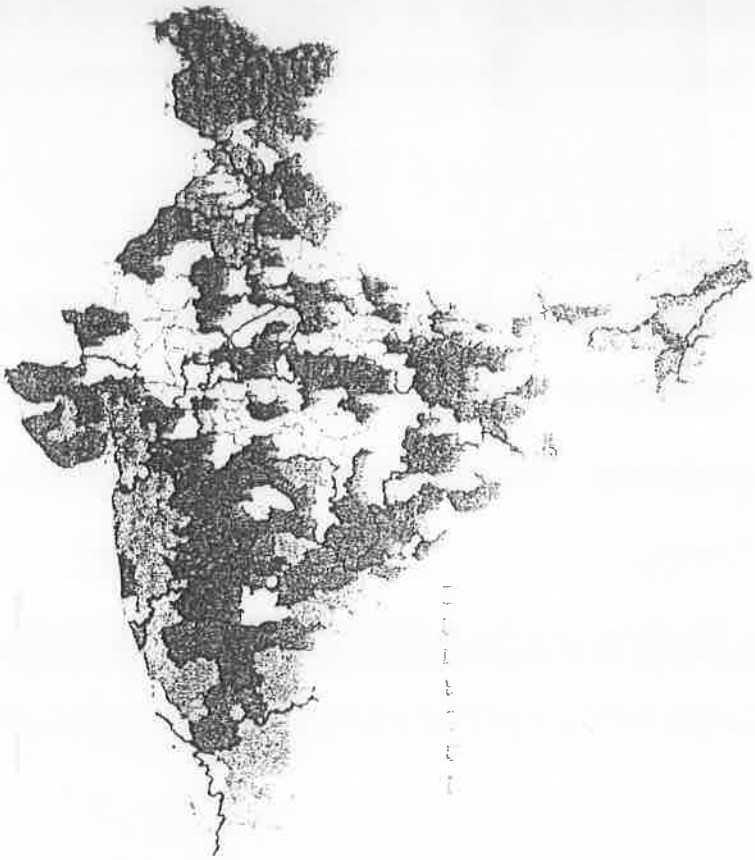
[6] The VISCOVERY® SOMine Standard Edition package was used for the K-SOM analysis. We are grateful to Chemols Infotech Private Limited for the data analysis. .

[7] The specialized VISCOVERY® SOMine package gives users scope for exploratory data analysis like, for example, "nearest" regions in development levels, component maps, and so on. These could be of practical use to development agencies.

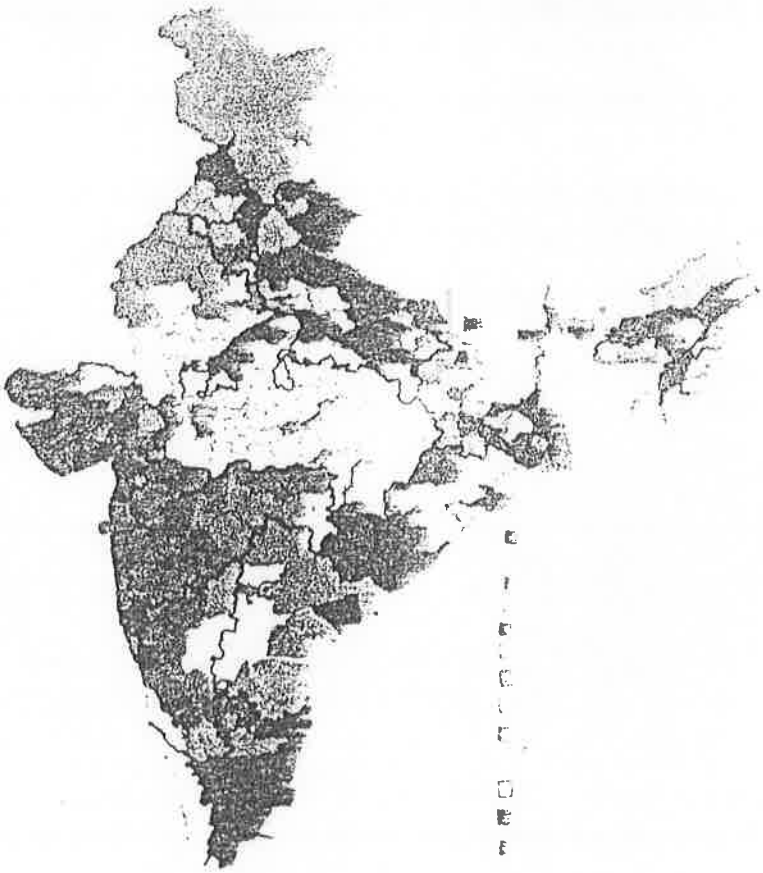
[8] districts referred in the text have been marked on Map 1 only.

[9] talukas referred in the text have been marked on Map 4 only.

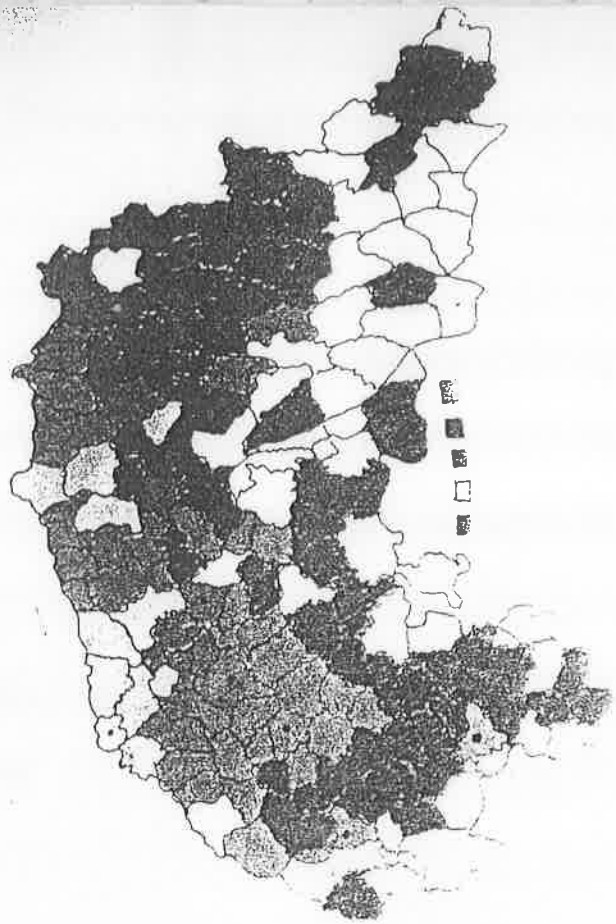
MAP – 1: HDI



MAP – 2:AHDI

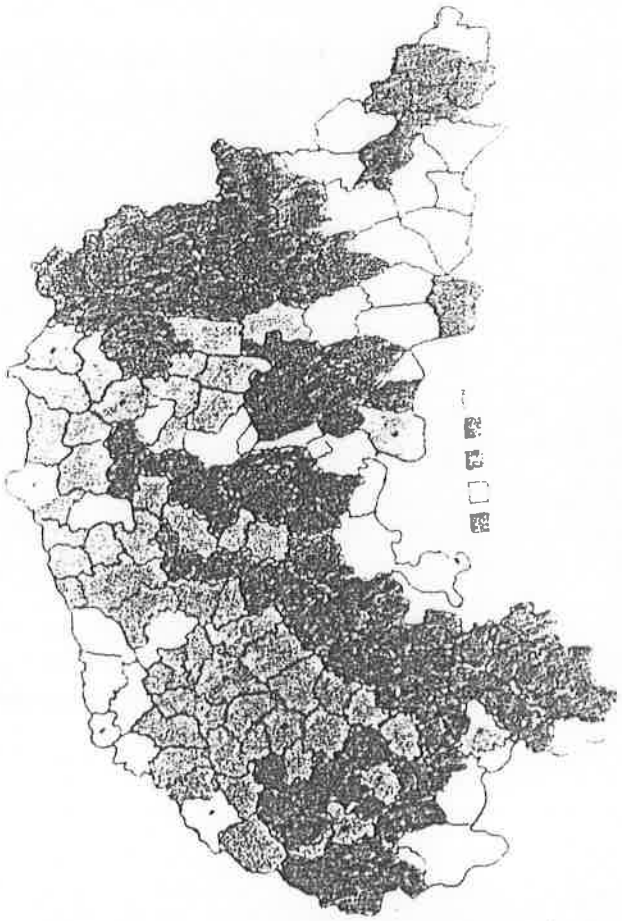


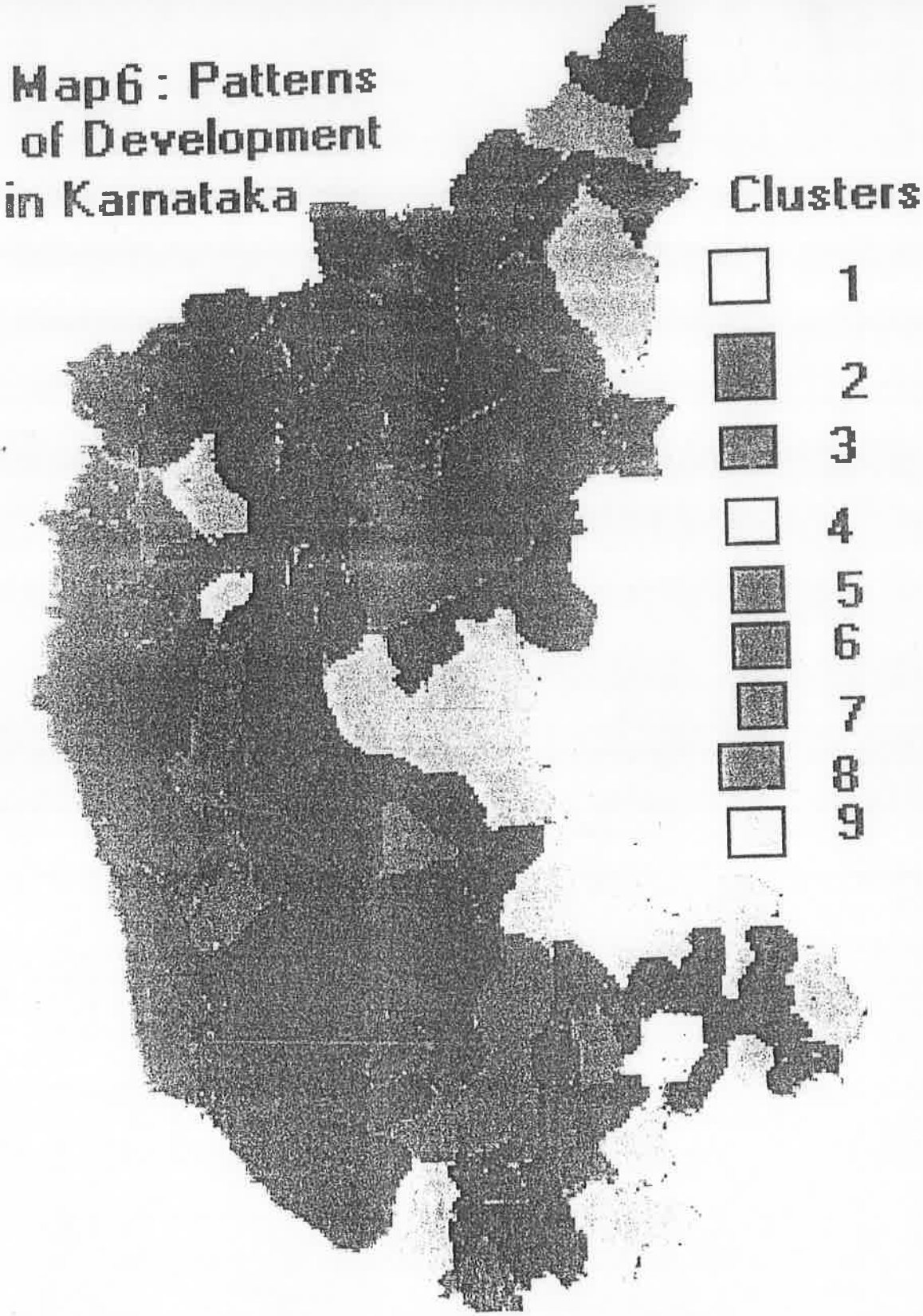
MAP – 3: Clusters



MAP – 4: HDI

MAP – 5: AHDI




Map6 : Patterns of Development in Karnataka
Clusters
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