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DECLINE IN AGRICULTURE : A CENSUS PERSPECTIVE

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One of the most revealing features under Census of India 2001, Provisional Reports, is the all-round decline of agricultural employment across the country. As is well known, agriculture used to be the highest source of employment, particularly in rural areas as evident from the previous Census reports on percentage share of cultivators and agricultural labourers among the total work force. While agriculture still continues to be the dominating source of employment in rural areas there is a distinct trend under the 2001 Provisional Census reports towards a shift away from agriculture. In this article we shall mainly concentrate on the census data on workers with particular reference to agricultural workers. We shall also try to analyse the implications of the data and its significance for our future agricultural prospects.

1. Decline of the Main Worker :

Before directly dealing with the 2001 provisional reports on cultivators and agricultural labourers let us first touch on another important feature of the data on main workers under 2001 Census which indicates the shrinkage of rural employment opportunities. Under census terminology a main worker is one who has worked for six months or more in any productive capacity during the previous twelve months from the date of enumeration. In the following Table we have given the all-India percentage of main workers to total Population from 1951-2001 by residence.

Table 1

Percentage of Main Workers By Residence, India, 1951 - 2001

Census year	India		
	Total	Rural	Urban
1951	39.91	41.00	34.71
1961	42.96	45.03	33.48
1971	32.92	33.82	29.33
1981	33.45	34.76	29.23
1991	34.10	35.69	29.50
2001 (P)	30.55	31.03	29.30

Source : *Census of India*, Union PCA 1951 – 1991 and *Provisional Reports*, 2001

It would be apparent from the above Table that after the great fall in the percentage of main workers between 1961 and 1971 by more than 10 percentage points, the decade of 1991-2001 represents the second decline in main workers within last fifty years. There have been improvements in the percentage of main workers in all other census reports after Independence. The two border wars, severe drought and food crisis, political instability after end of the Nehruvian era, industrial turmoil and unrest had made the decade of 1961-71 one of the worst in the economic history of Independent India. But no such apparent reason can be attributed to the decline in employment opportunities during 1991-2001. Generally good monsoon almost throughout the decade, political stability and economic recovery towards the last part of the decade generally marked the decade of the 1990s as economically productive. This should have been reflected in the data on employment generation in 2001 census report but it has betrayed one's expectations. There is another very significant difference between the decline in main workers during 1961-71 with that of the last decade. It will be seen from Table-1 that during the earlier decade the percentage of urban main workers had also declined

substantially by 4.5 points though not as high as the 11.25 points decline in rural areas. During 1991-2001, though the rural main workers declined by 4.81 points, there is almost no decline in case of urban main workers. **In Annexure-1** we have given the percent main and marginal workers for India, State and UT by residence and sex for 1981-2001. It will be seen therefrom that that out of 31 States / UTs for which comparison with 1991 are available (there was no census in Jammu and Kashmir in 1991 due to disturbed conditions while there are 3 newly created States for which 1991 comparisons are unavailable) rural main workers declined in as many as 26 States/UTs while urban main workers declined in only 16 States/UTs. Another very significant difference between the decline of main workers during 1961-71 and that of 1991-2001 is the different impact on the female main workers. For example, during 1961-71 the percentage of female main workers declined by a huge 16.09 points against the decline by 4.61 points in case of males. Now the tables have been turned in the opposite direction. During 1991-2001 the male main worker declined by 5.58 percentage points from 50.93 to 45.35 of the total male population but the female main workers declined by only 1.25 points from 15.43 in 1991 to 14.68 in 2001. In fact it will be seen from **Annexure-1** that the percentage of urban female main workers had increased by almost a point in 2001 over that of 1991. Thus it is quite clear that brunt of the decline in employment opportunities has taken place in the rural areas and in case of males. For a better understanding of the regional variations we have given in **Map-1** the location of the States/UTs which have suffered decline in main workers by absolute number or by percentage during 1991-2001.

2. Decline of Agricultural Workers :

If we want to look at the sector which has been hit hardest by this decline in main workers we shall immediately come to the agricultural sector. Among the four broad classifications of the working population so far released by Registrar General, India for 2001, Cultivators and Agricultural Laboureres have suffered serious decline both in terms of percentage to total population as well as sectoral share of the

working population. In the following Table we have given the sector-wise percentage distribution of total (main+marginal) workers by residence between 1961 and 2001.

Table 2

India	T R U	Percentage of Categories of Workers to Total (Main + Marginal) Workers by Residence, India : 1961 - 2001				
		Cultivators				
		1961	**1971**	**1981**	**1991**	**2001(P)**
1	2	3	4	5	6	7
	T	52.80	43.34	42.04	39.69	31.71
	R	60.33	51.59	50.84	48.68	40.14
	U	6.55	5.10	5.36	5.31	3.21
		Agricultural Labourers				
I		**1961**	**1971**	**1981**	**1991**	**2001**
N		8	9	10	11	12
D	T	16.71	26.33	26.33	27.37	26.69
I	R	18.86	30.71	31.10	32.66	33.20
A	U	3.48	6.00	6.44	7.16	4.71
		Household Industry Workers				
		1961	**1971**	**1981**	**1991**	**2001**
		13	14	15	16	17
	T	6.38	3.52	3.50	2.40	4.07
	R	6.13	3.21	3.09	2.17	3.77
	U	7.90	4.96	5.21	3.31	5.10
		Other Workers				
		1961	**1971**	**1981**	**1991**	**2001**
		18	19	20	21	22
	T	24.12	26.81	28.12	30.53	37.52
	R	14.68	14.49	14.97	16.49	22.90
	U	82.07	83.94	82.99	84.22	86.98

T - Total, R - Rural, U - Urban

Source : *Census of India*, Union PCA 1961-1991, *Provisional Reports*, 2001

The decline of agricultural workers at the all-India level during 1991-2001 is quite evident from the above Table. Between 1991 and 2001 the percentage of cultivators declined by 7.97 percentage points while agricultural laboureres declined by 0.68 points. This is in contrast to the household industry sector which increased by 1.67 points and other workers which increased by 6.99 points during the same period. The percentage of cultivators given in Table-2 indicates that in 2001 it went down to its lowest level in the last fifty years since 1951 or ever. We have given the broad category wise breakup of total (main + marginal) workers in India, States and U.Ts. for 1991 and 2001 by total population and by total workers in **Annexure-2 and 2A** respectively. It will be seen therefrom that of the 31 States and Union Territories which are comparable with 1991 there has been percentage decline of cultivators in all of them. Out of these 31 States and U.Ts. where cultivators went down between 1991 and 2001 it declined in 13 States/UTs even by absolute number. Cultivators are of course those who are the owners of agricultural land or otherwise have right or interest over the production. Agricultural labourers are, on the other hand, those landless labourers who work in other's land in return for wage in cash or kind. But even in case of agricultural workers it will be evident from **Annexure-2A** that out of 31 States agricultural labourers declined by percentage between 1991 and 2001 in 20 and by absolute number in 8. To have a better appretiation of the all-India scenario we have given in **Map-2** the States and U.Ts. in India showing decline by absolute number and by percentage in cultivators and agricultural labourers during 1991-2001. It will be seen therefrom that the main Hindi heartland and the southern States have been mostly affected by this decline of agriculture.

3. Percentage Decline in Agricultural Production :

The provisional reports under Census of India will not give us the full impact of the decline of agricultural occupation in 2001 on the ultimate agricultural production unless there is increase in the land under cultivation in tandem with the increase in population. In case cultivated land remains the same percentage reduction in agricultural workers will not affect per unit deployment of agricultural workers unless the percentage decline in agricultural employment also involves decline by absolute number. In the following Table we have given the gross area under cultivation for

major crops except plantation corps between 1961 and 2001 at the all India level :

Table 3

Gross Area under Major Crops (in Million Hectares) except Plantation Crops India, 1961 - 2001

Crop	1960-61	1970-71	1980-81	1990-91	2000-01
Foodgrains	115.6	124.3	126.7	127.8	121.0
Oil seeds	13.8	16.6	17.6	24.1	22.8
Sugar cane	2.4	2.6	2.7	3.7	4.3
Cotton	7.6	7.6	7.8	7.4	8.5
Jute & Mesta	0.9	1.1	1.3	1.00	1.00
Potato	0.4	0.5	0.7	0.9	1.2
Total	140.7	152.9	156.8	164.9	158.8

Source : *Economic Survey* 2002-2003

It will be seen from the above Table that the gross land area under cultivation remained almost static since 1970-71 perhaps indicating that we are now entering a stage of decline in the land available for cultivation. However, in case there is significant growth in yield rate it is possible to increase production without corresponding rise in the area under cultivation. In the following table we have given the production of major crops (except plantation crops which are not treated as agricultural products under census) at the all-India level :

Table 4

Production of Major Crops (except plantation crops) (in Million Tonnes) India, 1960-61 to 2000-01

Crop	1960-61	1970-71	1980-81	1990-91	2000-01
Foodgrains	82.0	108.4	129.6	176.4	199.5
Oil seeds	7.0	9.6	9.4	18.6	18.4
Sugar cane	110.0	126.4	154.2	241.0	296.0
Cotton	5.6	4.8	7.0	9.8	9.5
Jute & Mesta	5.3	6.2	8.2	9.2	10.5
Potato	2.7	4.8	9.7	15.2	22.1
Total	**212.6**	**260.2**	**318.1**	**470.2**	**556.0**

Source : *Economic Survey* 2002-2003

It will be seen from the above Table that though the crop area remained almost unchanged since 1970-71 production of foodgrains has seen tremendous increase basically due to spectacular jump in the productivity of cereals riding high on the wave of the Green Revolution from late 1960s. While the above Table on the production of major crops is apt to paint a rosy picture of the agricultural scenario in one's mind we have to find out the year-wise production and productivity for last five years to go into the theme of this article. But before that it will be interesting to see the decennial changes in the respective growth rate of agricultural workers (cultivators + agricultural labourers) and major agricultural factors to see how they have changed over the year.

Table 5

Comparative Decennial Growth Rate of Population, Agricultural Workers, Agricultural Area and Major Agricultural Crops, (Figures in Percent) In India, 1961-2001

Sl. No.	Field	Unit	1961-1971	1971-1981	1981-1991	1991-2001
1	Decennial Population Growth Rate	Person	24.8	25.1	23.5	21.4
2	Decennial Growth Rate of Agricultural Workers (Cultivators+Agri - Labourers- Main+Marginal)	Person	(-) 4.2	33.1	30.4	(-) 7.8
3	Decennial Percentage Increase in Agricultural Area under Principal Crops (except Plantation crops)	Hectare	8.5	2.7	5.2	(-) 3.7
4	Decennial Percentage Increase in Production of Major Crops (except Plantation crops)	Ton/Bale	22.4	22.3	47.8	18.2
5	Decennial Percentage Increase in Yield per hectare/Kg of Major Crops	Hectare/Kg	8.3	9.9	40.7	10.9

Source : 1.*Census of India*, Union PCA 1961-1991 & *Provisional Reports*, 2001, 2. *Economic Survey* 2002-2003

Above table would seem to indicate that we have reached a pleteau so far as agricultural workers, agricultural area, production and productivity are concerned. Unfortunately the same is not true so far as the population growth rate is concerned. Thus unless immediate steps are taken to reverse the trend in agricultural production and productivity and strengthen the efforts towards checking the population growth rate a serious gap between demand and supply in foodgrains is going to confront us in the next ten years. We shall try to explain this in the next paragraph. For the present if we concentrate on the growth of total agricultural workers, the parabolic shape of the growth curve during 1961-2001 as evident from the above table would lend one to wonder as to when the next upward movement will start. This would seem all the more plausible as the decline of (-)14.2 percentage points during 1961-71 was followed by the steep rise by 33.0 and 30.4 points during 1971-81 and 1981-91 respectively. But we have already explained the possible reasons for the huge all-round decline of employment opportunities during 1961-71 and had maintained that the economic condition during the two decades of 1961-71 and 1991-2001 are vastly different. On the agricultural scenario, perse, however, the grounds for the major intake of agricultural workers were already there during the decade ending with 1971. The agricultural area under principal crops had increased by 8.5 percentage points and production of major crops had increased by 22.4 percentage points though it was still lower than the population growth rate. The per hectare yield of major crops had also increased by 8.3 percentage points during this decade of 1961-71. Thus the grounds for absorption of higher agricultural workers were already there at the beginning of Green Revolution in 1971. This had led to the quantum jump of all the agricultural factors during the next two decades of 1971-81 and 1981-91. But what we see at the beginning to the 3rd Millennium does not encourage one to be very optimistic about agricultural growth during the next decade of 2001-11. The agricultural area has seen a negative growth of (-)3.7 points during 1991-2001 which is, perhaps, on the expected lines as there is ever increasing pressure of population on the agricultural land and the resultant conversion to residential or industrial use. The growth rate of production of major crops had for the first time in 40 year gone below 20 percentage points to 18.2 and thus its negative balance with that of population growth rate also stands at the widest during last 40

years. The rise in productivity in major agricultural crops is steady at 10.9 percentage points above that of the previous decade but is far short of the magnificent rise of 40.7 points during the previous decade of 1981-91. Thus as things stand in 2001 there is hardly any sign of the expected recovery in agricultural employment during the current decade of 2001-11.

4. Food Security :

To many the severe food crisis faced by the country during 1960s may seem to be belonging to some forgotten past. The Green Revolution effected towards the end of the 1960s and the beginning of 1970s through the sincere efforts of our agricultural scientists, good extension work and above all the hard toil put in by our agricultural workers in the field had made the quantum jump in agricultural production and productivity possible during the decades of 1970s and 1980s. But the euphoria and the stability seem to have waned considerably from the mid-1990s. In the Table below we have given the mid term population projection, production of foodgrains (cereals and pulses) and per capita net availability in cereals and pulses during 1995-2001.

Table 6

Mid Year Population, Production of Food Grains, Net availability of Cereals & Pulses with Per capita Net Availability Per Day, India, 1995-2001

Net Availability (in Million Tonnes)				Per Capita Net Availability Per Day (in Grams)		
Year	Population (Millions)	Cereals	Pulses	Cereals	Pulses	Total
1995	922.0	154.0	12.7	457.6	37.8	495.4
1996	941.6	152.1	11.3	442.5	32.7	475.2
1997	959.8	163.2	13.0	466.0	37.1	503.1
1998	978.1	147.9	11.7	414.2	32.8	447.0
1999	996.4	156.1	13.3	429.2	36.5	465.7
2000	1014.8	156.6	11.7	422.6	31.8	454.0
2001	1033.3	145.2	11.0	385.1	29.1	414.2

Source : *Economic Survey* 2002-2003

Although the Provisional Population as per 2001 is slightly less at 1027.0 millions leading to a slightly higher per capita availability of cereals, it will be still lower than 400 gram per day, the lowest since 1980. The availability of pulses has been declining over the years and the per capita availability of cereals and pulses at 414.1 grams per day is also the lowest since 1980. As per the dietary guidelines for Indians set by the National Institute of Nuitrition, ICMR, the required intake of cereals & pulses are given below :

Table 7

Balanced Diet for Adults- Sedentary / Moderate / Heavy Activity

Food Grains	Sedentary		Moderate		Heavy	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
	(in gms.)		(in gms.)		(in gms.)	
Cereals	420	300	480	360	690	480
Pulses *	60	60	90	75	90	90

* For Non Vegetarians 30 gms (one portion) of Egg/Meat/Chicken/Fish are to be substituted for pulses

Source : *Dietary Guidelines for Indians : A Manual* - National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.

Thus the per capita net availability of Cereals and Pulses a 2001 falls for short of the requirement for sedentary males and is also below the requirement for females with moderate activity. If this decline in agriculture continues in the next decade we are likely to face serious food crisis around 2015 with the present growth rate of population.

5. Some Thoughts on Possible Remedies :

The discussion as above would suggest two immediate areas of concern – (a) how to generate more employment in the agriculture sector to stop the evident serious decline of regular employment in this sector at least till such time as the excess/additional manpower can be absorbed in the service / manufacturing sectors

and (b) how to keep the momentum of the agricultural growth rate above the population growth in the long run till the expected stabilization of the Indian population around 2051 and in the short run to avoid serious scarcity in the availability of food grains. Since the second question is comparatively easiyer to deal with we shall try to answer the same earlier.

There are basically two ways to increase the production of food-grain. Firstly through increase of the land area under cultivation by a substantial and effective margin. It will be seen for Table 5 that the decennial percentage increase in the agricultural area under principal crops has been at a moderate rate but the danger signal is that during the last decade of 1991-2001 it has shown negative growth of (-) 3.7 points. As already mentioned, with the ever increasing pressure on land due to increase in population there is perhaps little possibility of substantial increase of agricultural area even in the long run. To emphasize the point further we are giving below the gross area under cereals and pulses from 1960-1961 to 2001-02.

Table 8

Gross Area Under Cultivation for Cereals and Pulses (in Million Hectare) India, 1960-61 to 2001-02

Crop Year	Cereals	Pulses	Total
1960-61	92.0	23.6	115.6
1970-71	101.8	22.6	124.4
1980-81	104.2	22.5	126.7
1990-91	103.2	24.7	127.9
1995-96	98.7	22.3	121.0
1996-97	101.1	22.4	123.5
1997-98	101.0	22.9	123.9
1998-91	101.7	23.5	125.2
1999-00	102.0	21.1	123.1
2000-01	100.7	20.3	121.0
2001-02(P)	100.2	21.7	121.9

Source : *Economic Survey*, 2002-2003

The above table would indicate the almost total stagration in the available area for cultivation of cereals and pulses. In fact whatever percentage increase has been shown in Table 5 is basically due to increase in the area under oilseeds and, to a lesser extent, under sugarcane and cotton. Thus any substantial increase in area under major crops, particularly food-grains like cereals and pulses seem to be rather remote even in the long run. It is, of course, possible to bring some additional area under cultivation through intensive soil reclamation drive and conversion of hitherto barren areas to agricultural land by scientific long term water management tools. But their combined impact on foodgrains production can, at this stage, be only described as marginal.

The second possibility for increase of foodgrains production is, of course, through increase in productivity. It would appear from Table 5 that the decennial percentage increase in per hectare yield of major crops has been quite impressive. Particularly during 1981-91 the decennial increase has been by 40.7 percentage points. Though during 1991-2001 the growth in per hectare yield declined to 10.9 points there is still considerable scope for improvement In the following Table we have given per hectare yield of major cereals, i.e., Rice, Wheat and Pulses from 1960-61 to 2001-02.

Inset Table 9

Per Hectare Yield of Rice, Wheat and Pulses (in qtls/hectare)

India, 1960-61 to 2000-01

Crop Year	Per Hectare Yield (in qtls.)		
	Rice	Wheat	Pulses
1960-61	10.1	8.5	5.4
1970-71	11.2	13.0	5.2
1980-81	13.3	16.3	4.7
1990-91	17.4	22.8	5.8
2000-01	19.6	27.1	5.4

Source: Economic Survey 2002-03

It will be seen from the above Table that during the five decades under review we have achieved excellent progress in improving the productivity in wheat and, at a lower degree, in rice. However, there has been practically no improvement in the per hectare yield of pulses. Even if we take the improved yield in wheat and rice into consideration there is still hope for substantial increase in production as per prevalent yield in major rice and wheat producing countries of the world. In the Table below we have given the per hectare yield of rice and wheat in the major producing countries of the world at 1998 level.

Table 10

Per Hectare Yield of Rice and Wheat in Major Producing Countries of the World (Qtls. / Hectare) 1998

Country	Per Hectare Yield (qtl./hectare)	
	Rice	Wheat
World	37.5	26.2
Argentina	-	21.7
Australia	-	19.1
Bangladesh	27.6	22.4
Brazil	25.4	-
China	60.6	36.7
Egypt	85.3	59.9
France	-	76.0
India	28.9	25.8
Indonesia	41.7	-
Italy	-	35.8
Japan	62.2	-
Myanmar	30.8	-
Pakistan	28.2	22.4
Russian Federation	28.0	10.3
Thailand	23.2	-
Turkey	-	22.3
U.K.	-	75.6
U.S.A.	63.5	29.1
Vietnam	39.6	-

Source : Website of Ministry of Agriculture and Cooperation(agnicoop.nic.in) as quoted from *F.A.O. Production Year Book*, 1998

It would seen from the above table that in case of rice we are substantially below the world average not to speak of the very high productivity in Egypt, U.S.A., Japan and China. Productivity of even middle tier countries like Indonesia or Vietnam are substantially higher than that of us. In case of wheat, we are marginally below the world average in productivity but, as in case of rice, there is wide gap between the yield achieved by France, UK, Egypt or even the countries with middle level yield like China, Italy or USA. In fact China can be a very good example before us as with only about 75% of our area under cultivation China is producing around 158% of our total rice production. Similar yield variation is there in case of wheat also. Even Indonesia and Vietnam who are producing more that ten qtls. more of rice per hectare than what we are producing can be role models for us so far as agricultural production is concerned. Thus there is no reason to assume that we have achieved the end of the road in agricultural production/ productivity in foodgrain because of the stagnation in the last 6/7 years. It is quite within the realm of possibility that we can achieve much higher production of foodgrain within a very short time not only to avoid any threat to our food security but also can emerge as the leading exporter of foodgrain in the world. But for that we have to assess our deficiencies and try to rectify our basic structural weaknesses so that far higher degree of inputs can be made available at the field level.

One of the major requirement for sustained high agricultural output is assured supply of water through irrigation. But inspite of our belated attempts at scientific water management, more than fifty percent of our agricultural land is fully dependent on the rains as the only source of water. In **Annexure-3** we have given the area under irrigation for different crops. It will be seen therefrom that apart from wheat, barley and sugarcane there is still a very large gap in the regular availability of water in case of other crops. In case of rice, the most important agricultural crop, around 50 percent of the total crop area is under irrigation. What is of even more concern is that there has been practically no increase in the area under irrigation after 1995. The position in case of pulses is even poorer with no significant increase in the area under irrigation since 1971. There is also considerable difference in the irrigation

facilities available to different States. Thus extension of irrigation facilities to cover most of the area under cultivation particularly in case foodgrains is one of the prime necessity to maintain our food security and, in general, to reverse the decline in agriculture during the last decade, particularly after 1995. Along with water other important inputs to effect substantial improvement in agriculture include assured supply of fertilizers and modern agricultural tools like improved seeds and use of biotechnology. At the beginning of the Green Revolution emphasis was basically on quantitative expansion. But in our haste we have not perhaps given as much importance to the qualitative improvement. Modern biotechnology may bridge this gap between high quality and the quantitative aspect.

6. Creation of More Employment :

Even assuming that production of foodgrains and other agricultural crops have the potential and prospect for substantial improvement even in the short run, the immediate question that comes to one's mind is how to meet the huge expenditure on building agricultural infrastructure like irrigation facilities and inputs like fertilizers, seeds and biotechnology. Even more important is the question, if increase in agricultural production will ensure corresponding increase in agricultural employment. This brings back our preliminary query on how to provide for more employment opportunities in the agricultural sector to stop the obvious decline in rural employment noticed in the 2001 census reports. Before attempting any reply to this complicated question let us first examine the pressure of the growing population on our agricultural land over the years.

Table 11

Per hectare employment of Cultivators and Agricultural Laboureres and Average Yield of Foodgrains India, 1961-2001

Year	Total land under Agriculture (Million Hectares)	Total no. of Cultivators (Millions)	No. of Cultivators employed per Hectare	Total no. of Agri Labourers (Millions)	No. of Agri Labourers employed per Hectare	Total no. of Agri workers (Cultivators+Agri-Labourers) (Millions)	No. of agri workers (Cultivators+Agri-Labourers) employed per Hectare	Average Yield of Foodgrains per Hectare (Qtl./Hectare)
1961	140.7	99.6	0.7	31.5	0.2	131.1	0.9	7.9
1971	152.7	78.2	0.5	47.5	0.3	125.7	0.8	8.7
1981	156.8	102.8	0.7	64.4	0.4	167.2	1.1	10.2
1991	164.9	124.7	0.8	86.0	0.5	210.7	1.3	13.8
2001	158.8	127.6	0.8	107.4	0.7	235.0	1.5	16.5

Source : 1.*Economic Survey*, 2002-2003. 2. *Union PCA*, India, 1961-1991 and *Provisional Reports* 2001

It will be seen from the above table that the number of cultivators per hectare of agricultural land remained almost static during the last 50 years except the great decline of 1961-71. But the same is not true of agricultural labourers whose number increased by more that three times during the last fifty years and caused near doubling of the total agricultural workers (cultivators + agricultural labourers). There is similar increase in per hectare employment of agricultural workers from 0.9 to 1.5. Although the per hectare average yield of food-grains increased from 7.1 qtls. in 1961 to 16.5 qtls. in 2001 the question that would come to one's mind is, if the increase in yield is sufficient to make the additional inputs terms of in agricultural workers viable. With the gradual easing out of the subsidized agricultural regime and the annual hike in the administered price of foodgrains through higher procurement prices fixed by the Govt. it is difficult to sustain the cost of labour even at the present deployment level, not to speak of cost for other inputs like fertilizers, seeds and agricultural implements at the present level of productivity. It is no wonder that the agricultural employment rate has fallen across the country during 1991-2001 and is likely to fall further. In fact higher employment of agricultural labourer does not necessarily mean higher productivity. In the Table below we have given the percentage of employment in the agricultural sector of the higher productivity countries of the world as per Table-10. It will be seen therefrom that there is a declining trend in agricultural employment across the world without in any way affecting productivity.

Table 12
Percentage Employment in Agricultural Sector of Major Foodgrains Producing Countries of the World, 1980-2000

Country	Percentage of Employment in Agricultural Sector to Total Workers			
	Year	Person	Male	Female
Australia	1980	6.5	7.8	4.1
	1990	5.6	6.7	4.0
	1999	4.9	6.0	3.5
Brazil	1980	NA	NA	NA
	1990	22.8	28.1	13.3
	1998	23.4	26.0	19.3
China	1980	68.7	NA	NA
	1990	53.5	NA	NA
	1998	47.5	NA	NA
Egypt	1980	42.4	44.9	9.5
	1990	39.0	34.9	52.0
	1998	29.8	28.5	35.3
France	1980	1.8	2.6	0.8
	1990	1.4	1.9	0.7
	2000	1.3	1.9	0.7
Japan	1980	10.4	8.7	13.2
	1990	7.2	6.3	8.5
	2000	5.1	4.7	5.5
Russian Fedaration	1980	16.0	18.8	13.2
	1990	13.9	NA	NA
	1999	11.8	15.2	8.1
Pakistan	1980	52.7	NA	NA
	1990	51.1	48.4	72.2
	1999	47.3	NA	NA
Spain	1980	19.3	19.6	18.4
	1990	11.8	12.6	10.2
	2000	7.3	8.5	5.2
UK	1980	2.6	3.5	1.3
	1990	2.1	2.9	1.1
	2000	1.5	2.2	0.8
USA	1980	3.6	5.0	1.6
	1990	2.9	4.1	1.3
	2000	2.6	3.5	1.4
INDIA	1981	68.4	66.1	82.3
	1991	67.1	60.0	82.4
	2001	58.0	52.2	72.0

Source : 1. *ILO Report on Employment By Sector*, 2001
2. *Union PCA*, 1981, 1991 and *Provisional Census reports*, 2001, Registrar General, India.

It is interesting to note from the above Table that China and India had almost the same percentage of agricultural workers to total workers in 1980. In fact the Chinese percentage was a bit higher. But China managed to reduce its dependence on agriculture as a source of employment by more than 20.0 percentage points in the next twenty years. During the same period we have managed to reduce our dependence on agriculture for employment by less than 9.0 percentage points. During 1980-2000 the Chinese agricultural output grew by more than 85.0 percent. Our agricultural production grew by less than 75.0 percent during about the same period.

7. Reform In The Agricultural Sector :

The analysis of employment in the agricultural sector as given in Table- 11 above would make it clear that additional input of agricultural labourers within the limited availability of land may increase productivity but is not sufficient in the long run to sustain the viability of the production. For that we need extra-manual inputs like proper availability of water, various fertilizers, high quality seeds and implements and modern agricultural technology including bio-technology. But introduction of such modern farming across the country to cover the major crops require huge investments in term of both capital and modern and scientific management skills which the agricultural sector, in general, is unable to provide. Fragmentation of land holdings in the name of land reforms, failure of the cooperative movement to provide much needed capital to the small or marginal farmers or to encourage collective farming and decline of the extension services provided by the Govt. have estallished that traditional and age old agricultural practices are still followed in large parts of the country. The new economic reforms started in 1991 has largely bypassed the agricultural sector. While packaging and marketing of agricultural products in a big way have just started the huge investments that are urgently required to boost production and application of modern techniques in the agricultural sector have not really come its way. Unless the age old land holding patterns are changed and land ceilings are done away with it will be very difficult to bring in the required high investments in agricultural production. While we have been trying to protect the small and the marginal farmers from large land sharks we have not really given them

the tools to make their units viable and rewarding. In an age when synergy is the 'mantra' of even the multinational companies we have left our farmer to fight his lonely battle against the weather gods, money lenders and big whole salers on the plea of protecting him and his land holding. Opening of agricultural production to the private sector while protecting the rights of the small farmers and share holders with a time lien to their land can bring in the much needed capital and consolidation of the agricultural holdings. This has the potential to change the face of rural India by creation of strong, large and viable agricultural units. This will at the same time provide newer employment in agricultural engineering, storage, processing, packaging, transport, marketing and far greater use of by-products through value additions. It is time that we wake up to the tremendous potential of the agricultural sector in our country and unleash the forces that can only take India to the path of all-round development in the rural sector having more than seventy percent of the Indian population and leading the way. Agricultural sector in India is crying out for reform.*

* Views expressed in this article is personal to the author.

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																		
		Main Worker									Marginal Worker									
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
INDIA	T	33.45	51.62	13.99	34.10	50.93	15.93	30.55	45.35	14.68	3.32	1.03	5.77	3.36	0.62	6.32	8.71	6.59	10.99
	R	34.76	52.62	16.00	35.69	51.76	18.57	31.03	44.51	16.77	4.11	1.19	7.18	4.29	0.72	8.10	10.94	7.85	14.21
	U	29.23	48.54	7.28	29.50	48.59	8.13	29.30	47.46	9.12	0.77	0.53	1.04	0.68	0.35	1.04	2.93	3.38	2.43
Jammu & Kashmir #	T	30.37	52.20	5.91	-	-	-	25.19	41.30	7.28	13.89	3.61	25.40	-	-	-	11.44	8.53	14.68
	R	30.76	52.86	6.12	-	-	-	23.78	38.73	7.65	16.96	4.41	30.97	-	-	-	14.15	10.41	18.19
	U	28.92	49.75	5.11	-	-	-	29.45	48.65	6.10	2.34	0.66	4.27	-	-	-	3.26	3.15	3.40
Himachal Pradesh	T	34.36	49.59	18.71	34.41	49.08	19.36	32.36	43.30	21.08	8.01	3.02	13.14	8.42	1.56	15.45	16.92	11.40	22.61
	R	34.39	49.22	19.38	34.50	48.79	20.08	32.13	42.30	21.88	8.58	3.23	13.98	9.07	1.67	16.53	18.49	12.45	24.59
	U	34.08	53.56	9.59	33.39	51.92	11.10	34.40	51.64	12.78	1.17	0.76	1.67	1.60	0.44	2.98	2.49	2.74	2.18
Punjab	T	29.35	53.14	2.27	30.07	54.12	2.79	32.23	49.97	11.92	2.15	0.61	3.89	0.81	0.10	1.61	5.36	4.13	6.76
	R	29.29	53.66	1.72	30.11	54.92	2.16	32.70	49.35	13.95	2.85	0.78	5.18	1.10	0.12	2.21	7.03	5.10	9.21
	U	29.51	51.80	3.71	29.96	52.22	4.31	31.31	51.14	7.87	0.31	0.17	0.49	0.10	0.04	0.17	2.09	2.28	1.87
Chandigarh *	T	34.69	54.50	8.93	34.83	54.24	10.28	36.51	54.77	12.87	0.23	0.27	0.18	0.10	0.10	0.11	1.12	1.33	0.85
	R	35.85	58.37	3.10	41.36	64.34	5.01	41.47	61.77	8.77	0.31	0.21	0.47	0.18	0.09	0.33	1.94	2.19	1.55
	U	34.61	54.23	9.30	34.08	52.95	10.80	35.94	53.89	13.27	0.22	0.27	0.16	0.09	0.10	0.09	1.03	1.22	0.79
Uttaranchal @	T	-	-	-	-	-	-	27.39	38.13	16.24	-	-	-	-	-	-	9.55	8.29	10.85
	R	-	-	-	-	-	-	27.77	36.09	19.50	-	-	-	-	-	-	11.86	9.90	13.82
	U	-	-	-	-	-	-	26.29	43.61	5.85	-	-	-	-	-	-	2.80	3.97	1.42

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																		
		Main Worker									Marginal Worker									
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Haryana	T	28.35	48.94	4.69	28.66	48.26	6.01	29.62	43.62	13.37	3.28	0.99	5.91	2.34	0.25	4.75	10.14	6.86	13.94
	R	28.21	48.64	4.89	28.85	48.20	6.46	30.20	42.71	15.78	4.10	1.20	7.41	3.02	0.31	6.16	12.93	8.18	18.40
	U	28.88	50.01	3.99	28.08	48.43	4.65	28.20	45.84	7.38	0.35	0.26	0.46	0.24	0.07	0.43	3.32	3.68	2.89
Delhi *	T	31.93	52.47	6.52	31.51	51.61	7.21	31.18	50.06	8.19	0.25	0.20	0.32	0.13	0.11	0.16	1.62	2.15	0.96
	R	28.49	46.64	6.10	28.75	48.06	4.84	29.11	46.37	7.78	1.66	0.85	2.65	0.37	0.17	0.62	2.89	3.33	2.35
	U	32.20	52.93	6.55	31.82	52.02	7.47	31.34	50.34	8.22	0.14	0.15	0.14	0.10	0.10	0.11	1.52	2.06	0.86
Rajasthan	T	30.48	49.92	9.32	31.62	48.53	13.04	30.86	43.81	16.83	6.13	0.98	11.74	7.25	0.77	14.36	11.25	6.26	16.66
	R	31.53	51.01	10.58	32.94	49.18	15.26	32.26	43.70	19.99	7.54	1.16	14.40	9.10	0.94	17.99	13.68	7.12	20.72
	U	26.54	45.93	4.45	27.18	46.36	5.36	26.29	44.15	6.22	0.83	0.29	1.43	0.99	0.24	1.86	3.27	3.49	3.02
Uttar Pradesh	T	29.22	50.31	5.39	29.73	49.31	7.45	23.74	39.58	6.10	1.49	0.45	2.67	2.47	0.36	4.87	8.86	7.68	10.18
	R	29.71	50.98	5.90	30.52	50.10	8.36	23.81	39.33	6.64	1.75	0.51	3.14	2.94	0.41	5.81	10.29	8.51	12.25
	U	26.99	47.30	2.99	26.56	46.19	3.75	23.47	40.52	4.01	0.31	0.17	0.47	0.57	0.18	1.03	3.45	4.56	2.18
Bihar	T	29.68	49.19	9.06	29.66	47.59	9.97	25.40	40.72	8.76	2.67	0.98	4.44	2.50	0.32	4.89	8.48	7.01	10.07
	R	30.23	50.01	9.70	30.42	48.52	10.79	25.75	41.06	9.24	2.97	1.06	4.95	2.81	0.35	5.47	9.09	7.37	10.95
	U	25.82	43.83	4.17	24.61	41.75	4.30	22.39	37.90	4.55	0.54	0.47	0.61	0.46	0.17	0.81	3.23	4.03	2.31
Sikkim	T	46.60	56.55	34.69	40.45	50.82	28.63	39.31	50.89	26.09	1.70	0.68	2.93	1.07	0.43	1.78	9.41	6.69	12.51
	R	47.61	55.90	38.01	40.68	50.56	29.61	39.57	50.75	26.89	1.94	0.71	3.36	1.06	0.34	1.87	10.17	6.99	13.78
	U	41.36	59.59	15.21	38.08	53.24	17.87	37.21	51.92	19.43	0.45	0.50	0.37	1.12	1.30	0.88	3.28	4.35	1.99

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																		
		Main Worker									Marginal Worker									
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Arunachal Pradesh	T	49.61	57.42	40.55	45.22	53.52	35.56	37.71	46.09	28.33	3.03	1.22	5.13	1.02	0.24	1.92	6.26	4.60	8.13
	R	50.20	57.21	42.24	46.54	53.43	38.72	39.28	45.99	31.87	3.22	1.29	5.40	1.14	0.26	2.14	7.19	5.14	9.46
	U	41.14	59.96	11.20	36.23	54.09	11.69	31.53	46.45	13.96	0.33	0.28	0.43	0.16	0.09	0.26	2.63	2.54	2.74
Nagaland	T	47.53	51.91	42.45	42.29	46.69	37.32	35.63	40.73	30.01	0.70	0.66	0.74	0.39	0.17	0.64	7.12	6.10	8.24
	R	49.90	52.05	47.50	44.29	46.36	42.03	37.08	40.31	33.62	0.77	0.74	0.80	0.46	0.20	0.75	8.00	6.77	9.31
	U	34.63	51.23	10.52	32.68	48.16	12.01	28.87	42.52	11.99	0.34	0.29	0.41	0.04	0.02	0.08	3.04	3.17	2.89
Manipur	T	40.35	45.94	34.59	38.55	44.21	32.65	31.68	39.83	23.22	2.85	0.86	4.90	3.63	1.06	6.30	13.11	9.08	17.29
	R	43.35	47.72	38.85	41.74	46.05	37.20	32.69	40.26	24.74	2.61	0.73	4.54	3.48	1.07	6.01	14.03	9.81	18.46
	U	32.00	40.99	22.71	30.17	39.29	20.82	28.50	38.45	18.58	3.52	1.22	5.90	4.01	1.04	7.06	10.22	6.72	13.70
Mizoram	T	41.73	50.38	32.33	42.09	49.59	33.95	40.83	49.29	31.82	3.71	2.15	5.40	6.82	4.28	9.57	11.87	8.16	15.82
	R	44.53	51.73	36.78	45.54	51.29	39.24	44.94	51.74	37.61	4.15	2.40	6.03	5.65	3.63	7.87	12.27	7.79	17.12
	U	33.19	46.35	18.45	38.05	47.57	27.83	36.64	46.77	25.99	2.36	1.41	3.43	8.18	5.06	11.54	11.45	8.55	14.50
Tripura	T	29.64	49.23	8.95	29.09	46.99	10.14	28.41	45.24	10.70	2.62	1.48	3.83	2.05	0.56	3.63	7.89	5.57	10.32
	R	29.99	49.80	9.03	29.21	46.92	10.40	28.08	44.49	10.76	2.85	1.54	4.25	2.34	0.60	4.18	9.03	6.12	12.10
	U	26.83	44.61	8.25	28.45	47.38	8.68	30.02	48.92	10.37	0.77	1.04	0.48	0.44	0.31	0.59	2.30	2.86	1.73
Meghalaya	T	43.44	53.12	33.29	40.32	49.54	30.67	32.21	40.40	23.80	2.49	0.85	4.21	2.35	0.53	4.25	9.27	7.36	11.22
	R	45.90	54.43	37.05	42.30	50.42	33.90	33.96	41.77	25.93	2.96	0.99	4.99	2.74	0.61	4.95	10.63	8.32	13.00
	U	32.27	47.33	15.61	31.64	45.78	16.10	25.05	34.78	15.16	0.36	0.22	0.51	0.66	0.23	1.13	3.70	3.41	3.99

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																		
		Main Worker									Marginal Worker									
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Assam	T	-	-	-	31.19	48.38	12.57	26.59	42.35	9.68	-	-	-	4.89	1.07	9.04	9.29	7.58	11.12
	R	-	-	-	31.30	48.14	13.26	26.15	41.46	9.86	-	-	-	5.44	1.17	10.01	10.30	8.31	12.42
	U	-	-	-	30.39	50.22	6.71	29.62	48.26	8.40	-	-	-	0.53	0.30	0.81	2.36	2.77	1.89
West Bengal	T	28.26	48.71	5.81	30.23	50.66	7.96	28.75	47.32	8.86	1.91	1.58	2.26	1.96	0.74	3.29	8.03	6.91	9.22
	R	28.04	48.72	6.19	30.61	51.18	8.74	27.91	46.00	8.87	2.26	1.84	2.70	2.57	0.91	4.33	10.02	8.30	11.83
	U	28.87	48.70	4.66	29.23	49.34	5.79	30.90	50.61	8.82	0.93	0.91	0.94	0.36	0.31	0.41	2.92	3.47	2.31
Jharkhand @	T	-	-	-	-	-	-	24.02	37.22	10.00	-	-	-	-	-	-	13.62	11.00	16.41
	R	-	-	-	-	-	-	24.47	36.95	11.50	-	-	-	-	-	-	16.59	12.96	20.36
	U	-	-	-	-	-	-	22.44	38.10	4.45	-	-	-	-	-	-	3.25	4.47	1.84
Orissa	T	32.75	54.38	10.70	32.78	52.86	12.10	26.08	43.07	8.60	5.26	1.46	9.11	4.75	0.93	8.69	12.80	9.68	16.02
	R	33.10	55.10	11.07	33.37	53.67	12.83	25.82	42.55	8.86	5.80	1.58	10.01	5.37	1.01	9.79	14.51	10.83	18.24
	U	30.10	49.38	7.65	28.93	47.90	7.03	27.56	45.93	7.03	1.26	0.75	1.84	0.74	0.46	1.07	3.10	3.44	2.73
Chhatisgarh @	T	-	-	-	-	-	-	33.92	45.44	22.28	-	-	-	-	-	-	12.62	7.54	17.75
	R	-	-	-	-	-	-	35.42	45.61	25.27	-	-	-	-	-	-	15.01	8.67	21.32
	U	-	-	-	-	-	-	27.98	44.76	9.95	-	-	-	-	-	-	3.10	3.19	3.01
Madhya Pradesh	T	38.41	53.52	22.35	37.68	51.51	22.82	31.66	44.87	17.31	4.52	0.96	8.30	5.15	0.75	9.86	11.08	6.76	15.79
	R	40.87	55.30	25.78	40.38	53.07	26.93	33.30	45.23	20.44	5.44	1.08	10.00	6.44	0.88	12.34	13.81	7.85	20.24
	U	28.74	46.80	8.31	28.71	46.46	8.82	27.12	43.88	8.47	0.88	0.49	1.32	0.85	0.33	1.42	3.52	3.77	3.24

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																	
		Main Worker									Marginal Worker								
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Gujarat	T	32.22	52.19	11.03	34.12	53.17	13.74	33.66	51.25	14.53	5.04	0.72	9.63	6.11	0.40	12.23	8.43	3.77	13.50
	R	33.78	53.27	13.46	36.54	54.42	17.70	35.11	50.41	18.93	7.02	0.90	13.40	8.97	0.49	17.90	12.44	5.19	20.11
	U	28.78	49.85	5.49	29.53	50.85	6.03	31.26	52.61	6.97	0.66	0.32	1.03	0.69	0.23	1.19	1.80	1.51	2.14
Daman & Diu *	T	26.86	43.09	11.59	31.66	50.67	12.04	42.77	63.84	13.07	6.36	1.40	11.03	5.97	0.96	11.13	3.20	1.72	5.27
	R	27.51	43.42	12.47	33.69	52.74	13.04	48.16	68.98	12.55	7.78	1.29	13.92	8.41	1.02	16.42	3.86	1.91	7.21
	U	25.74	42.52	10.07	29.35	48.19	10.96	33.29	52.51	13.74	3.91	1.58	6.08	3.19	0.89	5.44	2.02	1.32	2.74
Dadra & Nagar Haveli *	T	40.81	55.11	26.14	43.91	55.94	31.26	43.70	58.62	25.30	8.11	1.20	15.19	9.34	1.56	17.53	8.07	3.77	13.38
	R	41.18	55.39	26.68	44.37	55.76	32.57	44.20	56.77	29.41	8.24	1.00	15.63	9.92	1.66	18.48	9.65	4.53	15.68
	U	35.77	51.38	18.12	38.89	57.73	15.82	42.01	64.31	9.72	6.18	3.92	8.72	3.09	0.48	6.28	2.73	1.42	4.63
Maharashtra	T	38.71	52.51	23.98	39.28	51.24	26.47	36.87	48.65	24.10	3.85	1.22	6.65	3.68	0.92	6.64	6.60	4.85	8.49
	R	42.70	53.86	31.39	44.18	52.05	36.08	40.82	47.78	33.57	5.47	1.53	9.46	5.48	1.12	9.96	9.61	6.40	12.95
	U	31.31	50.17	9.11	31.52	50.02	10.37	31.49	49.77	10.58	0.85	0.69	1.03	0.82	0.61	1.07	2.51	2.83	2.14
Andhra Pradesh	T	42.26	57.12	27.02	42.77	55.14	30.05	38.10	50.71	25.21	3.50	0.56	6.53	2.28	0.35	4.27	7.70	5.74	9.72
	R	45.86	59.56	31.95	47.36	57.52	36.96	41.49	51.93	30.87	4.33	0.63	8.08	2.93	0.40	5.52	9.43	6.54	12.37
	U	30.40	49.27	10.49	30.30	48.71	11.09	29.11	47.48	10.03	0.80	0.31	1.32	0.53	0.21	0.85	3.11	3.62	2.59
Karnataka	T	36.76	53.90	18.95	38.45	53.53	22.73	36.71	51.92	20.92	3.48	0.70	6.38	3.55	0.56	6.66	7.90	4.95	10.96
	R	39.54	56.41	22.28	41.58	55.35	27.44	38.66	52.32	24.66	4.54	0.77	8.39	4.87	0.69	9.16	10.54	5.99	15.21
	U	29.92	47.88	10.53	31.44	49.55	11.96	32.92	51.15	13.52	0.89	0.51	1.29	0.60	0.28	0.94	2.75	2.95	2.54

Annexure-I

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981-2001

India / State / Union territory	R/U	Percentage to Total Population																		
		Main Worke									Marginal Worker									
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Goa	T	30.89	46.06	15.33	32.79	48.28	16.77	31.67	47.89	14.79	4.46	2.48	6.55	2.49	1.28	3.75	7.21	6.97	7.46
	R	30.34	44.88	16.47	32.88	47.15	18.50	30.40	45.57	15.05	5.73	3.02	8.43	3.52	1.66	5.39	10.29	9.28	11.32
	U	32.04	49.50	12.77	32.65	49.86	14.15	32.96	50.17	14.51	1.77	1.23	2.37	1.03	0.76	1.31	4.09	4.69	3.45
Lakshadweep	T	19.74	33.56	5.58	33.90	41.02	5.86	19.37	33.20	4.77	4.64	5.60	3.58	2.47	3.15	1.75	5.96	9.31	2.42
	R	10.69	31.23	[illegible]	21.44	37.70	[illegible]	11.08	30.47	4.07	6.36	7.76	4.90	3.35	5.08	1.54	6.21	10.25	2.00
	U	29.74	36.24	4.65	39.53	43.56	6.15	21.03	36.58	5.65	2.65	3.27	1.95	1.79	1.65	1.91	5.65	8.17	2.94
Kerala	T	26.68	41.04	12.73	28.53	44.62	12.81	25.87	41.89	10.74	3.85	3.85	3.85	2.90	2.74	3.04	6.45	8.48	4.54
	R	27.10	41.19	13.41	28.84	44.91	13.36	25.44	40.96	10.78	4.15	4.04	4.26	3.20	2.91	3.52	7.12	9.20	5.14
	U	24.86	40.37	9.67	27.66	44.57	11.30	27.10	44.54	10.62	2.56	3.04	2.09	1.95	2	1.72	4.54	4.25	2.91
Tamil Nadu	T	39.30	55.85	22.36	40.82	56.10	25.13	38.13	52.28	23.79	2.42	0.73	4.15	2.50	0.29	4.76	6.64	5.78	7.52
	R	43.20	58.35	27.85	45.07	57.92	31.97	40.56	51.79	30.08	3.28	0.89	5.70	3.42	0.30	6.53	9.41	7.59	11.25
	U	33.37	50.84	11.01	32.61	52.62	11.78	34.49	52.90	15.69	0.68	0.41	0.96	0.73	0.16	1.32	3.10	3.47	2.73
Pondicherry	T	29.66	46.02	11.09	32.41	50.11	14.34	32.54	50.52	14.57	1.75	1.06	2.45	0.67	0.44	0.90	2.59	2.78	2.40
	R	31.63	48.50	14.35	37.29	52.93	21.11	34.66	50.29	19.16	2.46	1.27	3.74	1.06	0.43	1.68	4.40	[illegible]	[illegible]
	U	25.95	43.74	8.02	29.67	48.52	10.52	31.40	50.63	12.28	1.10	0.92	1.28	0.45	0.44	0.47	1.69	2.01	1.36

Annexure-1

Percentage of Main Workers and Marginal Workers to Total Population by Residence and Sex for India / State / Union territory : 1981--2001

India / State / Union territory*	TRU	Percentage to Total Population																	
		Main Worker									Marginal Worker								
		1981			1991			2001			1981			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Andaman &	T	33.21	54.59	5.07	32.35	52.25	8.03	31.98	50.70	9.85	3.67	2.12	5.71	2.88	1.07	5.10	6.29	6.03	6.60
Nicobar Islands *	R	32.26	53.80	4.45	31.66	51.78	7.61	30.70	49.29	9.13	4.76	2.60	7.56	3.75	1.24	6.75	8.51	7.76	9.37
	U	35.86	56.71	6.89	34.27	53.50	9.25	34.61	53.53	11.39	0.62	0.85	0.31	0.50	0.62	0.35	1.72	2.55	0.70

Notes :

1 The concept of Main and Marginal Workers was started from 1981.

2. The figures for India and Gujarat exclude the data for the entire Kachchh district, Morvi, Maliya-Miyana and Wankaner talukas of Rajkot district c of Gujarat State where population enumeration of Census of India, 2001 could not be conducted due to earthquake.

3. The population figures of India and certain States presented here are different from that published earlier in Provisional Paper 1 because the basic compilation sources are different.

4. # There was no census in Jammu & Kashmir in 1991 due to disturbed conditions.

5. @ The states of Uttaranchal ,Jharkhand and Chhatisgarh have been created subsequent to 1991and hence pre 2001 figures for these states are not available.

Annexure-2.4

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	TRU	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
INDIA	T	39.69	39.95	39.04	31.71	31.34	32.51	27.37	20.96	43.40	26.69	20.82	39.43	2.40	2.06	3.26	4.07	3.02	6.36	30.53	37.02	14.29	37.52	44.82	21.70
	R	48.68	51.52	42.72	40.14	42.19	36.46	32.66	26.09	46.44	33.20	27.48	43.40	2.17	1.92	2.69	3.77	2.83	5.44	16.49	20.47	8.15	22.90	27.49	14.70
	U	5.31	4.96	7.40	3.21	2.99	4.26	7.16	5.47	17.27	4.71	3.42	11.03	3.31	2.50	8.13	5.10	3.50	12.93	84.22	87.08	67.20	86.98	90.09	71.77
Jammu & Kashmir #	T				43.36	38.74	55.04				6.74	7.38	5.13	-	-		6.22	4.51	10.56		-	-	43.67	49.38	29.26
	R				54.43	51.53	60.35				8.01	9.28	5.40		-		6.09	4.48	9.30				31.47	34.71	24.83
	U				4.62	4.08	8.20				2.30	2.23	2.73	-	-		6.70	4.57	20.84		-	-	86.38	89.12	68.23
Himachal Pradesh	T	69.42	55.14	90.71	65.55	49.59	86.15	3.40	3.94	2.59	3.10	3.27	2.88	1.22	1.67	0.53	1.68	1.92	1.36	25.97	39.25	6.17	29.67	45.23	9.58
	R	74.04	60.51	92.88	70.43	55.24	88.48	3.54	4.21	2.60	3.29	3.59	2.94	1.21	1.72	0.51	1.71	2.00	1.36	21.21	33.57	4.01	24.57	39.17	7.22
	U	8.91	5.11	25.91	3.94	2.25	11.61	1.58	1.49	1.98	0.65	0.60	0.90	1.25	1.24	1.30	1.42	1.26	2.11	88.26	92.16	70.82	94.00	95.89	85.37
Punjab	T	31.69	32.46	20.96	22.96	25.96	13.02	24.64	23.87	35.39	16.40	15.94	17.91	1.32	1.25	2.41	3.36	2.25	7.02	42.35	42.43	41.23	57.28	55.84	62.05
	R	42.78	43.75	29.10	31.51	37.61	15.38	31.62	30.45	48.12	22.00	22.45	20.79	1.15	1.09	2.06	3.13	1.79	6.70	24.45	24.72	20.72	43.36	38.15	57.14
	U	4.23	4.41	1.81	3.19	3.40	1.82	7.36	7.51	5.46	3.44	3.31	4.27	1.75	1.64	3.26	3.88	3.16	8.55	86.66	86.45	89.47	89.49	90.13	85.36
Chandigarh *	T	1.03	1.17	0.12	0.47	0.52	0.21	0.77	0.82	0.48	0.11	0.12	0.10	0.20	0.17	0.41	1.04	0.79	2.39	98.00	97.84	99.00	98.37	98.55	97.30
	R	5.65	5.84	1.97	2.42	2.49	1.76	3.10	3.03	4.46	0.65	0.65	0.58	0.32	0.31	0.51	1.76	1.19	7.42	90.93	90.82	93.06	95.17	95.60	90.25
	U	0.38	0.44	0.02	0.21	0.23	0.10	0.45	0.47	0.26	0.04	0.04	0.07	0.19	0.15	0.41	0.95	0.73	2.03	98.98	98.93	99.29	98.80	99.00	97.81

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991–2001

India / State / Union territory*	T R U	Percentage to Total (Main+Marginal) Workers																					
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Uttaranchal @	T	-	-	-	49.77	34.20	77.48	-	-	-	8.26	9.51	6.02	-	-	-	2.23	2.14	2.40	-	-	-	39.74	54.15	14.10
	R	-	-	-	61.75	46.74	82.33	-	-	-	9.75	12.35	6.19	-	-	-	2.07	2.07	2.07	-	-	-	26.43	38.84	9.42
	U	-	-	-	2.31	1.73	6.78	-	-	-	2.36	2.19	3.67	-	-	-	2.88	2.32	7.23	-	-	-	92.45	93.77	82.32
Haryana	T	40.96	38.03	56.25	36.34	32.76	44.02	19.74	18.41	26.69	15.22	12.46	21.16	1.48	1.56	1.05	2.47	2.19	3.06	37.82	42.01	16.01	45.97	52.59	31.76
	R	51.36	48.79	62.80	46.09	44.61	48.63	23.90	22.70	29.23	18.93	16.65	22.86	1.22	1.31	0.82	2.09	1.83	2.52	23.52	27.19	7.15	32.89	36.91	25.99
	U	5.14	5.01	6.57	3.66	3.26	5.93	5.41	5.23	7.42	2.80	2.03	7.17	2.34	2.30	2.77	3.76	3.10	7.51	87.10	87.46	83.23	89.79	91.61	79.39
Delhi *	T	1.16	1.17	1.08	0.81	0.67	1.76	0.93	0.86	1.48	0.30	0.24	0.69	1.43	1.40	1.66	2.95	2.71	4.62	96.49	96.57	95.78	95.94	96.37	92.93
	R	9.34	9.09	12.12	8.41	6.91	17.51	6.61	6.09	12.29	2.76	2.27	5.68	1.79	1.74	2.39	2.26	1.86	4.70	82.26	83.09	73.20	86.57	88.95	72.11
	U	0.32	0.33	0.20	0.25	0.22	0.45	0.35	0.32	0.62	0.12	0.10	0.28	1.39	1.36	1.60	3.00	2.78	4.62	97.94	97.98	97.57	96.62	96.90	94.66
Rajasthan	T	61.07	56.38	70.34	55.37	48.18	67.02	12.88	8.24	22.07	10.64	7.06	16.44	1.79	2.06	1.25	2.74	2.73	2.76	24.26	33.33	6.34	31.26	42.04	13.78
	R	71.23	70.01	73.23	65.01	60.95	70.46	14.55	9.61	22.67	12.29	8.73	17.05	1.42	1.75	0.88	2.14	2.24	2.00	12.80	18.64	3.23	20.56	28.09	10.48
	U	9.95	7.98	24.43	6.24	4.52	16.19	4.49	3.39	12.59	2.23	1.35	7.29	3.63	3.14	7.15	5.80	4.39	13.96	81.93	85.49	55.83	85.74	89.74	62.55
Uttar Pradesh	T	53.69	53.99	52.34	40.92	42.97	34.32	20.08	16.77	35.29	25.11	20.13	41.22	2.39	2.26	2.98	5.33	4.39	8.34	23.83	26.98	9.40	28.64	32.51	16.13
	R	62.74	64.50	55.65	48.42	52.56	36.82	22.61	19.02	37.14	29.29	24.06	43.94	1.79	1.71	2.09	4.54	3.71	6.88	12.86	14.77	5.12	17.75	19.67	12.36
	U	8.62	8.30	12.18	4.81	4.81	4.76	7.48	7.01	12.80	4.97	4.47	9.13	5.39	4.64	13.78	9.11	7.13	25.58	76.51	80.04	61.24	81.11	83.58	60.53

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	TRU	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Bihar	T	43.89	45.88	36.83	29.17	31.63	22.42	38.05	32.95	56.10	48.18	42.72	63.20	1.73	1.68	1.87	3.87	3.10	5.98	16.34	19.48	5.19	18.78	22.55	8.40
	R	47.75	50.80	37.82	31.18	34.33	23.04	40.99	35.97	57.37	51.26	46.12	64.57	1.56	1.51	1.72	3.65	2.90	5.61	9.70	11.73	3.09	13.91	16.66	6.79
	U	10.01	9.48	15.15	5.85	5.80	6.14	12.31	10.68	28.11	12.35	10.17	27.68	3.21	2.99	5.35	6.41	5.09	15.66	74.47	76.85	51.40	75.40	78.94	50.52
Sikkim	T	57.99	50.83	71.73	49.91	42.27	62.93	8.18	8.19	8.14	6.43	5.19	8.55	0.76	1.00	0.35	1.23	1.38	0.99	33.06	39.99	19.77	42.42	51.16	27.53
	R	63.39	56.56	75.47	54.97	47.56	66.92	8.85	9.04	8.59	7.08	5.83	9.09	0.64	0.83	0.30	1.28	1.45	1.00	27.12	33.46	15.62	36.87	45.17	22.99
	U	0.50	0.43	0.77	0.09	0.09	0.09	1.01	0.86	1.19	0.10	0.12	0.05	2.21	2.46	1.24	0.79	0.79	0.81	96.27	96.25	96.37	99.01	99.00	99.05
Arunachal Pradesh	T	60.76	47.00	83.71	58.44	46.77	76.61	5.36	5.22	5.64	3.85	3.44	4.49	0.19	0.21	0.16	0.86	0.73	1.05	33.67	47.56	10.49	36.85	49.06	17.86
	R	66.99	54.04	86.31	68.26	57.70	82.70	5.77	5.85	5.66	4.27	3.99	4.65	0.18	0.20	0.14	0.72	0.57	0.93	27.06	39.91	7.89	26.75	37.75	11.71
	U	5.13	3.30	16.55	6.13	3.44	15.44	1.87	1.38	4.95	1.62	1.24	2.93	0.31	0.28	0.49	1.59	1.39	2.26	92.68	95.04	78.01	90.66	93.93	79.37
Nagaland	T	72.65	59.84	90.49	64.05	55.68	75.32	1.62	1.77	1.41	3.96	3.72	4.34	0.40	0.30	0.55	2.13	1.34	3.19	25.33	38.09	7.55	29.84	39.26	17.15
	R	82.25	72.57	93.72	72.94	67.36	79.51	1.61	1.79	1.41	4.45	4.43	4.48	0.34	0.26	0.43	1.99	1.23	2.89	15.80	25.37	4.44	20.61	26.97	13.13
	U	9.51	5.83	29.07	5.84	3.44	14.93	1.67	1.69	1.56	0.90	0.53	2.31	0.82	0.46	2.75	2.99	1.80	7.52	88.00	92.02	66.63	90.27	94.23	75.24
Manipur	T	59.92	58.31	61.86	46.06	46.68	45.29	10.30	5.55	16.06	11.31	8.95	14.27	5.97	1.51	11.38	9.16	3.30	16.50	23.82	34.63	10.70	33.47	41.07	23.94
	R	67.52	66.08	69.17	53.49	53.88	53.02	9.69	5.50	14.48	11.76	9.39	14.64	5.35	1.21	10.09	8.17	2.86	14.64	17.45	27.21	6.26	26.58	33.87	17.71
	U	33.43	34.11	32.42	17.87	20.92	13.62	12.43	5.70	22.42	9.62	7.37	12.74	8.14	2.46	16.56	12.90	4.85	24.13	46.00	57.74	28.60	59.61	66.86	49.51

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	TRU	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Mizoram	T	62.28	54.39	72.87	53.91	48.77	60.52	5.41	4.85	6.17	5.85	4.93	7.05	1.13	1.12	1.14	1.40	1.20	1.66	31.18	39.64	19.82	38.83	45.11	30.77
	R	81.87	74.47	91.33	77.80	73.03	83.40	2.88	2.63	3.21	3.92	3.45	4.47	0.38	0.53	0.20	0.84	0.79	0.91	14.86	22.37	5.27	17.45	22.74	11.23
	U	36.90	29.63	47.33	24.92	21.78	29.42	8.69	7.59	10.27	8.21	6.57	10.56	2.09	1.85	2.44	2.08	1.66	2.68	52.31	60.93	39.96	64.80	69.99	57.34
Tripura	T	38.96	38.20	41.73	26.88	26.61	27.58	24.24	22.10	32.08	24.03	19.72	35.00	1.59	1.20	3.01	2.90	1.63	6.11	35.21	38.50	23.18	46.19	52.04	31.31
	R	44.72	44.29	46.21	31.41	31.78	30.55	27.27	24.95	35.29	27.97	23.40	38.64	1.64	1.22	3.07	3.10	1.74	6.26	26.38	29.54	15.44	37.52	43.08	24.55
	U	4.16	4.36	3.07	1.58	1.82	0.48	5.93	6.21	4.39	1.97	2.04	1.66	1.30	1.08	2.47	1.77	1.10	4.74	88.61	88.34	90.07	94.68	95.03	93.12
Meghalaya	T	56.26	50.90	64.31	47.80	44.89	51.88	12.97	11.77	14.78	18.09	16.25	20.66	0.42	0.36	0.50	1.88	1.43	2.50	30.35	36.96	20.42	32.23	37.44	24.96
	R	64.74	61.08	69.72	54.47	52.41	57.20	14.53	13.65	15.73	20.16	18.60	22.23	0.38	0.33	0.44	1.95	1.46	2.60	20.34	24.93	14.11	23.42	27.54	17.97
	U	4.48	2.86	9.23	5.46	4.24	7.91	3.46	2.92	5.04	4.92	3.55	7.70	0.64	0.51	1.03	1.40	1.26	1.69	91.42	93.71	84.70	88.22	90.94	82.70
Assam	T	54.75	51.28	63.36	39.15	38.66	40.42	12.57	12.21	13.47	13.50	12.34	16.48	0.96	0.58	1.90	3.44	1.71	7.89	31.72	35.93	21.28	43.91	47.29	35.21
	R	60.04	57.68	65.42	43.93	44.36	42.90	13.69	13.62	13.84	15.12	14.14	17.44	0.88	0.52	1.71	3.54	1.69	7.94	25.38	28.18	19.03	37.41	39.81	31.72
	U	4.39	3.79	9.24	1.82	1.74	2.25	1.91	1.69	3.71	0.84	0.68	1.74	1.70	1.06	6.83	2.63	1.83	7.16	91.99	93.45	80.22	94.71	95.74	88.85
West Bengal	T	29.24	30.27	24.09	19.03	20.77	13.44	25.01	22.72	36.42	24.92	22.58	32.41	4.24	2.87	11.07	7.30	3.98	17.97	41.51	44.14	28.42	48.76	52.67	36.19
	R	38.40	40.89	27.82	25.36	28.72	16.07	32.27	30.03	41.76	33.04	31.04	38.56	4.59	3.04	11.18	7.80	4.03	18.20	24.74	26.04	19.24	33.80	36.21	27.17
	U	2.12	2.10	2.32	0.80	0.86	0.44	3.54	3.35	5.33	1.52	1.42	2.09	3.20	2.43	10.39	5.86	3.84	16.81	91.14	92.12	81.96	91.82	93.87	80.67

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	T/R/U	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Jharkhand @	T	-	-	-	38.59	36.37	42.90	-	-	-	28.26	22.32	39.77	-	-	-	4.15	3.43	5.54	-	-	-	29.00	37.88	11.78
	R	-	-	-	45.12	45.22	44.96	-	-	-	32.86	27.55	41.48	-	-	-	4.36	3.69	5.45	-	-	-	17.67	23.54	8.12
	U	-	-	-	2.12	1.81	4.55	-	-	-	2.58	1.90	7.84	-	-	-	2.98	2.42	7.33	-	-	-	92.33	93.87	80.29
Orissa	T	42.42	48.21	26.90	29.70	34.34	19.46	32.87	23.22	58.69	35.04	26.28	54.34	3.24	2.68	4.74	4.83	3.16	8.51	21.46	25.90	9.65	30.44	36.22	17.69
	R	46.64	54.22	29.09	33.22	39.64	20.48	35.70	25.60	60.43	39.12	30.20	56.91	3.30	2.73	4.69	5.02	3.25	8.55	14.36	17.45	6.81	22.64	26.94	14.07
	U	4.79	6.89	5.98	3.34	3.48	2.54	6.94	6.84	23.44	4.60	3.32	11.79	2.75	2.29	5.89	3.41	2.62	7.85	81.53	83.97	64.70	88.66	90.58	77.89
Chhatisgarh @	T	-	-	-	44.57	44.79	44.28	-	-	-	31.89	22.55	44.38	-	-	-	2.08	2.17	1.97	-	-	-	21.46	30.50	9.38
	R	-	-	-	50.80	54.28	46.77	-	-	-	36.01	27.09	46.35	-	-	-	1.84	2.06	1.59	-	-	-	11.35	16.58	5.29
	U	-	-	-	4.43	3.69	7.35	-	-	-	5.33	2.89	15.06	-	-	-	3.63	2.65	7.54	-	-	-	86.61	90.77	70.04
Madhya Pradesh	T	52.16	52.13	52.22	42.93	42.80	43.16	25.24	17.88	37.88	28.66	21.52	40.77	2.47	2.18	2.96	3.92	3.09	5.32	20.13	27.82	6.94	24.49	32.59	10.75
	R	60.40	63.94	55.25	51.40	54.82	46.59	28.58	21.29	39.20	34.11	27.45	43.48	2.12	1.98	2.33	3.33	2.74	4.15	8.90	12.79	3.23	11.17	15.00	5.79
	U	8.86	8.15	12.67	6.83	6.24	9.52	7.68	5.15	20.60	5.40	3.46	14.19	4.29	2.92	11.29	5.47	4.17	16.87	79.14	83.78	55.44	81.30	86.13	59.42
Gujarat	T	33.72	34.01	33.08	27.56	27.43	27.83	27.12	17.75	47.80	24.49	17.33	39.76	1.42	1.34	1.59	1.87	1.60	2.45	37.74	46.90	17.53	46.06	53.53	29.96
	R	44.19	49.35	35.81	38.29	43.01	31.19	34.74	24.75	50.98	33.58	26.70	43.96	1.38	1.49	1.21	1.56	1.64	1.45	19.68	24.41	12.00	26.56	28.56	23.40
	U	3.77	3.37	6.87	2.02	1.86	3.10	5.30	3.77	17.24	2.84	1.96	8.81	1.52	1.04	5.26	2.61	1.55	9.80	89.42	91.82	70.63	92.52	94.63	78.29

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991–2001

India / State / Union territory*	TRU	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Daman & Diu *	T	16.99	10.36	32.23	5.36	3.19	16.30	5.89	2.57	13.54	1.77	0.53	8.03	1.59	0.95	3.05	1.58	0.60	6.54	75.53	86.11	51.18	91.29	95.68	69.14
	R	27.08	17.12	46.80	7.19	4.13	25.95	9.12	4.24	18.77	2.37	0.67	12.77	0.82	0.63	1.20	1.00	0.37	4.87	62.98	78.02	33.22	89.44	94.83	56.40
	U	2.15	1.51	4.03	0.64	0.48	1.15	1.16	0.39	3.40	0.23	0.12	0.60	2.71	1.38	6.62	3.08	1.25	9.14	93.98	96.72	85.96	96.06	98.15	89.11
Dadra &	T	62.07	52.28	74.19	34.63	23.87	56.03	12.66	8.23	18.15	12.92	7.08	24.54	0.27	0.32	0.20	0.73	0.66	0.85	25.00	39.17	7.46	51.72	68.39	18.58
Nagar Haveli *	R	65.15	56.50	75.23	41.43	30.67	58.63	13.34	8.84	18.58	15.54	9.20	25.68	0.23	0.29	0.17	0.74	0.70	0.80	21.28	34.36	6.02	42.29	59.43	14.90
	U	18.96	10.62	45.84	7.08	4.36	25.13	3.17	2.16	6.44	2.29	0.99	10.92	0.75	0.69	0.94	0.67	0.55	1.49	77.12	86.53	46.78	89.96	94.10	62.46
Maharashtra	T	34.04	29.91	41.01	28.56	25.13	34.66	28.11	18.89	43.68	26.85	18.31	42.05	1.65	1.64	1.65	2.49	2.01	3.34	36.20	49.57	13.65	42.10	54.56	19.94
	R	46.72	47.08	46.30	41.69	42.49	40.71	37.42	28.68	47.79	38.39	30.30	48.22	1.46	1.68	1.19	2.09	1.98	2.22	14.40	22.56	4.72	17.83	25.24	8.85
	U	3.17	2.73	5.39	2.11	1.90	3.10	5.48	3.39	16.01	3.59	2.25	9.90	2.11	1.57	4.80	3.29	2.05	9.17	89.25	92.30	73.80	91.01	93.80	77.83
Andhra Pradesh	T	27.67	30.55	22.90	22.67	24.34	19.91	41.77	30.64	60.29	39.63	29.60	56.22	3.43	2.72	4.62	4.50	3.07	6.88	27.12	36.10	12.19	33.19	42.99	16.99
	R	33.11	39.00	24.89	27.64	31.81	21.90	48.26	37.41	63.41	47.51	37.95	60.68	3.28	2.80	3.94	4.26	2.95	6.05	15.35	20.78	7.76	20.59	27.29	11.36
	U	3.54	3.57	3.40	1.78	1.82	1.62	13.00	9.05	29.86	6.55	4.49	15.18	4.13	2.44	11.33	5.53	3.41	14.46	79.34	84.94	55.41	86.14	90.28	68.73
Karnataka	T	35.43	37.78	30.93	29.49	32.15	24.57	29.93	20.51	48.00	26.40	17.00	43.80	1.87	1.77	2.06	3.98	2.54	6.63	32.76	39.94	19.00	40.14	48.31	24.99
	R	44.49	50.68	34.75	39.14	45.93	28.96	36.56	26.47	52.43	34.39	23.70	50.41	1.59	1.69	1.44	3.40	2.31	5.02	17.36	21.16	11.37	23.08	28.05	15.61
	U	6.10	6.09	6.15	3.62	3.81	2.95	8.47	5.87	19.28	4.99	3.22	11.32	2.77	1.98	6.05	5.54	3.01	14.60	82.66	86.07	68.52	85.85	89.96	71.13

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	T R U	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Goa	T	16.63	12.67	26.53	9.70	6.91	16.83	10.85	7.20	19.97	6.92	4.31	13.61	2.38	2.41	2.32	2.70	2.27	3.78	70.14	77.73	51.18	80.69	86.50	65.77
	R	24.46	19.75	34.13	16.47	12.53	24.78	15.23	10.54	24.85	11.47	7.44	19.95	2.70	2.79	2.51	3.03	2.61	3.90	57.61	66.92	38.50	69.03	77.41	51.38
	U	4.46	3.16	9.02	2.18	1.41	4.72	4.04	2.71	8.73	1.87	1.23	3.96	1.89	1.90	1.86	2.33	1.94	3.61	89.61	92.23	80.38	93.62	95.42	87.71
Lakshadweep *	T	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.16	0.00	0.00	0.00	9.21	7.14	21.98	5.93	4.10	17.36	90.77	92.86	77.86	94.07	95.90	82.64
	R	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.39	0.00	0.00	0.00	9.02	9.31	7.14	5.51	4.04	15.82	90.93	90.69	92.47	94.49	95.96	84.18
	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.34	5.56	32.04	6.38	4.16	18.73	90.66	94.44	67.96	93.62	95.84	81.27
Kerala	T	13.18	14.46	9.50	7.19	7.99	4.71	26.79	23.28	36.94	16.07	14.16	22.00	2.65	1.57	5.77	3.54	2.34	7.31	57.38	60.69	47.79	73.19	75.51	65.98
	R	16.06	17.92	10.98	8.93	10.06	5.53	31.69	27.82	42.26	19.74	17.56	26.24	2.55	1.51	5.41	3.41	2.18	7.11	49.70	52.75	41.35	67.92	70.20	61.12
	U	4.49	4.59	4.14	2.11	2.16	1.94	11.99	10.33	17.72	5.31	4.59	7.85	2.93	1.74	7.06	3.93	2.78	7.99	80.59	83.33	71.07	88.65	90.47	82.22
Tamil Nadu	T	24.98	26.52	21.98	18.39	18.21	18.73	36.19	26.39	55.18	31.16	23.56	45.43	3.60	2.83	5.08	5.24	3.41	8.69	35.23	44.26	17.75	45.21	54.82	27.15
	R	32.44	37.28	24.97	26.89	29.13	23.66	46.09	36.09	61.52	43.05	35.28	54.32	3.09	2.55	3.92	4.64	3.12	6.84	18.38	24.08	9.59	25.41	32.48	15.18
	U	4.05	3.86	4.84	3.79	3.58	4.48	8.45	5.97	18.88	10.74	7.86	19.74	5.02	3.42	11.74	6.28	3.80	14.05	82.48	86.76	64.54	79.18	84.77	61.73
Pondicherry *	T	6.81	7.68	3.86	3.30	3.93	1.33	30.06	23.85	51.07	21.07	16.19	36.36	0.83	0.71	1.23	1.78	1.19	3.62	62.30	67.76	43.84	73.85	78.68	58.69
	R	11.90	14.26	6.21	6.87	8.78	2.46	56.44	47.51	77.95	47.21	38.35	67.67	0.39	0.39	0.41	1.65	1.18	2.73	31.27	37.84	15.43	44.27	51.68	27.14
	U	3.17	3.62	1.15	1.17	1.39	0.34	11.16	9.24	19.86	5.52	4.59	9.10	1.14	0.91	2.17	1.86	1.20	4.40	84.53	86.24	76.81	91.45	92.82	86.16

Annexure-2A

Percentage of categories of workers to Total (Main+Marginal) Workers by residence and sex for India / State / Union territory : 1991--2001

India / State / Union territory*	T R U	Percentage to Total (Main+Marginal) Workers																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Andaman &	T	17.86	16.06	26.80	15.50	13.51	23.61	6.69	6.02	10.02	3.74	3.63	4.14	7.15	5.04	17.63	5.12	4.17	9.01	68.30	72.88	45.56	75.64	78.68	63.23
Nicobar Islands *	R	24.14	22.15	32.94	22.46	20.11	30.86	8.96	8.20	12.29	5.29	5.26	5.37	9.54	6.81	21.60	7.01	5.82	11.26	57.36	62.84	33.17	65.25	68.81	52.51
	U	0.31	0.30	0.42	0.04	0.04	0.05	0.36	0.38	0.22	0.29	0.31	0.16	0.46	0.45	0.51	0.93	0.79	1.71	98.87	98.87	98.85	98.74	98.85	98.08

Notes :

1. The figures for India and Gujarat exclude the data for the entire Kachchh district, Morvi, Maliya-Miyana and Wankaner talukas of Rajkot district c of Gujarat State where population enumeration of Census of India, 2001 could not be conducted due to earthquake.
2. The population figures of India and certain States presented here are different from that published earlier in Provisional Paper 1 because the basic compilation sources are different.
3. # There was no census in Jammu & Kashmir in 1991 due to disturbed conditions.
4. @ The states of Uttaranchal ,Jharkhand and Chhatisgarh have been created subsequent to 1991and hence the 1991 figures for these states are not available.

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991--2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
INDIA	T	14.87	20.60	8.69	12.45	16.28	8.35	10.25	10.81	9.66	10.48	10.81	10.12	0.90	1.06	0.72	1.60	1.57	1.63	11.44	19.09	3.18	14.73	23.28	5.57
	R	19.46	27.04	11.39	16.84	22.09	11.29	13.06	13.69	12.39	13.93	14.39	13.44	0.87	1.01	0.72	1.58	1.48	1.69	6.59	10.74	2.17	9.61	14.39	4.55
	U	1.60	2.43	0.68	1.03	1.52	0.49	2.16	2.68	1.58	1.52	1.74	1.27	1.00	1.22	0.75	1.64	1.78	1.49	25.41	42.62	6.16	28.04	45.81	8.29
Jammu & Kashmir #	T	-	-	-	15.89	19.30	12.09	-	-	-	2.47	3.68	1.13	-	-	-	2.28	2.24	2.32	-	-	-	16.00	24.61	6.43
	R	-	-	-	20.65	25.32	15.60	-	-	-	3.04	4.56	1.39	-	-	-	2.31	2.20	2.42	-	-	-	11.94	17.06	6.41
	U	-	-	-	1.51	2.11	0.78	-	-	-	0.75	1.16	0.26	-	-	-	2.19	2.37	1.98	-	-	-	28.26	46.16	6.48
Himachal Pradesh	T	29.73	27.92	31.58	32.30	27.12	37.64	1.45	2.00	0.90	1.53	1.79	1.26	0.52	0.85	0.19	0.83	1.05	0.60	11.12	19.87	2.15	14.62	24.74	4.19
	R	32.26	30.53	34.01	35.65	30.24	41.12	1.54	2.12	0.95	1.67	1.97	1.37	0.53	0.87	0.19	0.86	1.09	0.63	9.24	16.94	1.47	12.44	21.44	3.36
	U	3.12	2.68	3.65	1.45	1.23	1.74	0.55	0.78	0.28	0.24	0.32	0.14	0.44	0.65	0.18	0.52	0.69	0.32	30.87	48.25	9.98	34.68	52.14	12.77
Punjab	T	9.78	17.60	0.92	8.63	14.04	2.43	7.61	12.94	1.56	6.16	8.62	3.35	0.41	0.68	0.11	1.26	1.22	1.31	13.08	23.00	1.82	21.53	30.21	11.59
	R	13.35	24.08	1.27	12.52	20.48	3.56	9.87	16.76	2.10	8.74	12.23	4.81	0.36	0.60	0.09	1.24	0.97	1.55	7.63	13.61	0.91	17.23	20.78	13.23
	U	1.27	2.30	0.08	1.06	1.82	0.18	2.21	3.92	0.24	1.15	1.77	0.42	0.53	0.86	0.15	1.30	1.69	0.83	26.05	45.17	4.01	29.89	48.14	8.31
Chandigarh *	T	0.36	0.63	0.01	0.18	0.29	0.03	0.27	0.44	0.05	0.04	0.07	0.01	0.07	0.09	0.04	0.39	0.44	0.33	34.24	53.16	10.29	37.02	55.31	13.35
	R	2.35	3.77	0.11	1.05	1.59	0.18	1.29	1.95	0.24	0.28	0.42	0.06	0.13	0.20	0.03	0.76	0.76	0.77	37.78	58.52	4.97	41.32	61.19	9.31
	U	0.13	0.23	0.00	0.08	0.13	0.01	0.15	0.25	0.03	0.02	0.02	0.01	0.06	0.08	0.04	0.35	0.40	0.29	33.83	52.48	10.81	36.53	54.57	13.75

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991–2001

India / State / Union territory*	T R U	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Uttaranchal @	T	-	-	-	18.38	15.87	20.99	-	-	-	3.05	4.42	1.63	-	-	-	0.83	0.99	0.65	-	-	-	14.68	25.14	3.82
	R	-	-	-	24.47	21.50	27.43	-	-	-	3.86	5.68	2.06	-	-	-	0.82	0.95	0.69	-	-	-	10.48	17.86	3.14
	U	-	-	-	0.67	0.82	0.49	-	-	-	0.69	1.04	0.27	-	-	-	0.84	1.10	0.53	-	-	-	26.89	44.61	5.99
Haryana	T	12.70	18.45	6.05	14.45	16.54	12.02	6.12	8.93	2.87	6.05	6.29	5.78	0.46	0.76	0.11	0.98	1.11	0.84	11.72	20.38	1.72	18.28	26.55	8.67
	R	16.37	23.67	7.92	19.88	22.70	16.62	7.62	11.01	3.69	8.17	8.47	7.81	0.39	0.64	0.10	0.90	0.93	0.86	7.50	13.19	0.90	14.19	18.78	8.88
	U	1.46	2.43	0.33	1.15	1.61	0.61	1.53	2.54	0.38	0.88	1.00	0.74	0.66	1.12	0.14	1.19	1.54	0.77	24.67	42.42	4.23	28.30	45.36	8.15
Delhi *	T	0.37	0.60	0.08	0.27	0.35	0.16	0.29	0.45	0.11	0.10	0.13	0.06	0.45	0.72	0.12	0.97	1.42	0.42	30.53	49.95	7.05	31.46	50.31	8.50
	R	2.72	4.38	0.66	2.69	3.43	1.77	1.92	2.94	0.67	0.88	1.13	0.58	0.52	0.84	0.13	0.72	0.93	0.48	23.96	40.07	4.00	27.70	44.22	7.30
	U	0.10	0.17	0.02	0.08	0.12	0.04	0.11	0.17	0.05	0.04	0.05	0.03	0.44	0.71	0.12	0.99	1.45	0.42	31.26	51.06	7.39	31.75	50.78	8.59
Rajasthan	T	23.74	27.79	19.27	23.32	24.12	22.44	5.01	4.06	6.05	4.48	3.53	5.50	0.69	1.01	0.34	1.15	1.37	0.92	9.43	16.43	1.74	13.16	21.05	4.61
	R	29.94	35.09	24.35	29.87	30.97	28.68	6.12	4.81	7.54	5.64	4.44	6.94	0.60	0.88	0.29	0.98	1.14	0.81	5.38	9.34	1.07	9.45	14.27	4.27
	U	2.80	3.72	1.76	1.84	2.15	1.50	1.27	1.58	0.91	0.66	0.64	0.67	1.02	1.47	0.52	1.72	2.09	1.29	23.08	39.84	4.03	25.34	42.75	5.78
Uttar Pradesh	T	17.29	26.82	6.45	13.34	20.31	5.59	6.47	8.33	4.35	8.19	9.51	6.71	0.77	1.12	0.37	1.74	2.08	1.36	7.68	13.40	1.16	9.34	15.36	2.63
	R	20.99	32.58	7.88	16.51	25.15	6.96	7.57	9.60	5.26	9.99	11.51	8.30	0.60	0.86	0.30	1.55	1.77	1.30	4.30	7.46	0.73	6.05	9.41	2.34
	U	2.34	3.85	0.58	1.29	2.17	0.29	2.03	3.25	0.61	1.34	2.02	0.56	1.46	2.15	0.66	2.45	3.22	1.58	21.30	37.11	2.93	21.83	37.68	3.75

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991–2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Bihar	T	14.11	21.98	5.47	9.88	15.10	4.22	12.24	15.79	8.34	16.32	20.39	11.91	0.55	0.81	0.28	1.31	1.48	1.13	5.25	9.34	0.77	6.36	10.76	1.58
	R	15.87	24.82	6.15	10.87	16.62	4.65	13.62	17.57	9.33	17.86	22.33	13.04	0.52	0.74	0.28	1.27	1.40	1.13	3.22	5.73	0.50	4.85	8.07	1.37
	U	2.51	3.97	0.77	1.50	2.43	0.42	3.09	4.48	1.44	3.16	4.26	1.90	0.80	1.25	0.27	1.64	2.13	1.07	18.67	32.21	2.63	19.32	33.10	3.47
Sikkim	T	24.07	26.05	21.81	24.32	24.34	24.29	3.39	4.20	2.48	3.13	2.99	3.30	0.32	0.51	0.11	0.60	0.79	0.38	13.72	20.50	6.01	20.67	29.46	10.63
	R	26.46	28.85	23.78	27.35	27.46	27.22	3.69	4.60	2.68	3.52	3.36	3.70	0.27	0.42	0.10	0.64	0.84	0.41	11.32	17.03	4.92	18.24	26.08	9.35
	U	0.20	0.24	0.15	0.04	0.05	0.02	0.40	0.47	0.30	0.04	0.07	0.01	0.87	1.34	0.23	0.32	0.44	0.17	37.74	52.49	18.07	40.09	55.71	21.22
Arunachal Pradesh	T	28.09	25.27	31.38	25.70	23.71	27.93	2.49	2.81	2.11	1.69	1.74	1.64	0.09	0.11	0.06	0.38	0.37	0.38	15.57	25.57	3.93	16.20	24.87	6.51
	R	31.94	29.02	35.27	31.72	29.50	34.18	2.75	3.14	2.31	1.98	2.04	1.92	0.09	0.11	0.06	0.33	0.29	0.38	12.90	21.43	3.22	12.43	19.30	4.84
	U	1.87	1.79	1.98	2.10	1.69	2.58	0.68	0.75	0.59	0.55	0.61	0.49	0.11	0.15	0.06	0.54	0.68	0.38	33.73	51.49	9.32	30.97	46.01	13.25
Nagaland	T	31.01	28.04	34.35	27.38	26.07	28.81	0.69	0.83	0.54	1.70	1.74	1.66	0.17	0.14	0.21	0.91	0.63	1.22	10.81	17.85	2.86	12.75	18.38	6.56
	R	36.81	33.79	40.09	32.88	31.72	34.13	0.72	0.83	0.60	2.01	2.09	1.92	0.15	0.12	0.19	0.90	0.58	1.24	7.07	11.81	1.90	9.29	12.70	5.64
	U	3.11	2.81	3.51	1.86	1.57	2.22	0.55	0.82	0.19	0.29	0.24	0.34	0.27	0.22	0.33	0.96	0.82	1.12	28.79	44.33	8.06	28.81	43.06	11.19
Manipur	T	25.27	26.40	24.10	20.63	22.83	18.35	4.34	2.51	6.26	5.07	4.38	5.78	2.52	0.68	4.43	4.10	1.61	6.68	10.05	15.68	4.17	14.99	20.09	9.70
	R	30.53	31.14	29.89	24.99	26.98	22.90	4.38	2.59	6.26	5.49	4.70	6.32	2.42	0.57	4.36	3.82	1.43	6.32	7.89	12.82	2.70	12.42	16.96	7.65
	U	11.43	13.76	9.04	6.92	9.45	4.40	4.25	2.30	6.25	3.72	3.33	4.11	2.78	0.99	4.62	4.99	2.19	7.79	15.72	23.28	7.97	23.08	30.20	15.98

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991–2001

India / State / Union territory*	T R U	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Mizoram	T	30.46	29.30	31.72	28.41	28.02	28.83	2.65	2.61	2.69	3.09	2.83	3.36	0.55	0.60	0.50	0.74	0.69	0.79	15.25	21.36	8.62	20.47	25.91	14.66
	R	41.91	40.90	43.03	44.51	43.47	45.64	1.48	1.44	1.51	2.24	2.05	2.45	0.20	0.29	0.10	0.48	0.47	0.50	7.61	12.29	2.48	9.98	13.53	6.14
	U	17.06	15.59	18.64	11.98	12.05	11.91	4.02	4.00	4.04	3.95	3.63	4.28	0.97	0.97	0.96	1.00	0.92	1.09	24.19	32.07	15.73	31.16	38.71	23.22
Tripura	T	12.13	18.16	5.74	9.76	13.52	5.80	7.55	10.51	4.42	8.72	10.02	7.36	0.49	0.57	0.41	1.05	0.83	1.28	10.96	18.31	3.19	16.76	26.44	6.58
	R	14.10	21.05	6.74	11.65	16.08	6.98	8.60	11.86	5.15	10.38	11.84	8.84	0.52	0.58	0.45	1.15	0.88	1.43	8.32	14.04	2.25	13.92	21.80	5.61
	U	1.20	2.08	0.28	0.51	0.94	0.06	1.71	2.96	0.41	0.64	1.06	0.20	0.38	0.52	0.23	0.57	0.57	0.57	25.60	42.12	8.35	30.61	49.21	11.26
Meghalaya	T	24.01	25.48	22.46	19.83	21.44	18.17	5.54	5.89	5.16	7.50	7.76	7.24	0.18	0.18	0.17	0.78	0.68	0.88	12.95	18.51	7.13	13.37	17.88	8.74
	R	29.16	31.17	27.08	24.28	26.25	22.26	6.55	6.97	6.11	8.99	9.31	8.65	0.17	0.17	0.17	0.87	0.73	1.01	9.16	12.72	5.48	10.44	13.79	7.00
	U	1.45	1.32	1.59	1.57	1.62	1.51	1.12	1.34	0.87	1.41	1.36	1.47	0.21	0.23	0.18	0.40	0.48	0.32	29.52	43.11	14.59	25.36	34.73	15.83
Assam	T	19.76	25.36	13.69	14.05	19.30	8.41	4.54	6.04	2.91	4.84	6.16	3.43	0.35	0.29	0.41	1.23	0.85	1.64	11.45	17.77	4.60	15.75	23.61	7.32
	R	22.06	28.44	15.22	16.01	22.08	9.56	5.03	6.72	3.22	5.51	7.04	3.88	0.32	0.26	0.40	1.29	0.84	1.77	9.32	13.90	4.43	13.64	19.81	7.07
	U	1.36	1.91	0.69	0.58	0.89	0.23	0.59	0.85	0.28	0.27	0.35	0.18	0.53	0.54	0.51	0.84	0.93	0.74	28.44	47.21	6.03	30.29	48.85	9.14
West Bengal	T	9.41	15.56	2.71	7.00	11.26	2.43	8.05	11.68	4.10	9.16	12.25	5.86	1.36	1.47	1.24	2.68	2.16	3.25	13.36	22.69	3.20	17.93	28.57	6.54
	R	12.74	21.30	3.64	9.62	15.59	3.33	10.71	15.64	5.46	12.53	16.86	7.98	1.52	1.58	1.46	2.96	2.19	3.77	8.21	13.57	2.51	12.82	19.66	5.62
	U	0.63	1.04	0.14	0.27	0.47	0.05	1.05	1.66	0.33	0.52	0.77	0.23	0.95	1.21	0.65	1.98	2.08	1.87	26.96	45.73	5.09	31.06	50.76	8.98

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991--2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Jharkhand @	T	-	-	-	14.52	17.53	11.33	-	-	-	10.64	10.76	10.50	-	-	-	1.56	1.65	1.46	-	-	-	10.92	18.26	3.11
	R	-	-	-	18.52	22.57	14.32	-	-	-	13.49	13.75	13.22	-	-	-	1.79	1.84	1.73	-	-	-	7.25	11.75	2.59
	U	-	-	-	0.54	0.77	0.29	-	-	-	0.66	0.81	0.49	-	-	-	0.77	1.03	0.46	-	-	-	23.71	39.96	5.05
Orissa	T	15.92	25.93	5.61	11.55	18.12	4.79	12.34	12.49	12.19	13.62	13.86	13.38	1.22	1.44	0.99	1.88	1.67	2.09	8.06	13.93	2.01	11.83	19.11	4.36
	R	18.07	29.65	6.35	13.40	21.14	5.55	13.83	14.00	13.67	15.78	16.12	15.43	1.28	1.49	1.06	2.02	1.74	2.32	5.56	9.54	1.54	9.13	14.38	3.81
	U	2.01	3.33	0.48	1.02	1.72	0.25	2.65	3.31	1.90	1.41	1.64	1.15	0.82	1.11	0.48	1.04	1.29	0.77	24.19	40.61	5.24	27.18	44.72	7.60
Chhatisgarh @	T	-	-	-	20.74	23.73	17.73	-	-	-	14.84	11.94	17.77	-	-	-	0.97	1.15	0.79	-	-	-	9.99	16.15	3.75
	R	-	-	-	25.62	29.46	21.79	-	-	-	18.16	14.70	21.59	-	-	-	0.93	1.12	0.74	-	-	-	5.72	9.00	2.47
	U	-	-	-	1.38	1.77	0.95	-	-	-	1.66	1.38	1.95	-	-	-	1.13	1.27	0.98	-	-	-	26.92	43.53	9.08
Madhya Pradesh	T	22.34	27.24	17.07	18.35	22.10	14.28	10.81	9.34	12.38	12.25	11.11	13.49	1.06	1.14	0.97	1.68	1.60	1.76	8.62	14.54	2.27	10.47	16.82	3.56
	R	28.28	34.50	21.69	24.22	29.10	18.95	13.38	11.49	15.39	16.07	14.57	17.69	0.99	1.07	0.91	1.57	1.45	1.69	4.17	6.90	1.27	5.26	7.96	2.35
	U	2.63	3.81	1.30	2.09	2.97	1.11	2.27	2.41	2.11	1.65	1.65	1.66	1.27	1.37	1.16	1.98	1.99	1.97	23.39	39.20	5.68	24.91	41.04	6.95
Gujarat	T	13.57	18.22	8.59	11.60	15.09	7.80	10.91	9.51	12.41	10.31	9.54	11.15	0.57	0.72	0.41	0.79	0.88	0.69	15.19	25.12	4.55	19.40	29.51	8.40
	R	20.11	27.10	12.75	18.21	23.91	12.18	15.81	13.59	18.15	15.97	14.84	17.16	0.63	0.82	0.43	0.74	0.91	0.57	8.96	13.40	4.27	12.63	15.93	9.14
	U	1.14	1.72	0.50	0.67	1.01	0.28	1.60	1.92	1.24	0.94	1.06	0.80	0.46	0.53	0.38	0.86	0.84	0.89	27.02	46.90	5.10	30.60	51.21	7.13

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991–2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Daman & Diu *	T	6.39	5.35	7.47	2.46	2.09	2.99	2.22	1.33	3.14	0.81	0.35	1.47	0.60	0.49	0.71	0.73	0.39	1.20	28.42	44.46	11.86	41.96	62.73	12.68
	R	11.40	9.20	13.79	3.74	2.93	5.13	3.84	2.28	5.53	1.23	0.48	2.52	0.35	0.34	0.35	0.52	0.26	0.96	26.51	41.94	9.79	46.54	67.22	11.15
	U	0.70	0.74	0.66	0.23	0.26	0.19	0.38	0.19	0.56	0.08	0.06	0.10	0.88	0.68	1.08	1.09	0.67	1.51	30.58	47.48	14.09	33.92	52.83	14.68
Dadra &	T	33.05	30.06	36.19	17.93	14.89	21.67	6.74	4.73	8.86	6.69	4.41	9.49	0.14	0.19	0.10	0.38	0.41	0.33	13.31	22.52	3.64	26.78	42.66	7.19
Nagar Haveli *	R	35.37	32.45	38.40	22.31	18.80	26.44	7.24	5.08	9.49	8.37	5.64	11.58	0.13	0.16	0.09	0.40	0.43	0.36	11.55	19.73	3.07	22.78	36.43	6.72
	U	7.96	6.18	10.13	3.17	2.86	3.60	1.33	1.26	1.42	1.02	0.65	1.57	0.32	0.40	0.21	0.30	0.36	0.21	32.38	50.37	10.34	40.25	61.86	8.96
Maharashtra	T	14.62	15.60	13.58	12.41	13.44	11.30	12.08	9.85	14.46	11.67	9.79	13.71	0.71	0.86	0.55	1.08	1.07	1.09	15.55	25.85	4.52	18.30	29.18	6.50
	R	23.20	25.04	21.32	21.02	23.02	18.94	18.58	15.25	22.01	19.36	16.42	22.43	0.72	0.89	0.55	1.05	1.07	1.03	7.15	11.99	2.18	8.99	13.67	4.12
	U	1.03	1.38	0.62	0.72	1.00	0.39	1.77	1.72	1.83	1.22	1.18	1.26	0.68	0.80	0.55	1.12	1.08	1.17	28.86	46.73	8.45	30.95	49.34	9.90
Andhra Pradesh	T	12.47	16.95	7.86	10.38	13.74	6.95	18.82	17.00	20.69	18.16	16.71	19.64	1.55	1.51	1.59	2.06	1.73	2.40	12.22	20.03	4.18	15.21	24.27	5.93
	R	16.65	22.59	10.57	14.08	18.60	9.47	24.27	21.67	26.93	24.20	22.19	26.24	1.65	1.62	1.67	2.17	1.73	2.62	7.72	12.04	3.30	10.48	15.96	4.91
	U	1.09	1.75	0.41	0.57	0.93	0.20	4.01	4.43	3.57	2.11	2.30	1.92	1.27	1.19	1.35	1.78	1.74	1.83	24.45	41.55	6.62	27.75	46.13	8.68
Karnataka	T	14.88	20.43	9.09	13.15	18.28	7.83	12.57	11.09	14.11	11.77	9.67	13.96	0.79	0.96	0.60	1.77	1.45	2.11	13.76	21.60	5.59	17.90	27.47	7.97
	R	20.66	28.40	12.72	19.26	26.79	11.55	16.98	14.83	19.19	16.92	13.82	20.10	0.74	0.95	0.53	1.67	1.35	2.00	8.06	11.86	4.16	11.35	16.36	6.22
	U	1.95	3.03	0.79	1.29	2.06	0.47	2.71	2.92	2.49	1.78	1.74	1.82	0.89	0.98	0.78	1.98	1.63	2.34	26.48	42.88	8.84	30.62	48.67	11.42

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991--2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Goa	T	5.87	6.28	5.44	3.77	3.79	3.74	3.83	3.57	4.10	2.69	2.36	3.03	0.84	1.19	0.48	1.05	1.25	0.84	24.75	38.52	10.50	31.37	47.45	14.63
	R	8.90	9.64	8.16	6.70	6.87	6.53	5.54	5.14	5.94	4.67	4.08	5.26	0.98	1.36	0.60	1.23	1.43	1.03	20.97	32.65	9.21	28.09	42.46	13.55
	U	1.50	1.60	1.39	0.81	0.77	0.85	1.36	1.37	1.35	0.69	0.68	0.71	0.64	0.96	0.29	0.86	1.06	0.65	30.18	46.69	12.42	34.69	52.35	15.75
Lakshadweep *	T	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	2.43	3.15	1.67	1.50	1.74	1.25	23.99	41.02	5.91	23.83	40.77	5.94
	R	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.00	0.00	2.28	3.99	0.50	1.31	1.65	0.96	22.99	38.87	6.44	22.46	39.06	5.11
	U	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.55	2.51	2.60	1.74	1.86	1.61	24.76	42.66	5.50	25.54	42.89	6.99
Kerala	T	4.14	6.88	1.51	2.33	4.03	0.72	8.42	11.08	5.66	5.19	7.13	3.36	0.83	0.75	0.91	1.15	1.18	1.12	18.04	28.88	7.57	23.66	38.03	10.08
	R	5.15	8.58	1.85	2.91	5.05	0.88	10.17	13.32	7.13	6.43	8.82	4.17	0.82	0.72	0.91	1.11	1.09	1.13	15.95	25.26	6.97	22.12	35.25	9.71
	U	1.33	2.15	0.54	0.67	1.10	0.26	3.55	4.83	2.31	1.68	2.33	1.06	0.87	0.81	0.92	1.24	1.41	1.08	23.86	38.96	9.26	28.05	45.94	11.14
Tamil Nadu	T	10.82	14.95	6.57	8.23	10.57	5.87	15.68	14.88	16.49	13.95	13.68	14.23	1.56	1.60	1.52	2.35	1.98	2.72	15.26	24.96	5.31	20.24	31.83	8.50
	R	15.73	21.73	9.62	13.55	17.29	9.78	22.35	21.03	23.69	21.70	20.95	22.45	1.50	1.49	1.51	2.34	1.85	2.83	8.91	14.03	3.69	12.81	19.28	6.27
	U	1.35	2.04	0.63	1.43	2.02	0.82	2.82	3.15	2.47	4.04	4.43	3.64	1.67	1.80	1.54	2.36	2.14	2.59	27.50	45.79	8.45	29.76	47.79	11.37
Pondicherry *	T	2.25	3.88	0.59	1.16	2.09	0.23	9.94	12.06	7.78	7.40	8.63	6.18	0.27	0.36	0.19	0.63	0.64	0.62	20.61	34.25	6.68	25.94	41.92	9.97
	R	4.56	7.61	1.42	2.69	4.78	0.59	21.64	25.36	17.81	18.50	20.89	16.10	0.15	0.21	0.09	0.65	0.64	0.65	11.99	20.20	3.53	17.35	28.15	6.45
	U	0.95	1.77	0.13	0.39	0.73	0.05	3.36	4.52	2.18	1.83	2.42	1.24	0.34	0.45	0.24	0.62	0.63	0.60	25.46	42.22	8.44	30.25	48.89	11.73

Annexure-2

Percentage of categories of workers to total population by residence and sex for India / State / Union territory: 1991–2001

India / State / Union territory*	TRU	Percentage to Total Population																							
		Cultivators						Agricultural Labourers						Household Industry						Other Workers					
		1991			2001			1991			2001			1991			2001			1991			2001		
		P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
1	2	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14	9	10	11	12	13	14
Andaman &	T	6.29	8.56	3.52	5.93	7.67	3.88	2.36	3.21	1.32	1.43	2.06	0.68	2.52	2.69	2.31	1.96	2.36	1.48	24.07	38.86	5.98	28.94	44.63	10.40
Nicobar Islands *	R	8.55	11.75	4.73	8.80	11.47	5.71	3.17	4.35	1.76	2.07	3.00	0.99	3.38	3.61	3.10	2.75	3.32	2.08	20.31	33.32	4.76	25.58	39.25	9.71
	U	0.11	0.16	0.04	0.02	0.02	0.01	0.13	0.21	0.02	0.10	0.17	0.02	0.16	0.24	0.05	0.34	0.45	0.21	34.38	53.51	9.49	35.88	55.44	11.86

Notes :

1. The figures for India and Gujarat exclude the data for the entire Kachchh district, Morvi, Maliya-Miyana and Wankaner talukas of Rajkot district c of Gujarat State where population enumeration of Census of India, 2001 could not be conducted due to earthquake.
2. The population figures of India and certain States presented here are different from that published earlier in Provisional Paper 1 because the basic compilation sources are different.
3. # There was no census in Jammu & Kashmir in 1991 due to disturbed conditions.
4. @ The states of Uttaranchal ,Jharkhand and Chhatisgarh have been created subsequent to 1991and hence the 1991 figures for these states are not available.

ANNEXURE - 3

IRRIGATED AREA UNDER DIFFERENT CROPS

(in Million Hectares)

1970-1999

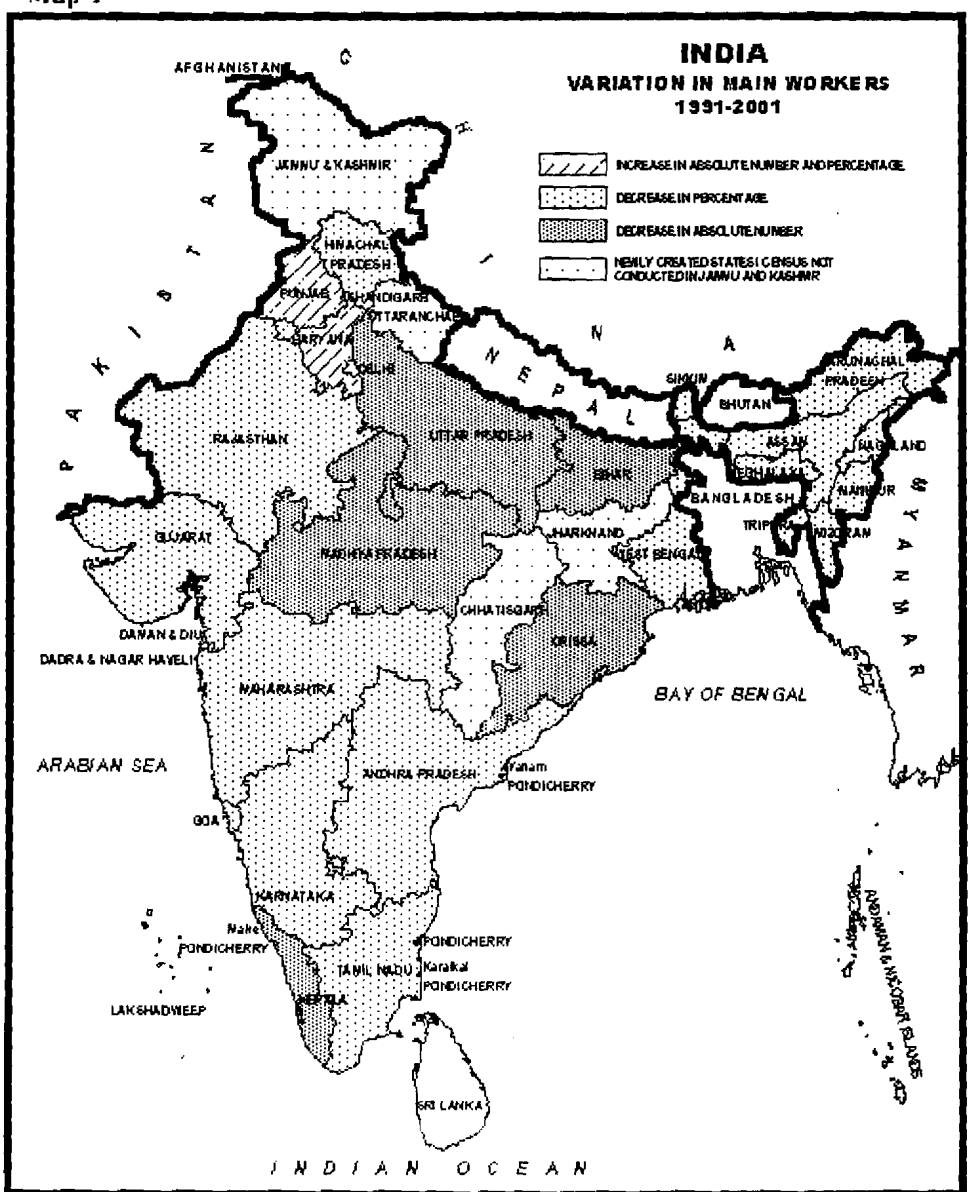
	1970-71	1980-81	1990-91	1995-96	1996-97	1997-98	1998-99
1	2	3	4	5	6	7	8
Rice	14.3	16.4	19.4	21.5	22.2	22.1	22.4
	(38.4)	(40.8)	(45.5)	(49.9)	(51.0)	(50.7)	(50.0)
Jowar	0.6	0.8	0.8	0.8	0.8	0.8	0.8
	(3.6)	(4.7)	(5.6)	(6.8)	(7.0)	(7.3)	(8.2)
Bajra	0.5	0.6	0.5	0.6	0.5	0.6	0.6
	(4.0)	(5.5)	(5.1)	(6.2)	(4.9)	(6.1)	(6.4)
Maize	0.9	1.2	1.2	1.4	1.3	1.3	1.4
	(15.9)	(20.1)	(19.7)	(22.6)	(20.3)	(20.3)	(22.2)
Wheat	9.9	15.6	19.5	21.6	22.4	22.9	23.6
	(54.3)	(70.0)	(81.1)	(85.8)	(86.2)	(85.8)	(87.4)
Barley	1.3	0.9	0.5	0.5	0.5	0.5	0.5
	(52.0)	(50.6)	(54.4)	(60.3)	(62.5)	(55.6)	(62.5)
Total Cereals	28.1	35.8	42.3	46.5	47.9	48.5	50.6
	(27.6)	(34.1)	(41.0)	(46.6)	(47.0)	(47.7)	(49.7)
Total Pulses	2.0	2.0	2.6	3.0	3.0	2.7	2.9
	(8.8)	(9.0)	(10.5)	(12.9)	(12.9)	(11.3)	(11.9)
Total Foodgrains	30.1	37.8	44.9	49.5	50.8	51.2	53.5
	(24.1)	(29.7)	(35.1)	(40.1)	(40.6)	(40.8)	(42.4)
Oilseeds	1.1	2.3	5.8	7.3	7.4	6.8	6.6
	(7.4)	(14.5)	(22.9)	(26.6)	(26.2)	(24.4)	(23.2)
Cotton	1.4	2.1	2.5	3.2	3.3	3.3	3.3
	(17.3)	(27.3)	(32.9)	(35.0)	(35.9)	(37.1)	(34.7)
Sugarcane	1.9	2.4	3.4	3.9	3.9	3.8	4.0
	(72.4)	(81.3)	(86.9)	(87.4)	(88.6)	(90.5)	(93.0)

Notes : 1. Figure in parentheses represent percentage of irrigated area to total area under the crop.

2. Irrigated area under oilseeds denotes the area under groundnut, rapeseed & mustard, linseed, sesamum and others.

Source : Economic Survey 2002-03

Map-1


INDIA
VARIATION IN MAIN WORKERS
1991-2001
INCREASE IN ABSOLUTE NUMBER AND PERCENTAGE
DECREASE IN PERCENTAGE
DECREASE IN ABSOLUTE NUMBER
NEWLY CREATED STATES (CENSUS NOT CONDUCTED IN JAMMU AND KASHMIR
AFGHANISTAN
JAMMU & KASHMIR
HIMACHAL PRADESH
PUNJAB
CHANDIGARH
UTTARANCHAL
HARYANA
DELHI
RAJASTHAN
UTTAR PRADESH
BIHAR
SIKKIM
BHUTAN
ARUNACHAL PRADESH
ASSAM
NAGALAND
MEGHALAYA
MANIPUR
BANGLADESH
TRIPURA
MIZORAM
GUJARAT
MADHYA PRADESH
JHARKHAND
WEST BENGAL
CHHATISGARH
ORISSA
DAMAN & DIU
DADRA & NAGAR HAVELI
MAHARASHTRA
BAY OF BENGAL
ARABIAN SEA
ANDHRA PRADESH
Yanam
PONDICHERRY
GOA
KARNATAKA
Mahe
PONDICHERRY
TAMIL NADU
Karaikal
PONDICHERRY
KERALA
LAKSHADWEEP
SRI LANKA
ANDAMAN & NICOBAR ISLANDS
INDIAN OCEAN
PAKISTAN
NEPAL
MYANMAR

Map-2

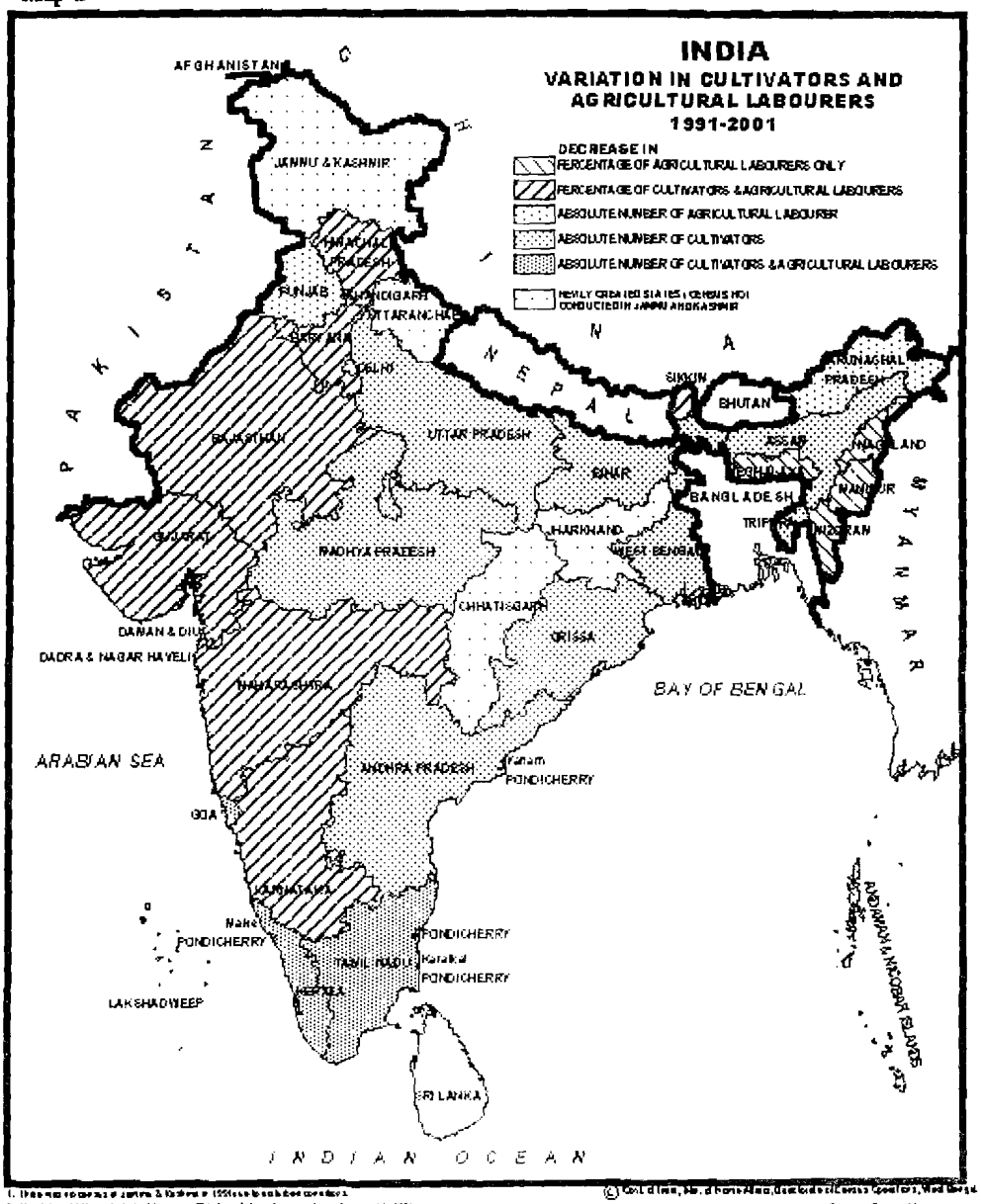

INDIA
VARIATION IN CULTIVATORS AND AGRICULTURAL LABOURERS
1991-2001
DECREASE IN
PERCENTAGE OF AGRICULTURAL LABOURERS ONLY
PERCENTAGE OF CULTIVATORS & AGRICULTURAL LABOURERS
ABSOLUTE NUMBER OF AGRICULTURAL LABOURER
ABSOLUTE NUMBER OF CULTIVATORS
ABSOLUTE NUMBER OF CULTIVATORS & AGRICULTURAL LABOURERS
AFGHANISTAN
JAMMU & KASHMIR
HIMACHAL PRADESH
PUNJAB
CHANDIGARH
UTTARANCHAL
HARYANA
DELHI
RAJASTHAN
UTTAR PRADESH
SIKKIM
BHUTAN
ARUNACHAL PRADESH
ASSAM
NAGALAND
MEGHALAYA
BIHAR
BANGLADESH
MANIPUR
TRIPURA
MIZORAM
JHARKHAND
WEST BENGAL
GUJARAT
MADHYA PRADESH
CHHATISGARH
ORISSA
DAMAN & DIU
DADRA & NAGAR HAVELI
MAHARASHTRA
BAY OF BENGAL
ARABIAN SEA
ANDHRA PRADESH
Yanam
PONDICHERRY
GOA
KARNATAKA
Mahe
PONDICHERRY
TAMIL NADU
Karaikal
PONDICHERRY
KERALA
LAKSHADWEEP
ANDAMAN & NICOBAR ISLANDS
SRI LANKA
INDIAN OCEAN
NEPAL
MYANMAR
PAKISTAN
CHINA

TABLE-1 Main Workers 1991-2001

ST_ID	NAME	ABSOL	PERCT	CATEGO
1	Jammu & Kashmir	NA	NA	NA
2	Himachal Pradesh	185041	2.05	2
3	Punjab	1740737	2.16	3
4	Chandigarh*	105278	1.68	3
5	Uttaranchal @	NA	NA	NA
6	Haryana	1526676	0.96	3
7	Delhi*	1335435	0.33	2
8	Rajasthan	3515072	0.76	2
9	Uttrar Pradesh	1907806	5.99	1
10	Bihar	4565885	4.26	1
11	Sikkim	48086	1.13	2
12	Arunachal Pradesh	22545	7.52	2
13	Nagaland	196958	6.66	2
14	Manipur	48237	6.87	2
15	Mizoram	73541	1.26	2
16	Tripura	104424	0.68	2
17	Meghalaya	27175	8.11	2
18	Assam	90990	4.60	2
19	West Bengal	2482752	1.48	2
20	Jharkhand @	NA	NA	NA
21	Orissa	804695	6.70	1
22	Chhatisgarh @	NA	NA	NA
23	Madhya Pradesh	5856953	6.01	1
24	Gujarat	2192906	0.46	2
25	Daman & Diu *	35441	11.11	3
26	Dadra & Nagar Haveli	35532	0.21	2
27	Maharashtra	4664727	2.41	2
28	Andhra Pradesh	555844	4.67	2
29	Karnataka	2065483	1.74	2
30	Goa	42143	1.11	2
31	Lakshadweep	649	4.59	1
32	Kerala 64346	2.66	1	
33	Tamil Nadu	885545	2.68	2
34	Pondicherry*	55051	0.13	3
35	Andaman & Nicobor Island	23122	0.38	2
	INDIA 27240901	**3.55**	**2**	

TABLE-2		Cultivators		Agricultural Labourers		
ST_ID	NAME	ABSOL	PERCT	ABSOL	PERCT	CATEG2
1	Jammu & Kashmir	NA	NA	NA	NA	NA
2	Himachal Pradesh	423629	3.87	17530	0.30	4
3	Punjab	114985	8.72	43863	8.24	3
4	Chandigarh*	723	0.56	1342	0.66	1
5	Uttaranchal @	NA	NA	NA	NA	NA
6	Haryana	955584	4.63	268760	4.52	4
7	Delhi*	2103	0.35	14158	0.63	3
8	Rajasthan	2721929	5.70	325480	2.25	4
9	Uttrar Pradesh	1881354	12.77	4607174	5.03	2
10	Bihar3998298	14.71	2958333	10.12	2	
11	Sikkim	33588	8.08	3146	1.74	4
12	Arunachal Pradesh	38929	2.31	2945	1.53	3
13	Nagaland	169409	8.59	25480	2.36	5
14	Manipur	28407	13.85	41190	1.01	5
15	Mizoram	43083	8.36	9230	0.44	5
16	Tripura	23108	12.08	70233	0.21	2
17	Meghalaya	31110	8.46	74716	5.11	5
18	Assam	686875	15.60	273069	0.93	2
19	West Bengal	794236	10.21	1869440	0.10	2
20	Jharkhand @	NA	NA	NA	NA	NA
21	Orissa	802456	12.73	1094653	2.16	2
22	Chhatisgarh @	NA	NA	NA	NA	NA
23	Madhya Pradesh	3724403	9.23	228606	3.42	2
24	Gujarat	8787	6.16	480551	2.63	4
25	Daman & Diu *	2599	11.63	966	4.12	1
26	Dadra & Nagar Haveli	6244	27.43	5406	0.26	2
27	Maharashtra	467727	5.48	1757626	1.26	4
28	Andhra Pradesh	387999	5	1301500	2.14	2
29	Karnataka	243911	5.94	555704	3.54	4
30	Goa 17973	6.93	8625	3.93	1	
31	Lakshadweep	0	0.0	3	0.02	3
32	Kerala	465410	5.99	796411	10.72	1
33	Tamil Nadu	928267	6.59	91917	5.04	1
34	Pondicherry*	6914	3.51	8219	8.98	1
35	Andaman & Nicobor Island*	3470	2.36	1527	2.96	3
	INDIA	**2944079**	**7.98**	**21455335**	**0.68**	

LIBERALISATION AND ITS IMPACT ON PRODUCTIVITY GROWTH IN THE JUTE INDUSTRY IN WEST BENGAL

Maniklal Adhikary
Ritwik Mazumder[1]

1. Introduction

Productivity growth has been identified as the dominant determinant of economic growth. As such, in the formation of growth-oriented industrial strategy, productivity growth has a key role. But growth rate of manufacturing sector productivity is liable to change depending on the change in policy regimes.

The New Industrial Policy of 1991 reflected some fundamental changes resulting in severe deregulation and abolition of excessive government controls over manufacturing industries. The sole objective of these highly liberalized policies was to promote productivity and efficiency in Indian manufacturing by creating a competitive environment. Opening up of the domestic market resulted in the end of the protectionist regime in India, West Bengal being no exception.

As per media reports, the industrial performance of West Bengal during the Left Front regime has been poor compared to that of Maharashtra and Gujarat. The liberalization policy was severely opposed by the state along with bliss of science (automation, computerization etc). Our focus here is on the growth of factor productivity in the jute and vegetable fibre processing industries in West Bengal.

The Jute Industry has a background that is more rural than urban. As a cash crop jute has traditionally been the most important (apart from tea) for entire Eastern India. The jute fibre has been put to varied uses ranging from rope and twine to

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coarse cloth to produce gunny bags (sacks) meant primarily for large scale commercial transportation of goods (such as food grains). Unfortunately, introduction of more convenient substitutes of jute (synthetic fibres like nylon) has threatened the survival of this industry. As such we anticipate the fact that the importance of the Jute Industry is bound to diminish over time. This alone provides us with a strong enough rationale for studying the performance of this industry during the past two decades.

Section 2 describes the objectives of the study followed by section 3 with models, data and methodology of estimation. In section 4, we present the empirical analysis of productivity growth for different policy regimes in West Bengal and in section 5 summary and conclusion.

2. Objective

This paper intends to study the relationship between changes in the policy regimes during the period from 1980-81 to 1997-98 and productivity growth in the jute industry in West Bengal. The periods 1980-81 to 1984-85 and 1985-86 to 1990-91 are considered as two phases (Regimes) of weak liberalisation and the rest of the time span (1991-92 to 1997-98) as the phase of strong liberalisation (Dutt, 1993). First, we consider the trend in the growth of average productivity of labour, capital and total factor productivity for Regime 1, Regime 2 and Regime 3 and for the entire 17- year period. The trends in the growth of capital intensity and the capital-employee ratio would be also considered for study. Second, since the growth of capital, labour and total factor productivity definitely affects the growth of output, the relationship between the growth of output and contribution of capital to output (CKO), contribution of labour to output (CLO) and contribution of total factor productivity to output (CTFPO) is estimated. The growth of total factor productivity would be computed under both Solow and Tornqvist indices of growth accounting process. Third, we look into something about the type of technical progress, which is the most important component in the estimation of growth of output. Finally, Verdoorn (1949) law, which states the positive relationship between growth of labour productivity and growth of output, is empirically verified for the jute industry.

3. Model Methodology, Data and Estimation

Following Poirier's (1974), spline function approach, the trend in the growth of several variables of interest is looked into for different regimes. Assuming a linear time trend, the postulated model is

$$\left.\begin{array}{lll} \text{Regime 1 :} & \ln Y_t = \alpha_1 + \beta_1 t + u_t & \text{for } t \le 1985 \\ \text{Regime 2 :} & \ln Y_t = \alpha_2 + \beta_2 t + u_t & \text{for } 1986 < t \le 1991 \\ \text{Regime 3 :} & \ln Y_t = \alpha_3 + \beta_3 t + u_t & \text{for } 1991 < t \end{array}\right\} \quad (3.1)$$

Let us define the following variables

$$\left.\begin{array}{l} w_{1t} = t; \\ w_{2t} = \begin{cases} 0 & \text{if } t \le 1985 \\ t - 1985 & \text{if } 1985 < t \end{cases}; \\ w_{3t} = \begin{cases} 0 & \text{if } t \le 1991 \\ t - 1991 & \text{if } 1991 < t \end{cases} \end{array}\right\} \quad (3.1a)$$

and reparameterise the function as

$$\ln Y_t = \alpha_1 + \delta_1 w_{1t} + \delta_2 w_{2t} + \delta_3 w_{3t} + u_t \quad (3.2)$$

The expression $[\exp(\beta_i) - 1] * 100$ will yield the percentage growth rate for the i-th regime (i = 1,2,3), where $\beta_1 = \delta_1$, $\beta_2 = \delta_1 + \delta_2$ and $\beta_3 = \delta_1 + \delta_2 + \delta_3$. Equation (3.2) will be used to compute the growth rates of desired variables in the jute industry in West Bengal for different regimes. The variables which capture the growth rates in the three different regimes are w_{1t}, w_{2t} and w_{3t} respectively. The growth rate for the entire period 1980-81 to 1997-98 will be computed by using the equation as

$$\ln Y_t = \alpha + \beta t + u_t \quad (3.3)$$

The variables we shall consider are listed below.

APL: Average productivity of labour; APE: Average productivity of employee; APK: Average productivity of capital; CAPINL: Capital intensity when capital

is considered per unit of labour only; CAPINE: Capital intensity when capital is considered per unit of employee; TFP1: Total factor productivity when labour as input has been taken for calculation, TFP2: Total factor productivity when employee as input has been taken for calculation.

In order to compute the growth of total factor productivity, we shall proceed as follows. Given the production function

$$Y = F(X_1, X_2, \ldots, X_k, t) \tag{3.4}$$

under constant returns to scale, the construction of the divisia or the geometric index of total factor productivity, that belongs to the growth accounting approach for measuring productivity, is based on the formula as

$$DI = \frac{Y_t}{Y_0} \exp\left[-\sum_{i=1}^{k} \int_0^t Sh_i \frac{\dot{X}_i}{X_i} \right] \tag{3.5}$$

where Y is output, X's are inputs, t is time and Sh is the share of input in the value of output. This type of index was used by Abramowitz (1956), Solow (1956), and Jorgenson and Grilliches (1967) in their empirical studies. The logical foundation of this index was developed and enriched by Richter (1966), Gorman (1970), Hillinger (1970) and Hulten (1973).

Based on the production function (3.4), the total differential is

$$dY = F_1 dX_1 + F_2 dX_2 + \cdots + F_k dX_k + F_t dt$$

or, $$\frac{dY}{dt} = F_1 \frac{dX_1}{dt} + F_2 \frac{dX_2}{dt} + \cdots + F_k \frac{dX_k}{dt} + F_t$$

or, $$\frac{1}{Y}\frac{dY}{dt} = \frac{X_1 F_1}{Y}\frac{1}{X_1}\frac{dX_1}{dt} + \frac{X_2 F_2}{Y}\frac{1}{X_2}\frac{dX_2}{dt} + \cdots + \frac{X_k F_k}{Y}\frac{1}{X_k}\frac{dX_k}{dt} + \frac{F_t}{Y}$$

or, $$\frac{F_t}{Y} = \frac{1}{Y}\frac{dY}{dt} - \sum_{i=1}^{k}\left[\left(\frac{X_i F_i}{Y}\right)\left(\frac{1}{X_i}\frac{dX_i}{dt}\right)\right]$$

Thus, the divisia index is given as

$$DI = \frac{\dot{Y}}{Y} - \sum_{i=1}^{k} Sh_i \frac{\dot{X}_i}{X_i} \tag{3.6}$$

where $Sh_i = \frac{\partial \ln Y}{\partial \ln X_i} \approx \frac{X_i F_i}{Y}$ and $\sum_{i=1}^{k} Sh_i = 1$

The divisia index (3.6) that shows the rate of technical change is defined as the difference between the rate of growth of output and the weighted average of rates of growth of inputs, the weights being the shares of inputs in the value of output. For the economic time series data, Solow (1957) computed the divisia index by using the formula

$$DI_t = \left(\frac{\dot{Y}}{Y} - \frac{\dot{X}_k}{X_k}\right) - \sum_{i=1}^{k-1} Sh_i \left(\frac{\dot{X}_i}{X_i} - \frac{\dot{X}_k}{X_k}\right) = \left(\frac{\Delta Y}{Y} - \frac{\Delta X_k}{X_k}\right) - \sum_{i=1}^{k-1} Sh_i \left(\frac{\Delta X_i}{X_i} - \frac{\Delta X_k}{X_k}\right) \tag{3.7}$$

This is what is famous Solow residual measure of total factor productivity growth. If we have only two inputs, namely, capital (K) and labour (L), Solow residual for annual time series data, is

$$DI_t = \left(\frac{\Delta Y}{Y} - \frac{\Delta L}{L}\right) - (1 - Sh_L)\left(\frac{\Delta K}{K} - \frac{\Delta L}{L}\right) \tag{3.8}$$

where Sh_L is the share of labour.

Contrasted with the divisia index Solow used, Tornqvist index is another important variant of the divisia index. Under the specification of a translog production function under constant returns to scale, Diewart (1976) proved that the Tornqvist index is the exact measure of technical change. Thus, if there is a transcendental logarithmic production function as

$$\ln Y_t = \alpha_0 + \alpha_t t + \beta_{tt} t^2 + \sum_{i=1}^{k} \alpha_i \ln X_i + \frac{1}{2} \sum_i \sum_j \beta_{ij} \ln X_i \ln X_j + \sum_{i=1}^{k} \beta_{it} t \ln X_i + u_t \qquad (3.9)$$

the Tornqvist approximation of the divisia index as introduced by Jorgensen and Grilliches (1967) can be written as

$$\overline{DI}_t = \ln\left(\frac{Y_t}{Y_{t-1}}\right) - \sum_{i=1}^{k} \overline{Sh}_i \ln\left(\frac{X_{i,t}}{X_{i,t-1}}\right) \qquad (3.10)$$

where $\overline{Sh}_i = \frac{1}{2}\left[Sh_{i,t} + Sh_{i,t-1}\right]$. The average rate of technical change, $\overline{DI}_t$, is also called translog index of technical change.

It should be noted that the translog measure of the total factor productivity growth is not significantly different from the Solow residual measure under two conditions. First, the elasticity of substitution is not significantly different from one. Second, variation in the growth rates of inputs over time is not significant (see, Ahluwalia 1991).

Using equation (3.8) and (3.10), we shall compute the growth of total factor productivity. The inputs and total factor productivity have their contribution to the production of output. Therefore, the growth of output will be regressed on the contribution of labour to output (CLO), contribution of capital to output (CKO) and the contribution of total factor productivity to output (CTFPO). The contribution of any input can be computed as the product of growth of input and its share. The equation to be used for estimation is specified as

$$\hat{Y} = Const + \beta_1 CLO + \beta_2 CKO + \beta_3 CTFPO + u_t \qquad (3.11)$$

Total factor productivity and the rate of technical progress are synonymous. The higher the rate of technical progress, the higher will be the growth of output. Hence, the estimation of the rate of technical progress and its input bias is relevant. Under the specification of production function as (3.9), the expression for the rate of technical progress is given as

$$\frac{\partial \ln Y}{\partial t} = \alpha_t + \beta_{tt} t + \sum_i \beta_{it} \ln X_i \qquad (3.12)$$

where α_t stands for the rate of autonomous growth of total factor productivity, β_{it} for the bias in the growth of total factor productivity and β_{tt} for the rate of change in the growth of total factor productivity. If $\beta_{it} = 0$, technical progress is Hicks neutral. If $\beta_{it} > 0$, technical progress is non-neutral in the Hicksian sense and is biased with respect to the *i*th input.

If we assume a transcendental logarithmic production function as (3.9), output elasticity with respect to i-th endogenous input is

$$\eta_i = \frac{\partial \ln Y_t}{\partial \ln X_i} = \alpha_i + \sum_j \beta_{ij} \ln X_j + \beta_{it} t \qquad (3.12A)$$

Differentiating (3.12A) with respect to *t* yields, $\frac{\partial \eta_i}{\partial t} = \beta_{it}$

Thus, technical progress may increase or decrease the value of output elasticity with respect to i-th endogenous input depending on the sign of β_{it}.

The sum of output elasticities is defined as returns to scale or the elasticity of scale function. Thus, the elasticity of scale (see Fϕrsund and Hjalmarsson, 1987) is

$$SCLE = \sum_{i=1}^{k} \frac{\partial \ln Y}{\partial \ln X_i} = \sum_{i=1}^{k} \eta_i$$

The rate of technical progress is defined in (3.12). We have,

$$\eta_i = \frac{\partial \ln y}{\partial \ln X_i} = \frac{\partial y}{\partial X_i} \frac{X_i}{y} = \frac{w_i X_i}{py} = sh_i$$

where sh_i is the share of the i-th input in total cost. Hence,

$$\frac{\partial \eta_i}{\partial t} = \frac{\partial (sh_i)}{\partial t} = \beta_{ii},$$

We can also write

$$X_i = sh_i \frac{py}{w_i}$$

$$\text{or, } \ln X_i = \ln sh_i + \ln p + \ln y - \ln w_i$$

Differentiating this expression with respect to t we have

$$\frac{\partial \ln X_i}{\partial t} = \frac{\partial \ln sh_i}{\partial t} + \frac{\partial \ln y}{\partial t} = \frac{1}{sh_i}\frac{\partial (sh_i)}{\partial t} + RTP = \frac{1}{sh_i}\frac{\partial \eta_i}{\partial t} + RTP = \frac{1}{sh_i}\beta_{ii} + RTP$$

Thus, the bias in technical progress from this expression is

$$BIAS_i(X) = \frac{1}{sh_i}\beta_{ii} + RTP$$

The technical progress is i-th input intensive if the bias is positive.

In order to test Verdoorn law empirically we shall use Kaldor (1966) specification of the aggregate Verdoorn law as a regression equation.

$$\hat{y} = \theta_1 + \theta_2 \hat{Y} + u_i, \quad \theta_2 > 0, \text{ where } y = \frac{Y}{L}, \quad \hat{y} = \frac{\dot{y}}{y}, \quad \hat{Y} = \frac{\dot{Y}}{Y}. \qquad (3.13)$$

For empirical estimation we have used ASI data for the jute industry of West Bengal for a period of 17 years (1981-82 to 1997-98). Nominal values were deflated by appropriate wholesale price indices from RBI: *Report on Currency and Finance* (various issues). The price indices of machinery and equipment were used to deflate fixed capital stock at current. We measure labour by the number of workers engaged in production, as also by the number of employees.

Admittedly there is no satisfactory or universally accepted way of measuring capital stock. Since measurement of true economic depreciation is a very complex exercise we choose to work with estimates of gross fixed capital stock.

Here we have computed gross fixed capital stock at constant prices by using the perpetual inventory accumulation (PIA) method (Goldsmith, 1951). As regards the gross fixed capital stock at replacement cost for the benchmark year (1980-81) we have used the rule of thumb after Roychaudhury (1977), "...doubling the value of fixed capital stock at book value at current prices for the benchmark year...", to estimate the replacement cost figures of machinery and equipment.

4. Empirical Analysis

Referring to table 1A, both labour and employee have registered negative growth rates except in regime-3. But capital has always grown positively. Considering the entire 17-year period, there is a huge mismatch between growth rates of labour and capital – heavily inclined towards the latter. But a striking observation is that strong liberalisation has tremendously raised output growth which was negligible in Regime-1.

Table 1A : Growth Rate of Output, Labour, Employee and Capital in Jute Industry in West Bengal

Regime/Variable	Output	Labour	Employee	Capital
Regime1	0.81	-3.18	-3.25	7.06
Regime2	3.77	-2.21	-2.40	8.35
Regime3	9.92	5.00	4.48	3.36
Entire Period	2.73	-0.89	-1.07	10.03

From Table 1B we see that TFP growth rates for the period 1980-81 to 1997-98 are not very impressive. The state suffered a negative and decreasing TFP growth pattern, considering both Tornqvist and Solow measures, except in regime-1. TFP exhibits negligible growth over the entire period.

Table 1B : Growth Rate of Productivity of Relevant Variables in Jute Industry in West Bengal

Regime/ Variables	APL	APE	APK	CAPINL	CAPINE	TFPG1 (Solow)	TFPG2 (Solow)	TFPG1 (Tornqvist)	TFPG2 (Tornqvist)
Regime1	4.12	4.22	-10.19	15.93	16.05	0.39	0.33	0.37	0.34
Regime2	6.11	6.32	-8.66	16.17	16.39	-1.78	-1.85	-1.36	-2.12
Regime3	4.69	5.14	1.43	3.21	3.65	-2.94	-2.97	-2.50	-1.43
Entire Period	3.63	3.80	-7.30	10.93	11.11	-0.04	-0.10	-0.05	-0.09

- Regime 1: 1980-81 to 1984-85; Regime 2: 1985-86 to 1990-91; Regime3: 1991-92 to 1997-98. Growth rates for different regimes and for the entire period have been computed by using the equations

$$\ln Y_t = \alpha_1 + \delta_1 w_{1t} + \delta_2 w_{2t} + \delta_3 w_{3t} + u_t \quad \text{and} \quad \ln Y_t = \alpha + \beta t + u_t \text{ respectively.}$$

TFPG, according to Solow and Tornqvist measure, decreases at an increasing rate between Regime-2 and Regime-3 (except in Regime-3 when Tornqvist measure is computed for employee). Thus, both Solow and Tornqvist total factor productivity measures give similar results except in the isolated case mentioned in parenthesis. Hence, we may compute the total factor productivity by using either of them. We use the Solow measure in subsequent analyses.

Labour productivity registered a growth rate of 4.12 percent per annum during 1980-81 to 1984-85. But the growth rate, increased in the second phase of weak liberalisation. During the phase of strong liberalistion, growth rate of labour productivity declined slightly to 4.69. Even under the thrust of 'Liberalisation, Privatisation and Globalisation' (LPG) since July 1991, no impressive enhancement in labour productivity growth is observed. The same applies to the growth rate of employees' productivity.

The capital productivity shows a declining trend during the entire period with growth rate of –7.3 percent per annum. But after registering negative growth rates

during Regime-1 and Regime-2, capital productivity grew positively in Regime-3. But capital productivity growth has shown clear signs of improvement.

The capital-labour ratio, a measure of capital deepening, is important. It is observed that CAPINL grew at the rate of 10.93 percent per annum during the period 1980-81 to1997-98 where as CAPINE grew at a rate of 11.11 percent. The growth rate of capital per unit of labour (employee) has declined immensely in between Regime-2 and Regime-3. Arguably this reflects that the objective of greater labour absorption as outlined in various Five Years Plans and Industrial Policy Resolutionsis, are being followed in the jute industry in West-Bengal.

Empirical estimates of equation (3.11) are presented in Table 2. The contribution of labour to the growth of output is positive but just less than unity in all regimes and also over entire period. Similarly, capital contributes positively to output growth throughout all the three regimes and also over the entire period though its contribution is consistently higher than that of labour in all regimes. TFP is seen to contribute positively to growth of output but the coefficients are very close to one in all periods. All the coefficients in Table 2 are highly significant except for the constant terms. During the period of strong liberalisation CKO increased significantly. This is purely due to labour saving technical progress as we shall see later.

Table 2 : Regression Estimates of Growth Rate of Output in Jute Industry in West Bengal

Regime	Coefficient*				R^2	$\bar{R}^2$	DW
	Const	CLO	CKO	CTFPO			Statistic
Regime 1 1981-85	0.0147 (2.321)	0.957 (26.620)**	1.489 (2.648)*	0.976 (33.548)**	0.99	0.9888	1.545
Regime 2 1986-91	0.002 (1.277)	0.994 (23.380)**	1.485 (38.414)**	1.031 (73.239)**	0.99	0..98	2.150
Regime 1& 2 1981-91	0.007 (1.973)	0.945 (27.688)**	1.416 (12.258)**	1.005 (45.479)**	0.99	0.97	1.050
Regime 3 1992-98	-0.010 (-2.150)	0.972 (66.824)**	3.370 (5.917)**	1.125 (27.816)**	0.99	0.98	0.628
Entire Period 1981-98	0..006	0.957	1.450	1.002	0.99	0.97	1.071

* The empirical value of t-statistic is presented in the parenthesis.
*Significant at 5% level. **Significant at 1% level.

The results in Table 2 reveal that the contribution of input growth was highly significant in the growth of output. The analysis of growth of output reveals the following:

(1) The contribution of capital was a significant source of growth of output.

(2) The contribution of labour though smaller in absolute terms was also significant during the entire period.

With reference to Table 3A rate of technical progress is seen to be insignificantly declining (increasing) in Regime 1&2 and Regime 3 (regimes 1 and 2). Throughout the entire period rate of technical progress is declining insignificantly. During the first phase of weak liberalisation, technical progress is significantly labour saving in Hicksian sense, but has become insignificant during strong liberalisation. Over the entire period rate of technical progress is statistically insignificant though it is significantly labour saving.

Table 3A : Regression Estimates of Rate of Technical Progress in the Jute Industry in West Bengal

Regime	Constant	time	Coefficient+ capital	labour	R sqr	Adj. R sqr	D.W. Statistic
Regime 1	4.607	0.225	-0.000090	-0.000018	0.98	0.92	2.597
1981-85	(3.697)	(1.694)	(-1.715200)	(-5.259800)**			
Regime 2	2.466	0.071	-0.000014	-0.000016	0.59	0.39	2.217
1986-91	(0.945)	(0.521)	(-0.656270)	(-1.066600)			
Regime 1 & 2	2.240	-0.068	0.000003	-0.000011	0.54	0.34	2.561
1981-91	(2.886)	(-1.154)	(0.241040)	(-2.813200)*			
Regime 3	0.376	-0.013	0.000008	-0.000004	0.39	0.22	1.797
1992-98	(0.439)	(-0.110)	(0.342680)	(-0.908630)			
Entire Period	0.858	-0.020	0.000003	-0.000005	0.26	0.09	2.649
1981-98	(2.063)	(-0.471)	(0.305950)	(-2.108900)*			

+ The empirical value of t-statistic is presented in the parenthesis.

*Significant at 5% level. **Significant at 1% level.

We have computed the amount of bias in technical progress and presented in Table 3B. Technical progress is biased towards using more capital (labour saving) in all regimes and also over the entire period. The pattern of bias has been very similar through all regimes and throughout the entire 17-year period. It also exhibits that technical progress in the jute industry in West Bengal has traditionally been labour saving and strong liberalisation can hardly be blamed.

Table 3B : Bias in Technical Progress in the Jute Industry in West Bengal

Regime	Amount of Bias in		Nature of Technical Progress
	Labour	Capital	
Regime 1 (1981-85)	-0.249	1.965	Labour Saving or Capital Intensive
Regime 2 (1986-91)	-0.054	0.166	Same
Regime 1 & 2 (1981-91)	-0.043	0.339	Same
Regime 3 (1992-98)	-0.008	0.162	Same
Entire Period (1981-98)	-0.018	0.123	Same

Table-4 exhibits the validity of Verdoorn Law except in regimes 1 and 3. All we can say is that growth of output has had a positive impact on both growth of labour productivity and growth of employees' productivity during the combined Regime 1& 2.

In order to interpret the results for Indian manufacturing industry, we quote Kaldor (1975) : " ..... A sufficient condition for the presence of static or dynamic economies of scale is the existence of a statistically significant relationship between the growth of employee and growth of output with a regression coefficient, which is significantly less than unity. If this condition is not satisfied, there are several possibilities. First, that there is a significant relationship, but the coefficient of growth in employee on growth in output is either not statistically different from unity or is significantly greater than unity. The latter case is sufficient to reject the increasing return to scale hypothesis. Second, that there is no significant relationship between growth in employee and growth in output." We thus arrive at the conclusion that the substantial dynamic economies of scale prevailed in the jute industry in the state during the period 1980-81 to 1997-98.

Table 4 : Table 4.Regression Estimates of Verdoorn Law for Jute Industries in West Bengal

Regime	Dependent Variable	Coefficient+		R^2	$\bar{R}^2$	D.W. Statistic
		CONSTANT	GRY			
Regime 1	GAPL	0.052	0.463	0.55	0.40	1.793
1981- 85		(0.787)	(1.908)			
	GAPE	0.050	0.457	0.55	0.40	1.762
		(0.777)	(1.921)			
Regime 2	GAPL	0.001	0.678	0.93	0.91	1.725
1986-91		(0.092)	(7.137) **			
	GAPE	0.004	0.654	0.90	0.88	1.900
		(0.256)	(6.160)			
Combined	GAPL	0.022	0.536	0.65	0.61	2.577
Regime 1& 2		(0.797)	(4.058) **			
1981-91	GAPE	0.023	0.524	0.65	0.61	2.506
		(0.843)	(4.045) **			
Regime 3	GAPL	0.047	0.003	0.00001	-0.25	2.163
1992-98		(0.600)	(0.007)			
	GAPE	0.049	0.015	0.0003	-0.25	2.164
		(0.613)	(0.033)			
Entire Period	GAPL	0.028	0.395	0.29	0.24	2.636
1981-98		(0.871)	(2.464)*			
	GAPE	0.029	0.389	0.28	0.23	2.610
		(0.915)	(2.430)*			

+ The empirical value of t-statistic is presented in the parenthesis.

*Significant at 5% level. **Significant at 1% level.

6. Summary and Conclusion

To sum up, strong liberalisation has had a positive impact on growth of output, labour and employee but not capital (growth rate of capital has fallen in Regime 3) in

the jute industry in West Bengal. This is surprising. Arguably demand for jute products is on the decline due to the introduction of more convenient synthetic substitutes of jute fibre like nylon. Moreover we expect liberalisation to promote automation by raising capital growth relative to labour growth, which is contrary to our observation. Without a micro–level investigation it is difficult to explain why this has occurred. Second, liberalisation has had a positive impact (expectedly) on growth of productivity of capital. As regards the growth rates of productivities of labour and employee liberalization has not brought much of a change. But growth rates of capital intensity and TFP have fallen during post-liberalization era. Third, in the decomposition of growth rate of output – labour, capital and TFP – all contribute positively (in all sub-periods) and strong liberalisation has not changed the scenario. Fourth, technical progress is seen to be capital intensive and labour saving in all the regimes and liberalization cannot be blamed. This directly contradicts the claim that it is strong liberalisation that is directly responsible for labour displacement. Finally, Verdoorn law is found empirically valid for the combined Regime 1&2 and for the entire 17-year period.

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MANUFACTURING PRODUCTIVITY GROWTH IN INDIA & WEST BENGAL : A LIBERARIZATION PERIOD ANALYSIS

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Liberalization programme in India started in early 1980s and strengthened in 1990s. During the liberalization period wide spread change in government policy is observed. Delicensing of the industry, privatization of many of the public sector industries , free and floating exchange rate, withdrawal of the trade controls in the form of tariff and subsidies and free capital movements are remarkable among those changes. Due to those policy changes industries are facing greater competition from both within and aboard. In the face of such competition , productivity of the industries is expected to improve much. But all the industries of different states are not equally affected by those policy changes. This is due to the diffference in the infrastructural facilities and also the policy of the state governments. This paper is an attempt to estimate the change in productivity of eight industries of India as a whole and that of West Bengal.Those industries account for about eighty per cent of gross value added of the organized manufacturing sector of India. From the estimates of productivity of eight industries selected for study, we shall try to get at estimate of productivity of the organized manufacturing sector of India and West Bengal as a whole. We shall also estimate productivity of organized manufacturing sector as a whole from the aggregative data and observe whether any discrepancy arises between the productivity derived from disaggregative data with that of the aggregative data

In section II of this paper ,we have discussed the methodology of our study. Section III deals with the problems related to the measurement of capital,

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labour and output. In Section IV we have presented the estimates of the production functions (regression results). In this section we have also analysed the TFPG (total factor productivity growth) of the eight industries and TFPG of the manufacturing sector as a whole for India and West Bengal. Annual average TFPG has also been estimated in this section . In Section V summary and concluding remarks have been presented.

II

Methodology

In the present study we have taken total factor productivity as the measure of productivity. Total factor productivity growth is defined as the difference between the rate of growth of output and rate of growth of combined inputs(appropriately weighed).

In the estimation of total factor productivity, there are two widely used approaches. They are (1) growth accounting approach and (2) production function estimation approach. The growth accounting process of estimation of total factor productivity rests on two restrictive assumptions, namely existence of perfect competition in the factor market and constant returns to scale. These two assumptions do not hold good for a developing country like India because of market imperfections. The production function estimation approach that does not make any restrictive assumption like constant return to scale and exibits non-unitary elasticity of substitution is chosen for this purpose. Such a general type of production function is obtained from the approximation to the CES production function.

$$\text{Log}Y_i = \alpha_0 + \alpha_K \text{ Log } K + \alpha_L \text{ Log } L + \beta[\text{ Log } K - \text{Log } L]^2 + \varepsilon_i$$

By allowing the coefficients of $(\text{Log } K)^2$, $(\text{Log } L)^2$, and $-2(\text{LogK})(\text{LogL})$ to differ. this function is called transcedental logaithim or translog production function. Thus, the translog production function for two inputs is given by :

$$\text{Log } Y_i = \alpha_0 + \alpha_K \text{ Log } K + \alpha_L \text{ Log } L + \beta_{KK} (\text{Log } K)^2 + \beta_{LL} (\text{Log } L)^2 + \beta_{KL} (\text{Log } K)(\text{Log } L) + \varepsilon_i$$

This production function is the generalisation of Cobb-Douglas production function. It is quadratic in logarithms of the variables and reduces to Cobb-Douglas case if the parameters β_{KK}, β_{LL}, and β_{KL} vanish. In our study of total factor productivity growth of the manufacturing industries, we have considered two inputs labour (L), capital (K) and time (T)representing technical progress.As a result, the production function takes the following form.

$$\text{Log}Y_t = \alpha_0 + \alpha_K \log K + \alpha_L \log L + \alpha_T T + \tfrac{1}{2}\beta_{KK}(\log K)^2 + \beta_{KL}(\log K)(\log L) + \tfrac{1}{2}\beta_{LL}(\log L)^2 + \beta_{KT}(\log K).T + \beta_{LT}(\log L).T + \tfrac{1}{2}\beta_{TT} T^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Total factor productivity may be derived from the production function given in equation(1) in the following manner.

$$TFPG = \delta(\log Y)/\delta T = \alpha_T + \beta_{KT}(\log K) + \beta_{LT}(\log L) + \beta_{TT} T \quad \ldots\ldots\ldots\ldots (2)$$

In eqation(1) and (2), Y, K, L & T represent output, capital input, labour input and time respectively.

In eqation(1) and (2), Y, K, L & T represent output, capital input, labour input and time respectively.

Starting with the translog production function , we have followed the backward elimination process to arrive at the best fitted production function for the industries taken up for the study. We have applied three tests to choose the best fitted production function. The tests are :

(1) The best fitted production function should contain all the variables, namely capital input, labour input & time as argument in any form.

(2) The best fitted production function should be observationally roburst in the sense that all the coefficients should be significant and its estimated values will not change significantly even when one or two observations either from the beginning or from the end of the sample set are excluded from the model or included in the same.

(3) The chosen form should have the desired property that the contributions of the inputs to the estimated output is positive.

We have also tested whether the excludeed coefficients are jointly insignificant. We ignore the resuts that fail the F- test. The F- test is given by

$$F_{q,n-k}=\{(R^2_g - R^2_c)/(1 - R^2_g)\}.(n-k)/q$$

(where n, k and q are respectively the number of observation, the number of coefficients in the general form of the production function and the number of independent linear restrictions, that is, the number of coefficients assumed zero in the present case.)

III

Measurement of variables & data source

In our study we have taken gross value added as the index of output. Gross output is not taken directly as the index of output in order to avoid the possibility of double counting. However, it may appear that net value added might have been a better measure of output index, but since the depreciation figures are not reliable as the entrepreneurs often provide us with inflated figures to avoid tax-laws, we have preferred gross value added as a measure of output to net value added.

Data regarding output index is obtained from various issues of Annual Survey of Industries(ASI) published by CSO. The data on gross value added as available from the ASI are given at current prices. To obtain the real gross value added at constant prices we have deflated the gross value added by a constant price index(1982-83).The reasons for taking 1982-83 year as the base year for our study are that the year has all the properties of a base year . For deflating the gross value added we have used the wholesale price index of the indusrty concerned . The price levels for this purpose is found from the Mamoranda tables of the the consolidated database on the "Annual Survey of Industries" published by EPW Research Foundations.

In this connection it is worth mentioning that the disaggregative data for India are available only from 1972-73 onwards and for West Bengal only from1980-81. So we have to remain satisfied with the estimates of productivity for the years

stated above. But the aggregative data are available from 1970-71 to1997-98 for India as a whole and also that of West Bengal. So we can safely analyse TFPG for all the three decades, i.e., 1970s,1980s &1990s in case of the aggregative analysis.

With respect to the index of labour input, we have made an uncomfortable assumption that efficiency differences among different classes of labour are largely reflected in their remuneration. The assumption is , however, not particularly valid for a country like India where remuneration does not vary often due to level of efficiency, because of huge surplus labour in the country side. However, the non-conformity of remuneration with the efficiency or productivity is more evident in the unorganized sector than in the organized manufacturing sector. Therefore, remuneration received by the workers may be considered a good proxy for the and at least better than the unweighted sum of different categories of labour. Workers and other employees (including supervisors, technicians, managers etc.) are two groups of labour for which data are consistently available for the period under study. Labour index is formed by a weighted sum of the number of heads in these two groups. Weights are the relevant group remuneration. Relevant data are obtained from various issues of "Annual Survey Of Industries" published by CSO. With respect to capital, we have taken the real value of gross fixed capital at 1982-83 prices as its measure. Deflator for gross fixed capital is obtained from data on gross fixed capital formation(G.F.C.F) at current and constant prices for different years. Data for above purpose are obtained from various issues on "Annual Survey Of Industries" and "National Accounts Statistics" published by C.S.O.

IV

Estimation of Production Functions &TFPG

In our study the best fitted production functions for eight industries of India as a whole and West Bengal is derived. The results of best-fitted production functions are presented in table-1 & table-2. It is observed from table –1 & table-2 that the values of R^2 are very close to one. In all the cases we observe that the values of t-statistics are significant. The values of D.W statistics show that there is no auto-

correlation in the disturbance term. We have estimated the TFPG of India as a whole and West Bengal. From the TFPG estimates of different years we have estimated the annual average TFPG for the eight industries of India as a whole and also seperately for the decades 1970s, 1980s and 1990s. We have also estimated annual average TFPG for the decades 1980s &1990s of industries selected for our study of West Bengal.

TABLE 1 : ESTIMATES OF PRODUCTION FUNCTION (ALL INDIA)

EXPLANATORY VARIABLE	IND. 1	IND. 2	IND. 3	IND. 4	IND. 5	IND. 6(A)	IND. 6(B)	IND. 7	IND. 8
LOG L	154.15	-139.88		3.2763		18.781	-14.852	-0.399	14.781
	(4.04)	(3.11)		(6.9)		(4.87)	(3.36)	(2.22)	(1.91)
LOG K		0.3134	1.2677			-12.468	11.476	0.235	
		(2.28)	(20.56)			(4.34)	(3.69)	(2.94)	
T		-1.7667		-0.498				-0.558	-0.6728
		(3.07)		(2.72)				(6.84)	(3.22)
LOG K^2	4.2215		-0.0465	0.2991					0.388
	(3.31)		(5.86)	(4.70)					(1.82)
LOG L^2	-7.1839	10.446				-3.2587	2.9872		
	(4.44)	(3.11)				(4.56)	(3.59)		
T^2	0.0961				0.0256				
	(2.05)				(5.50)				
LOGK*T	-0.4537			-0.0528					0.0675
	(3.01)			(3.67)					(3.24)
LOG L*T	0.5044	0.2692	0.0086	0.1779	-0.0066	0.0072	0.0077	0.106	
	(3.10)	(3.09)	(8.17)	(3.37)	(2.37)	(8.47)	(2.44)	(7.3)	
LOG K.LOG L	-9.0346			-0.6998	0.0467	2.3216	-2.116		
	(3.28)			(4.6)	(2.37)	(8.47)	(3.62)		
INTERCEPT	-487.91	473.107			5.432			7.307	-36.06
	(3.99)	(3.15)			(6.14)			(7.57)	(1.66)
R^2	0.9756	0.50919	0.9858	0.9797	0.947	0.9793	0.9860	0.984	0.9399
D.W	1.89	2.122	1.39	1.69	2.11	1.57	2.4950	1.727	2.072

Notes : Figures in the parenthesis shows the t-statistics

IND 1 : Food Products

IND 2 : Cotton Textiles

IND 3 : Chemical & Chemical Products

IND 4 : Non-Metalic Mineral Products

IND 5 : Basic Metal & Alloy

IND 6(A) : Electrical Mechinary

IND 6(B) : Non-Electrical Mechinary

IND 7 : Transport Equipments & Parts

IND 8: Electricity

TABLE 2 : ESTIMATES OF PRODUCTION FUNCTION (WEST BENGAL)

EXPLANATORY VARIABLE	IND. 1	IND. 2	IND. 3	IND. 4	IND. 5	IND. 6	IND. 7	IND. 8
LOG L	-58.732	-15.879		81.996	461.95	-101.95	100.354	-3.1965
	(3.55)	(2.21)		(2.58)	(2.5)	(2.87)	(3.59)	(2.61)
LOG K	80.828	22.5543		-0.777		-119.50	-124.32	4.7098
		(2.41)		(2.48)		(2.82)		(4.017)
T	-18.949	-5.4475	1.2313	1.0471	7.799	26.461	21.309	-0.94699
	(3.53)	(2.66)	(2.25)	(2.2)	(1.97)	(2.7)	(3.25)	(5.24)
LOG K^2	-0.2015			0.0512	0.02		1.05258	-0.23049
	(3.44)			(3.29)	(2.42)		(2.83)	(4.52)
LOG L^2	5.4553	1.63327		-4.264	-20.403		-8.29196	0.17809
		(2.25)		(2.55)	(2.49)		(2.96)	(3.01)
T^2						0.007	-0.03067	
						(2.43)		(2.23)
LOGK*T			-0.0267					0.0872
			(3.20)					(5.73)
LOG L*T	1.7958	0.52688	-0.0989	-0.113	-0.7125	-2.5986	-1.91908	
	(3.52)	(2.57)	(1.83)	(2.23)	(2.00)	(2.7)	(3.29)	
LOG K LOG L	-7.2634	-2.20503	0.0921		11.681	9.5220		
	(3.48)	(2.33)	(79.13)		(2.83)	(3.55)		
INTERCEPT				-382.64	-2605.7	1053.6		
				(2.51)	(2.50)	(2.89)		
R^2	0.807	0.84920	0.7836	0.929	0.6272	0.7419	0.77869	0.92136
D.W	1.5634	2.72	2.48	2.82	2.24	1.72	1.80	2.30

Notes : Figures in the parenthesis shows the t-statistics

IND 1 : Food Products
IND 2 : Cotton Textiles
IND 3 : Chemical & Chemical Products
IND 4 : Non-Metalic Mineral Products
IND 5 :Basic Metal & Alloy
IND 6: Electrical & Non-Elctrcal Mechinary
IND 7: Transport Equipments & Parts
IND 8: Electricity

In table 3 we have presented the estimates of annual average total factor productivity growth (TFPG) for the industries selected for our study in case of India as a whole. From table 3, it is noticed that the annual averageTFPG during 1970s was low in almost all the industries. Again annual average TFPG of two industries, namely food products and Basic Metal and Alloy was negative during 1970s. TFPG of rest of the industries range between 1 per cent and 4.5 per cent. The only exception was the Non-metalic mineral products which show very high rate of growth of TFP.

TABLE 3 : Average Annual TFPG (ALL-INDIA), 1980s, 1990s & Whole Period (%)

Industries	Average Annual TFPG			
	1972-73 to 1989-1990	1980-81 to 1989-1990	1990-91 to 1997-1998	Whole Period
Industry 1	-5.04	8.49	-5.17	-0.02
Industry 2	2.10	-0.68	-4.72	-1.19
Industry 3	4.50	4.78	5.00	4.77
Industry 4	7.66	7.88	4.81	6.93
Industry 5	-1.68	2.22	7.08	2.54
Industry 6(A)	3.77	3.90	3.95	3.87
Industry 6(B)	3.78	3.98	4.13	3.97
Industry 7	1.05	4.06	4.68	3.42
Industry 8	4.27	8.31	9.85	7.67

Notes :

IND 1 : Food Products

IND 2 : Cotton Textiles

IND 3 : Chemical & Chemical Products

IND 4 : Non-Metalic Mineral Products

IND 5 :Basic Metal & Alloy

IND 6(A): Electrical Mechinary

IND 6(B): Non-Electrical Mechinary

IND 7: Transport Equipments & Parts

IND 8: Electricity

1980s witnessed negative rate of growth of TFP. Growth of TFP of food products and electricity improved significantly during 1980s. TFPG of electricity and non-metalic mineral products was very high during 1980s. TFPGs of most of the industries were very high during 1990s. Productivity of Basic Metal and Alloy improved significantly in 1990s in comparision to 1980s. However, TFPG of cotton textiles and food products were negative during 1990s. Considering the whole period under study it is found that electricity has the highest TFPG in case of India as a whole. Next comes the non-metalic mineral products, and chemical and chemical products occupies the third position. The annual average TFPGs were negative for two industries during 1972-73 to 1997-98. These industries are food products and cotton textiles.

The annual average TFPGs of West Bengal for all the industries taken up for our study are presented in table 4.

From table 4, it is interesting to note that all the industries except electricity showed negative TFPG for West Bengal during 1980s. More or less the picture is observed for the 1990s. TFPG for Transport equipment and parts improved significantly during 1990s. Electricity is no exception.

TABLE 4 : Average Annual TFPG(West Bengal), 1980s ,1990s &Whole Period (%)

Industries	Average Annual TFPG		
	1980-81 to 1989-1990	1990-91 to 1997-1998	Whole Period (1980-81 to1997-1998)
Industry 1	-5.69	-4.17	-5.01
Industry 2	-8.23	-5.84	-7.17
Industry 3	-2.84	-5.54	-4.05
Industry 4	-2.22	-0.7	-1.54
Industry 5	-16.20	-8.45	-12.76
Industry 6	-1.52	-3.88	-2.57
Industry 7	-0.03	4.05	1.63
Industry 8	11.01	25.97	17.66

IND 1 : Food Products

IND 2 : Cotton Textiles

IND 3 :Chemical & Chemical Products

IND 4: Non-Metalic Mineral Products

IND 5 :Basic Metal & Alloy

IND 6: Electrical & Non-Elctrical Mechinary

IND 7: Transport Equipments & Parts

IND 8: Electricity

Comparing the performance of West Bengal with that of India as a whole it is found that TFPG performance of most of the industries are less than that of all-India average. The only exception is observed in case of electricity. The productivity of electricity is very high for West Bengal and it surpasses the all-India average.

Finally, we have derived the production functions from aggregative data (taking all the industries together) for India as a whole and West Bengal. The production functions are presented in table-5. We derived the TFPG from the production functions in table-5 and the annual average TFPG thereof. Annual average

TFPG derived from aggregative data is represented by Y_1 in our analysis. Again, we have derived annual average TFPG from the weighted average of the annual average TFPG of the industries selected for our analysis. Weight of a particular industry is calculated as follows.It is the share of gross value added of that particular industry in aggregate value added of the manufacturing sector.This estimate is represented by Y_2 in our study. Both the estimates of annual average TFPG are presented in table 6.

TABLE 5 : ESTIMATES OF PRODUCTION FUNCTION FROM AGGREGATIVE DATA, ALL INDIA & WEST BENGAL

EXPLANATORY VARIABLE	WEST BENGAL	ALL INDIA
LOG K	-4.27287 (1.78)	
LOG L	-5.60596 (2.33)	1.88269 (17.23)
T		-0.338715 (2.70)
LOG^2 K	0.164413 (1.79)	0.074486 (8.54)
LOG^2 L	0.232904 (2.35)	
T^2	0.000987019 (5.97)	
LOG K. LOG L		-0.138537 (8.71)
LOG K.T		
LOGL. T		0.025755 (3.20)
INTERCEPT	73.1014 (4.55)	
R^2	0.928931	0.993892
D.W	1.87559	1.51

Note : Figures in the parenthesis shows the t-statistics

TABLE 6 : ANNUAL AVERAGE TFPG DERIVED FROM AGGREGATIVE & DISAGGREGATIVE DATA, ALL INDIA &WEST BENGAL

YEAR	ALL INDIA		WEST BENGAL	
	Y_1	Y_2	Y_1	Y_2
1970-71 to 1979-80	6.01	2.46	1.08	-
1980-81 to 1990-91	6.1	4.81	3.06	-3.34
1990-91 to 1997-98	6.06	4.62	4.83	3.54

Y_1= Annual Average TFPG derived from aggregative data

Y_2=Annual Average TFPG derived from disaggregative data

From table 6 it is found that Annual average TFPG derived from aggregative data is different from that derived from disaggregative data. Here the figure for Y_1 in general is higher than that of Y_2 in all the decades and for both West Bengal and India . Again it is found that annual average TFPG figures for India as a whole is higher than that of West Bengal whatever measure of TFPG we choose. Again annual average TFPG is higher in the 1980s than that in the 1970s in both India as a whole and West Bengal. Comparing the TFPG of West Bengal and all-India it is found that annual average TFPG of West Bengal is higher during 1990s than during 1980s whatever data we consider. But annual average TFPG of India as a whole has decreased in case of both aggregative and disaggregative data.

V

Conclusion

From our study the folowing conclusions can be drawn.

Firstly, productivity of all the industries selected for our study in case of India as a whole was lower in 1970s than during other decades. TFPG increased substantially during 1980s and1990s. Secondly, TFPG of West Bengal was lower than that of India as a whole in all the three decades whatever measure (aggregative or disaggregative) is adopted.Thirdly, the annual average TFPG derived from the aggregative and disaggregative analysis do not always give the same .Fourthly, annual average TFPG of most of the industries of West Bengal was lower than the corresponding figures of India as a whole.Eectricity is the only exception.

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IMAGES FROM ARTISANS' LIVES

M. V. Rao

1. IMAGES

- In Pingla and Sabang areas of West Midnapore district, women make mats or *madur* which are famous in India and abroad. They depend on moneylenders and middlemen for small amounts of credit to buy raw materials. The rate of interest can go up to Rs.10/- per Rs.100/- per month. They also depend on these people to sell their products and in the process get paid only a fraction of the market price.
- In Jhargram and parts of Garbeta area, women make rope from *sabai* or *babui* grass. They need only small amounts as capital to buy grass. They are forced to depend on traders for this small capital. The result is that they get far less price for the rope.
- Thousands of women in forest areas of Jhargram, Salboni and Garbeta, collect *sal* leaves which are used in making plates. They can earn more if they have a pressing machine but they can not afford the same. Women also collect *tendu* leaves in Jhargram areas and roll them into *bidis* but the middlemen run away with the cake. These women are not organised and do not have market access and money to withstand the might of middlemen.
- Many women in Daspur manufacture incense sticks or *agarbattis*. The middlemen or the trader gives them sticks and the paste. These women are paid paltry amounts as wages on the basis of thousand sticks rolled. The women can as well buy the ingredients and make the product and sell. They can earn many times more in the process. But, lack of small capital forces them to be exploited by others.

The images will be common and similar in most of the Indian villages across various trades and professions.

2. COMMON PROBLEMS

MARKETING :

The artisans normally lose their earnings and edge due to lack of market access. They depend upon middlemen to sell their products. The products are bought by the first middleman at the village itself. As the artisan does not feel confident about outside avenues of market, he feels satisfied with whatever price he gets, which is invariably low. He feels that he can utilize the time he would have spent in exploring market for producing further. There are many tiers of middlemen operating at various levels, each taking his profit or rather artisan's pound of flesh! It is unbelievable to find that the 'senior middleman' operating in sabai rope has turnover of millions of rupees. If one has the heart to ask how much a villager earns, in a tribal interior of Jhargram forests, it is around fifteen rupees a day!

INADEQUATE CAPITAL :

Despite the growth of banking and cooperative sector, the majority of the poorer sections find it hard to access cheap and easy credit. The saviour (or the devil next door?) is the village money lender. Instances of a family losing whatever valuables they have like gold, small piece of land, cattle are common sites in rural India. The question arises why? What happens to all these banks? An average villager is still scary of the procedural nightmares of a bank despite the simplifications of norms for lending, particularly adequate security for the loan. One of the reasons could be lack of adequate awareness about programmes and the simplifications happening in the banking over the years. Attitude and motivation, or lack of it, on the part of banking personnel also contributes to the situations in some cases. Vigorous implementation of the Artisan Credit Card scheme may provide some relief and hope for the thousands of artisans.

AGE OLD TECHONOLOGY :

The artisans also lose the race in not being able to upgrade their traditional skills to suit changing times. The tools and methods are age old and they continue to live in

the past. They have little access to the design improvements happening in the outside world. Their chances of interaction with technical institutes for interaction and improvement are remote. One example is thigh reeling being practiced in tasar (a form of silk) in Anandapur village of West Midnapore district, till recently. The method was unhygienic and the quality of yarn was poor. The cloth woven out of such yarn would be inferior, of course. What was needed was a simple reeling machine which can be operated with or without power. Introduction of such machines by the district administration, with adequate training, has totally transformed the dynamics of silk industry in the village. With it, the lives of hundreds of families dependent on this profession also changed for better.

HEALTH :

The artisans who make horn product suffer from acute respiratory problems. This is because of poisonous gases emitted from heating the horns before they are moulded into various shapes. Mostly, these are made in their own mud houses where little ventilation exists. Any outsider may not be able to stand in that room for more than five minutes.

The condition in which most of the weavers work does not need much description. Where the pit looms are in operation, the working conditions are not congenial for the health of the weavers. Their eyesight is affected because of poor lighting in the room. In many cases, there is no electricity. Their efficiency and health conditions get adversely affected because of these inadequacies. Artisans working in the *zari* (intricate designs on clothing) field also suffer from typical eyesight problems due to severe pressure on the eyes. Child labour also is not uncommon in this sector.

The incense sticks manufacturer employs a sizeable number of child labour for their profits. The wages paid are negligible where as the pressure of work is heavy. Mostly women are engaged for this work in this field as they can work at their home or in the neighbourhood. They also work in inhospitable conditions.

The conditions will be similar in respect of most of the artisans working in any field or sector.

LIFE SECURITY AND ASSURANCE :

The life suddenly turns a nightmare if and when an artisan or the living member dies or becomes sick. The family normally does not have the financial or mental strength to face such a crisis. Adequate life insurance and other social security schemes will provide some answer to this common but most serious problem an artisan faces in life (or death?) No serious impact will be felt by pilot initiatives or by covering a small section of the group. The initiative has to be on a large scale and time bound to cover each of them during their life time.

3. SELF HELP GROUPS : THE WAY OUT ?

A lot of experiments and efforts have been made all over the country to improve the condition of various artisans. Main issues relate to exploitation by middlemen, lack of access to market facilities and age old traditional skills and lack of knowledge about modern methods and market demand. These problems keep them in poor economic condition. Organizing these people, particularly, women have been one of the positive features of the interventions in various parts of the country. Self Help Group movement in Midnapore West and East districts, initiated in March, 2000, has made significant impact on the lives of three hundred thousand rural families including artisans. The positive change has been felt in these areas :

- ✓ Income level of the members has increased because of economic activities taken up from their own savings. Many Groups could obtain credit linkage which helped them in asset creation and significant improvement in standard of living of the members and their families. They could access improved machines and tools because of better economic conditions and collective bargaining strength. They have started exploring markets outside their villages and as a result, their profit margins have improved.
- ✓ Increase in their self-confidence levels and social status.
- ✓ The Groups provided the women and rural people an opportunity to develop their leadership qualities and managerial skills.

- ✓ The decision-making process in family and community has improved because of the continuous learning from the SHG functioning. The Groups have provided economic security to women and through them, to the whole family.
- ✓ The Group serves as a platform for discussing many issues and problems they face day-to-day. These can be problems like children health, impending childbirth in a family, drinking water problem in the area, literacy, sanitation and immunization. The issues can be endless.
- ✓ The Group helps build cohesiveness among members and in turn in the community. It gives them the confidence and ability to fight collectively on common issues. They could reduce their dependence on middlemen and money lenders.
- ✓ The campaign to form SHGs has become a mass movement in social mobilization. It made significant impact on the approach of community towards holistic development. Panchayats and officials came out with a lot of innovative ideas to strengthen and enrich this movement.

POLLUTING INDUSTRIES IN WEST BENGAL : A PRELIMINARY ANALYSIS

Sebak Kumar Jana
Joyashree Roy

I. Status of West Bengal in Industrial Pollution

Indian economy poised for fast economic growth through rapid industrialization can hardly ignore the threat to local as well as global pollution. This can be gauzed from the fact that against an economic growth of 163% during 1975-1995, the industrial pollution in India by 247% in the same period (Kathuria V. et al 2002). Earlier as an indicator of development, economic growth was emphasized as the only objective of a nation. Today emphasis is being shifted from the quantity of growth to the quality of growth with sustainability (Haq M. 1994). Thus environmentally driven policies must form an integral part of industrial activity. West Bengal cannot be different in this respect.

In West Bengal pollution control from major point sources is regulated through command and control system. The state pollution control board has classified all the industries, on the basis of their pollution generating potential into three categories namely red, orange and green (Annual Report, 1997-98, West Bengal Pollution Control Board). Some of the features of these industries are as follows. (a) Red category industries: These are grossly polluting obnoxious industries and have fire hazards. The power to grant consent for such industries is with the Member Secretary. There are 74 types of such industries. The seventeen-category industry, as identified by MOEF, is a subset of this type. These industries cannot be set up in Municipal areas. (b) Orange category industries: There are 39 industries under this heading. These industries are pollution-free and can be permitted in all the municipal areas other than CMC and HMC with adequate pollution measures. (c) Green Category industries: There are 69 industries under this heading. These industries can be permitted in any area with adequate pollution control measures.

The Government has labelled 70% of the 15,000 industrial units in the Calcutta Metropolitan areas and its neighbourhood "polluting" and announced that they must all be relocated. These industries did not have the required permission and were operating in flagrant violation of the norms set by West Bengal Pollution Control Board (The Telegraph, 4th April 2003). It has also been reported that 43% of air pollution in greater Kolkata is caused by the industry. 2134 factories burn about 80 tons of coal per month. The level of SO2 has gone to an alarming level of 31.5 microgram per cubic meter, which can cause acid rain. Small scale units in the categories like secondary lead smelting, iron foundries, dyeing, stone crusher in the different districts of West Bengal are really a cause of concern.

Regarding the problem of industrial pollution, the main issue is the compliance of standard by industries. India can boast of being one of the few developing countries to have comprehensive environmental regulation. Though there has been a multitude of regulations, many of the units have not complied with the regulations. Often there are flagrant violations of the law (Down to Earth, April 15, 2000). The CPCB (Central Pollution Control Board) has identified 1551 large and medium industries in India called seventeen category industries, contributing maximum to the pollution load. They have been given time schedule to install necessary pollution control equipments to comply with the prescribed standards. The progress of compliance is monitored periodically and quarterly reports are given by CPCB based on the inputs received from the concerned State Pollution Control Boards (SPCBs). As on 31.12.2000, out of 1551 industrial, 1326 industrial have so far provided the necessary pollution control facilities, 172 industrial have been closed down and the remaining 53 industrial are defaulting in India. Legal action has been taken under the Environment (Protection) Act, 1986 for all the defaulting units and in many cases the matter is pending before the Hon'ble Supreme Court. Almost all the defaulting units are either in the advanced stage of installing the pollution control measures or under legal action for default A state-wise summary status of the pollution control in 17 categories of industries and a category-wise summary status are given in Table 1 and Table 2 respectively.

Table 1 : State-wise Summary Status of the Pollution Control in 17 Categories of Industries (as on 31.12.2000)

Sl. No.	State/UT	Total No. of units	Status (No. of units)		
			Closed	complying	Defaulters
1.	Andhra Pradesh	173	29	142	02
2.	Arunachal Pradesh	00	00	00	00
3.	Assam	15	02	11	02
4.	Bihar	62	21	35	06
5.	Goa	06	00	06	00
6.	Gujarat	177	07	168	02
7.	Haryana	43	05	37	01
8.	Himachal Pradesh	09	00	09	00
9.	Jammu & Kashmir	08	03	05	00
10.	Karnataka	85	09	72	04
11.	Kerala	28	06	20	02
12.	Madhya Pradesh	78	11	60	07
13.	Maharashtra	335	24	302	09
14.	Manipur	00	00	00	00
15.	Meghalaya	01	00	01	00
16.	Mizoram	00	00	00	00
17.	Nagaland	00	00	00	00
18.	Orissa	23	01	15	07
19.	Punjab	45	06	39	00
20.	Rajasthan	49	06	39	00
21.	Sikkim	01	00	01	00
22.	Tamil Nadu	119	02	117	00
23.	Tripura	00	00	00	00
24.	UT – Andman & Nicobar	00	00	00	00
25.	UT – Chandigarh	01	00	01	00

26	UT-Daman & Diu, Dadra & Nagar Haveli	00	00	00	00
27.	UT – Delhi	05	01	04	00
28.	UT – Lakshadweep	00	00	00	00
29.	UT – Pondichery	06	01	05	00
30.	Uttar Pradesh	224	21	198	05
31.	West Bengal	58	17	35	06
	Total	**1551**	**172**	**1326**	**53**

Notes : Complying: Having adequate facilities to comply with the standards

Defaulter : Not having adequate facilities to comply with the standards

The highest number of such units are of sugar category, followed by Pharmaceuticals, Distillery, Cement, Fertiliser, Thermal Power, Pulp and Paper, Pesticides, Leather, Petrochemicals, Aluminum, Zinc and Copper. More or less the same distribution pattern of the 17 categories of industries is true for West Bengal. Thermal Power category has the highest number of units followed by Cement, Pharmaceuticals, pulp and paper, fertiliser. Such distribution is itself suggestive of required prioritization of action towards pollution control.

Table 2 : Summary status of Pollution control in 17 categories of Industries in India

Sl. No.	Category	Total No. Units	Closed	Having Adequate facilities to comply with the standards	Not having adequate facilities to comply with the standards
1.	Aluminum	7	1	6	0
2.	Caustic Soda	25	0	25	0
3.	Cement	116	4	104	8
4.	Copper	2	0	0	2
5.	Distillery	177	22	122	33
6.	Dye and Dyeing	64	4	56	4

7.	Fertilisers	110	8	96	6
8.	Iron and Steel	8	0	2	6
9.	Leather	70	11	59	0
10.	Pesticides	71	6	62	3
11.	Petrochemicals	49	0	49	0
12.	Pharmaceuticals	251	26	224	1
13.	Pulp and paper	96	16	64	16
14.	Refinery	12	0	10	2
15.	Sugar	392	25	309	58
16.	TPP	97	2	68	27
17.	Zinc	4	0	4	0
	Total	**1551**	**125**	**1260**	**166**

Source : CPCB, Ministry of Environmental and forests. Annual Report, 2001

Industrial emission is of three types: solid, liquid and gaseous. The gaseous air pollutants are CO_2, SO_2, NO_2 and SPM. Of these are the first three are global polluting agents whereas solid type emission namely suspended particulate matter (SPM) is local polluting agent. We have estimated the level of industrial pollution measured by the level of emission in West Bengal vis-à-vis India with the help of ASI data. The emissions of CO_2, SO_2 and NO_2 from industrial sources are calculated for West Bengal as well as India for four years: 1978-79, 1983-84, 1993-94 and 1994-95. The results are presented in tables 3, 4 and 5. As is evident from the table the emission have increased steadily over time.

Table 3 : CO_2 Emission from Industrial Sources

Emissions (Tones CO2 Equivalent/Year)

Sector	1978-79	1983-84	1993-94	1994-95
Industry (India)	111,075,167	170,587,407	284,329,607	382,523,570
Industry (West Bengal)	12,252,006	13,880,051	23,304,977	24,938,882
Power Gen. & Transmission	-	-	18,091,629	20,783,247

Source : *Our own estimate*

Table 4 : SO_2 Emission from Industrial Sources

Emissions (Tones SO_2 Equivalent/Year)

Sector	1978-79	1983-84	1993-94	1994-95
Industry (W.B)	93,274	103,700	149,546	158,316
Industry (India)	907,404	1338,472	2182,062	2501,523
Power Gen. & Transmission	-	-	108,609	123,586

Source : *Our own estimate*

Table 5 : NOX Emission from Industrial Sources

Emissions (Tones NO_2 Equivalent/Year)

Sector	1978-79	1983-84	1993-94	1994-95
Industry (W.B)	9,728	15,585	23,236	24,680
Industry (India)	113,117	194,231	320,459	527,074
Power Gen. & Transmission	-	-	16,850	19,144

Source : *Our own estimate*

We have also calculated the percentage share of West Bengal in the total all India industrial emission. It reveals that the percentage share of West Bengal for all the categories of pollutants have decreased over the years. It is encouraging to note that it has been reduced from 11.03% to 6.51% for CO2 10.27% to 6.32% for SO2 and 8.6% to 4.68% for NO2 over the period 1978-79 to 1994-95. The results are presented in table 6. This may be due to declining share of West Bengal in total number of units, conservation measures and adoption of abatement technology.

Table 6 : Percentage share of West Bengal in the total Industrial Emission in India

Year	CO_2	SO_2	NO_2
1978-79	11.03	10.279	8.599
1983-84	8.136	7.74	8.023
1993-94	8.19	6.85	7.25
1994-95	6.51	6.32	4.68

Source : *Our own estimate*

II. Objective, Methodology and Data

Objective of the study

There are a very limited number of studies on constructing industry specific pollution statistics. The primary objective of the present paper is to estimate the pollution intensity of 17 category plants in West Bengal. These information will be useful for economic modelers, analysts engaged in working out clean development mechanism and policy makers engaged in formulation of appropriate abatement policy. To be more precise, the study seeks to cover the following aspects:

1. Industry-wise energy intensity
2. Industry-wise emission intensity in terms of pollutants like CO_2, SO_2 and NO_2
3. Industry-wise wastewater generation
4. Industry-wise solid waste pollution
5. Regression analysis of firms from the point of view of pollution generation

Methodology

We have used the unit-specific information for the calculation of pollution statistics. To fulfill our purpose we have first collected data of the daily consumption

of different fuels for each unit. Emission level for each unit is calculated multiplying the relevant emission factor (Bhattacharya S. et al 1999) Industry-wise generation of wastewater and solid waste per ton of product is calculated by averaging the generation of the individual units concerned. The causal analysis of pollution is done through regression analysis.

Data

We have used the information available with the environmental cell of WBPCB on unit-wise information of 17 category industries for our purpose. As reported by West Bengal Pollution Control Board there are 69 such units in this state. Given the access and availability we could record data for only 32 units. The data have been collected from the files of Pollution Control Board Office.

The paper is organized as follows. Section II gives database prepared for industry-wise general characteristics using the raw data available from WBPCB. Section III presents the industry-wise pollution characteristics including the energy intensity and emission intensity of the plants. A regression analysis of the plants is done in section IV. Section V makes a conclusion of the whole study.

II. General Characteristics of the Units Under Consideration

The units covered in the present study belong to the following categories of industries: Thermal Power, Cement, Pulp & Paper, Fertiliser, Basic drugs and Pharmaceuticals, Integrated Iron & Steel, Distillery, Sugar, Pesticide, Caustic Soda, Dyes and Dye Intermediates, Oil Refinery, Leather. There are no units of Copper Smelting, Zinc Smelting, and Aluminum Smelting. Out of the reported 69 units of 17 categories we have collected information for 39 units. The category-wise distribution of 69 units reported and 39 units recorded are presented in the table 2 and the district-wise distribution of the units is given in the table 7. It is clear from the above that Burdwan has the highest number of units followed by Midnapore and Hooghly.

Table7 : Category-wise distribution of the units

Industry Category	No. of units reported	No. of units recorded
Aluminum	0	0
Caustic Soda	2	2
Cement	12	7
Copper	0	0
Distillery	6	3
Dye and Dyeing	1	1
Fertilisers	7	2
Iron and Steel	4	4
Leather	1	1
Pesticides	2	1
Petrochemicals	0	0
Pharmaceuticals	8	3
Pulp and paper	7	4
Refinery	1	1
Sugar	4	0
TPP	14	10
Zinc	0	0
Total	69	39

Source : *Roy J. (1999)*

Table 8 : Districtwise distribution of 17 category industries

District	Reported	Recorded
Bankura	2	1
Burdwan	18	14
Calcutta	3	3
Darjeeling	2	2
Hooghly	7	3
Midnapore	10	5
Mursidabad	2	2
Nadia	5	1
Purulia	1	1
24 Pgs. (N)	5	4
24 Pgs. (S)	5	4
Total	**69**	**39**

Source : *Roy J. (1999)*

The general characteristics of the units under consideration include the following information: size of the industry, gross capital investment, and number of persons attending the factory.

Gross Capital Investment

We have collected unit-wise data of gross capital investment. As is expected thermal power plants and steel plants are in nature of high capital investment. We have presented the frequency distribution (for which the data is available) of gross capital investment in table. As is seen from the table 19 industries are below the investment size of Rs. 25 crores.

Table 9 : Gross Capital Investment Distribution

Class (Rs. Crore)	No. Of Units
(1-25)	19
(25-100)	8
(100-200)	2
(200-500)	2
(500-1000)	1
(2000-)	2

Number of persons employed

We have calculated average labour capital ratio industry-wise on the basis of the available information. As is evident from the table leather industry is the most labour absorbing industry and the most capital-intensive industry is thermal. According to the descending order of labour intensity the industries are: Leather, Dyes, Fertiliser, Pharmaceuticals, Caustic Soda, Paper, Cement, Oil Ref., Iron & Steel and Thermal.

Table 10 : Labour Capital Ratio (No. of labour/ Gross Capital in Rs. Crore)

Industry	L/K
Thermal	1.637
Oil Refinery	6.79
Cement	10.96
Distillery	11.91
Paper	14.35
Iron & Steel	3.423
Caustic Soda	22.57
Pharmaceuticals	41.74
Fertilizer	42
Dyes	79.41
Leather	140.26

Ageing Pattern of the Units

Out of 39 units for which we have got the year of commissioning date we see that 27 units have been commissioned after 1960. In the 90's 9 units have been commissioned. The three oldest plants were commissioned in the decade 1910-19. Decade wise commissioning of total number of units are also presented in the table 10.

Table11 : Ageing pattern of the units

Year	No. of Units
(1990-)	9
(1980-1989)	6
(1970-1979)	6
(1980-1989)	6
(1950-1959)	2
(1940-1949)	3
(1930-1939)	2
(1920-1929)	1
(1910-1919)	3

III. Pollution characteristics of the plants

Pollution generation by the units under consideration:

The level of pollution from any production unit depends on various factors like (i) The raw materials being used, (ii) Existing pollution control measures and emission levels, (iii) Options for reducing pollution and their associated costs, (iv) Investment plans including expenditure on pollution control.

Liquid Waste

Liquid Waste may be of different types like industrial, domestic, mixed etc. Industry category wise liquid waste generation is presented in the following table. This has been calculated averaging the unit specific information of wastewater generation.

Table 12 : Industry-wise liquid waste generation per unit of output

Industry Type	Unit	Liquid Waste (M^3 / Unit of Product)
Thermal Power	Million Unit	2681
Cement	MT	24.183
Pulp & Paper	MT	46.218
Fertiliser	MT	0.492
Basic drugs and Pharmaceuticals	MT	193.88
Integrated Iron & Steel	MT	6.121
Distillery	KL	83.489
Pesticide	MT	40
Caustic Soda	MT	35.667
Dyes & Dye Intermediates	MT	20.883
Oil Refinery	MT	0.723
Leather	Pairs	-

Solid Waste

Solid waste may also be of different types like seasonal waste, spillage rejected materials, CETP sludge and others. Industry category wise solid waste generation is presented in the following table. This has been calculated averaging the unit specific information of solid waste generation.

Table13 : Industry-wise solid waste generation per unit of output

Industry Type	Unit	Solid Waste (Tone / Tone of Product)
Thermal Power	Million Unit	7185
Cement	MT	2.6
Pulp & Paper	MT	1.277
Fertiliser	MT	0.027
Basic drugs and Pharmaceuticals	MT	0.086
Integrated Iron & Steel	MT	9.91
Distillery	KL	11.39
Pesticide	MT	0.1
Caustic Soda	MT	0.262
Dyes & Dye Intermediates	MT	-
Oil Refinery	MT	-
Leather	Pairs	-

Energy Intensity

Energy intensity is defined as energy consumed per unit of output. Energy intensity of an industry is a technical efficiency parameter reflecting how efficiently energy is used to produce unit level of output. Energy efficiency has direct bearing upon emission intensity. Less is the energy intensity more is the energy efficiency of an industry. Consumption and production of energy is an important source of pollution both local and global. As a no regret strategy or win-win option improving energy

efficiency is the most favoured policy alternative. In this context we unit-wise process specific energy efficiency parameter can be useful data-base for policy formulation. Though the type and quantity of energy consumed differ unit-wise, energy consumed here is in the form of coal, HSD (High Speed Diesel), LDO (Light Diesel Oil), FO (Furnace Oil) and BFG (Bio-fuel Gas). We have left out BFG for the lack of data on emission factor of BFG. The consumption of different facts has been reported in different units like litres for HSD, FO and LDO and tones for coal. For the calculation of energy efficiency we have all the fuels in a common unit named tone coal equivalent. For this purpose we have used the relationship 1 million tone of oil = 2 million tonnes of coal equivalent. It has been found that there is a lot of variation in energy efficiency among the units. We have then calculated industry-wise energy intensity which is presented in the table 14.

Table 14 : Industry-wise energy intensity

Industry Type		Energy Intensity (tonne coal equivalent/ unit of product)
Thermal Power	Million Unit	687.955
Cement	MT	0.022
Pulp & Paper	MT	3.477
Fertiliser	MT	0.001
Basic drugs and Pharmaceuticals	MT	0.046
Integrated Iron & Steel	MT	0.479
Distillery	KL	1.084
Pesticide	MT	0.864
Caustic Soda	MT	0.103
Dyes & Dye Intermediates	MT	-
Oil Refinery	MT	0.154
Leather	Pairs	0.001

Emission Intensity

Now we want to study the level of air pollution generated by the members of the 17 category industries in West Bengal. For this purpose we have first calculated unit-wise total emission following our methodology outlined earlier. But instead of total emission, emission intensity i.e. emission per unit of output will be much relevant from policy purpose because comparison of performance among the units in each category is possible thorough such measure. Industry-wise emission intensity is calculated from the unit-specific pollution intensity and is presented in the table 14.

Table15 : Industry-wise energy intensity

Industry Type	Unit	CO_2 (Tone/Unit of Product)	SO_2 (Tone/Unit of Product)	NO_2 (Kg/Unit of Product)
Thermal Power	Million Unit	1185.195	7.10	1099.845
Cement	MT	0.037	0	0.034
Pulp & Paper	MT	2.484	0.015	2.278
Fertiliser	MT	0	0	.001
Basic drugs and Pharmaceuticals	MT	0.281	0.003	0.483
Integrated Iron & Steel	MT	1.735	0.010	3.841
Distillery	KL	1.139	0.012	1.623
Pesticide	MT	7.317	0.058	10.710
Caustic Soda	MT	0.058	0	0.080
Dyes & Dye Intermediates	MT	0.001	0	0.005
Oil Refinery	MT	0.165	0.004	0.450
Leather	Pairs	0.006	0	0.010

IV. Regression Analysis

We have observed that emission intensity differs for different units in the same industry. This may be the outcome of differences in plant characteristics and regulatory pressure. Plant characteristics include age of the plant, the efficiency with which the plant is operated and is maintained, size of the plant, quality of fuel used, location of the plant and effectiveness of the existing pollution control equipment. Regulatory pressure includes the frequency of monitoring by the pollution control board and also the community pressure (Hettige Hemamala et al 1996). To study the causal factors affecting the emission intensity we have estimated the following regression equation for 10 thermal power plants under consideration. As the sample size of other firms is small we have done the analysis for the thermal plants only.

$PI = \alpha + \beta_1 AGE + \beta_2 EMP + \beta_3 PCI$

where, the model variables are defined as follows:

PI: Pollution intensity of the plant measured by the tones of CO2 per million unit of power

AGE: Age of the plant

EMP : No. of persons employed in the plant measuring the size of the plant

PCI: Per Capita income of the district in which the plant is situated. It is a proxy variable measuring the community pressure to control pollution.

We have skipped the other variables for the lack of data. The estimated regression equation is as follows

$PI = 2074.503 + 11.421\ AGE - 0.214\ PCI - 0.289\ EMP$

t =	7.448	6.110	- 2.670	- 3.463
Sig =	0.0	(0.001)	(0.037)	(0.013)

$R^2 = 0.936$ and Adjusted $R^2 = 0.904$

The results show that all the coefficients are statistically significant and the regression explains about 90% of the total variation in pollution intensity.

We can infer the following conclusions from the estimated equation

1. The older plants are more pollution intensive. This may reflect the fact that the technology used by the older plants is also old.

2. The larger size plants are less pollution intensive. This may reflect the economies of scale in pollution abatement. The larger size plants can adopt more abatement measures than the smaller ones because of the cost advantage.

3. The community pressure can play an effective role to take abatement measures by the plants.

V. Conclusions

Our study here is mainly concerned with the technical review of the 17 category plants in West Bengal. These sectors are gaining importance in the context of joint implementation of clean development mechanism (Gupta S. 2003). The pollution related data worked out in this paper can be helpful for policy makers. The study also reveals that there is scope for efficiency improvements of the plants in reducing pollution. The greatest contribution to achieve decline in total emission is likely to come from improving the environmental performance of older plants. As per Kyoto protocol we should go forward with care taking preventive steps that make economic sense while we need to find out the scope for substantial potential for efficiency gain. In view of the new paradigm of sustainable development the competitive and comparative advantage of one region over the other will emerge from environmental cleanliness of the industries. Our study also indicates that there is need for strong regulatory pressure.

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RURAL POVERTY AND NON-FARM EMPLOYMENT IN INDIA

*Pinaki Das**

I

Introduction

It is now becoming fairly evident that in a peasant economy typically characterised by continuing population pressure, an ever declining land-man ratio, small and fragmented agricultural holdings, highly iniquitous land distribution structure, increasing labour saving farm production technologies etc., agriculture alone cannot provide that ultimate answer for rural unemployment and rural proverty (Rao, 1995 : pp 153). Therefore, the need for strengthening the concept of rural non-farm sector is essential. Employment base of rural workers has clearly witnessed a modest degree of diversification although the last three decades, the 1009s being no exception. The rural non-farm sector in India has attracted attention in recent years as performing an increasingly significant rural income augmentative function. A popular view, focusing upon the expansion of employment in non-farm activities, sees it as a residual sector fed by a secular pauperization of the rural population, and would target it as the focus for rural anti-poverty programmers (Shukla, 1992).

The growth of the non-farm sector in the rural areas over the last two decades, in terms of the proportion of workers, has been welcomed as a solution to the sagging employment elasticity with respect to output in the agricultural sector (Unni, 1998).

Rural poverty began declining in India only in the mid-1970s, the trend continued in the 1080s (Mahashwari, 2002). In mid-1991, the government of India

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launched structural reforms. The days of protected domestic market are over. The challenge to the rural economy in general, and rural workforce in particular is all the more daunting. The incidence of rural poverty has sharply increased after the reforms were introduced. In 1993-94 and after that poverty has declined. The questions that arise in this context is : What is the pattern of growth of rural non-farm employment? Does it have any significant impact on rural poverty alleviation?

A brief review of the existing literature on those themes reveals that the plethora of literature has developmed on both rural poverty and rural non-farm employment. But their relationship between the two hardly has been explored and established. The present work attempts to remedy some of the gaps in the existing literature.

In the present chapter we are trying to discuss the growth and structural distribution of rural non-farm employment and the trends of rural poverty. We also are trying to analyse the inter-relation between rural poverty and rural non-farm employment.

We used more than one sources of data yet, in the main, we base our analyses on NSS data on employment that are available for five points of time – 1972-73, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000.

II

Change of Rural Farm and Non-Farm Employment

The farm sector in rural India has all long been the largest absorber of labour. But its relative importance has steadily declined on account of the declining employment elasticity in the farm sector due to technological changes and pattern of farm employment.

Table 1 based on usual status NSS estimates gives a 28 year series of rural workers of India. In rural India, the proportion of male workers engaged in non-farm sector has been steadily increasing from 16.8 percent in 1972-73 to 25.5 percent in 1987-88 and to 28.6 per cent in 1999-00. The rural female workers did not witness the uninterrupted trend of the type witnessed by the male counterparts.

It is noticed that in the economic reforms period the share of RNFE inncreased marginally from 13.8 percent in 1993-94 to 14.6 percent in 1999-00.

Table 1 : Percentage share of Rural Farm and Non Farm Employment by sex. 1972-73 to 1999-2000

Sector \ Sex	1972-73	1977-78	1983	1987-88	1993-94	1999-2000
Male						
Farm	83.2(100)	80.6	77.5	74.5(90)	74.1	71.4(86)
Non-Farm	16.8(100)	19.4	22.5	25.5(125)	25.9	28.6(170)
Female						
Farm	89.7(100)	88.1	87.5	84.7(94)	86.2	85.4(95)
Non-Farm	10.3(100)	11.9	12.5	15.3(149)	13.8	14.6(142)

Source :NSSO, *Employment and Unemployment Situation in India,* 1972-73, 1977-78, 1983, 1987-88, 1993-94, 1999-2000.

N. B : Figure within bracket indicates the change of percentage.

Dependence of female workers on the farm employment declined only up to 1987-88. In the post-reform period, the proportion of these workers engaged in the farm sector increased marginally. In particular, their base of rural NFE expanded from 10.3 per cent in 1972-73 to 15.3 per cent in 1987-88. It is noticed that in the post-reform period, the share of female rural NFE declined marginally to 13.8 per cent in 1993-94 and 14.6 per cent in 1999-2000.

Fig 1 Percentage Share of Farm & Non-Employment of Rural MALE Workers in India : 1972-73 to 1999-2000

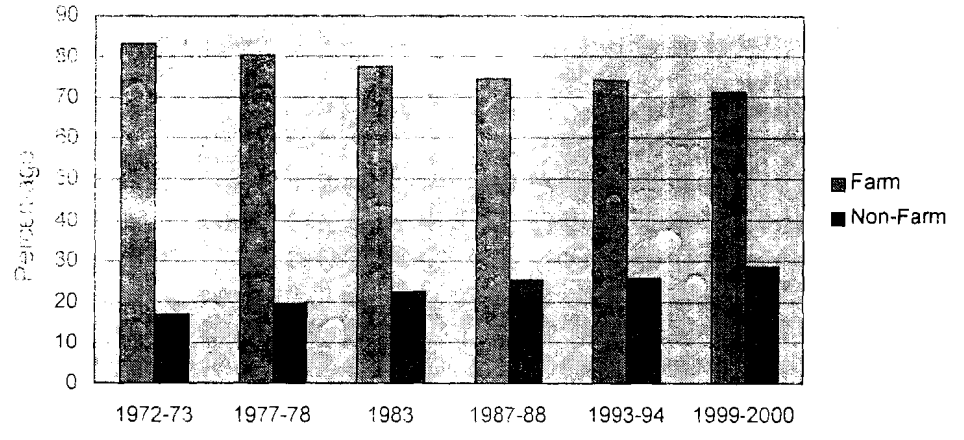


Fig 2 Percentage Share of Farm & Non-Employment of Rural FEMALE Workers in India : 1972-73 to 1999-2000

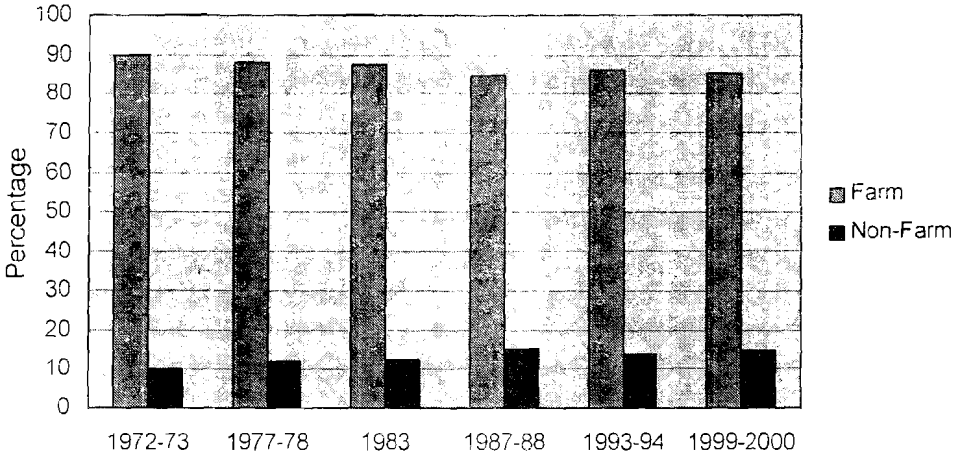
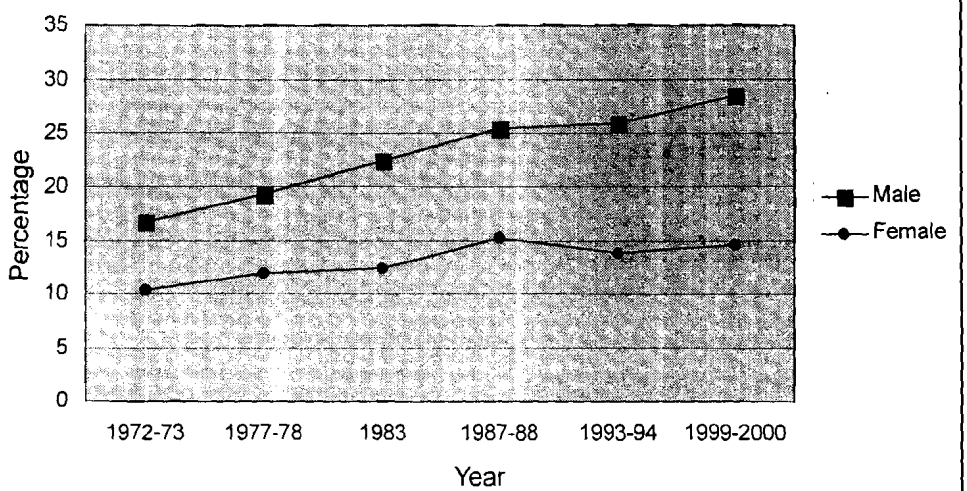


Fig 1 and Fig 2 depict the relative share of farm and non-farm rural workers for male and female respectively. Fig 1 it is clear that the relative share of farm male employment decreased and the relative share of non-farm employment gradually increased over years. The above trend is not witnessed for rural female workers.

From Figure 3, we notice the fact that the percentage shares of male and female non-farm workers increased gradually up to 1987-88. In the post-reform period, up to 1993-94 the percentage share of rural non-farm female workers decreased while that of male workers increased slightly. After 1993-94, share in the case of male workers increased in contrast to that in case of female workers.

Fig 3 Trends of Rural Male & Female Non-Frame Workers in India : 1972-73 to 1999-2000



III

Structural Changes of Rural Non-Farm Employment

The relative share of different sectors of rural male and female workers is shown in Table 2 and Table 3 respectively. The percentage shares of employment of rural male and female workers in the secondary sector witnessed a steady increas in the pre-reform period. But in the post-reform period these shares declined in 1993-94 and after that they increased. In the tertiary sector we see that the proportion of employment recorded a steady increase over time for both rural male and female workers.

Table 2 : Sectorial Distribution of Rural *Male* Workers in India, 1972-73 to 1999-2000

Sector	*1972-73*	*1977-78*	*1983*	*1987-88*	*1993-94*	*1999-00*
Agriculture and Allied	**83.2**	**80.6**	**77.5**	**74.5**	**74.1**	**71.4**
Mining & Quarrying	0.4	0.5	0.6	0.7	0.7	0.6
Manufacturing	5.7	6.4	7.0	7.4	7.0	7.3
Electricity, Gas and Water	0.1	0.2	0.2	0.3	0.3	0.2
Construction	1.6	1.7	2.2	3.7	3.2	4.5
Secondary Sector	**7.8**	**8.8**	**10.0**	**12.1**	**11.2**	**12.6**
Trade, Hotelling etc.	3.1	4.0	4.4	5.1	5.5	6.8
Transport, Communication	1.0	1.2	1.7	2.0	2.2	3.2
Other Services	4.8	5.3	6.1	6.2	6.6	6.1
Tertiary Sector	**9.0**	**10.6**	**12.5**	**13.4**	**14.7**	**16.2**
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source : Same as Tabl 1

The increase in share of tertiary sector was higher than that of secondary sector. In case of rural female workers, the share of tertiary sector was lower than that of the secondary sector. 'Manufacturing' sector accounted for the highest share among the non-farm sectors. Trade, Hotelling etc.' which constitute the dynamic sector for rural male workers could not do much for the ruraly female workers in the post-reform period.

Table 3 : Sectorial Distribution of Rural *Female* Workers in India 1972-73 to 1999-2000

Sector	*1972-73*	*1977-78*	*1983*	*1987-88*	*1993-94*	*1999-00*
Agriculture and Allied	**89.7**	**88.1**	**87.5**	**84.7**	**86.2**	**85.4**
Mining & Quarrying	0.2	0.2	0.3	0.4	0.4	0.3
Manufacturing	4.7	5.9	6.4	6.9	7.0	7.6
Electricity, Gas and Water	N	N	N	N	0.1	N
Construction	1.1	0.6	0.7	2.7	0.9	1.1
Secondary Sector	**6.0**	**6.7**	**7.4**	**10.0**	**8.4**	**9.0**
Trade, Hotelling etc.	1.5	2.0	1.9	2.1	2.1	2.0
Transport, Communication	N	0.1	0.1	0.1	0.1	0.1
Other Services	2.8	3.0	2.8	3.0	3.3	3.7
Tertiary Sector	**4.3**	**5.1**	**4.8**	**5.2**	**5.5**	**5.8**
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source : Same as Tabl 1

Fig 4 Trends of Secondary & Tertiary Sector of Rural MALE Non-Farm Workers in India : 1972-72 to 1999-00

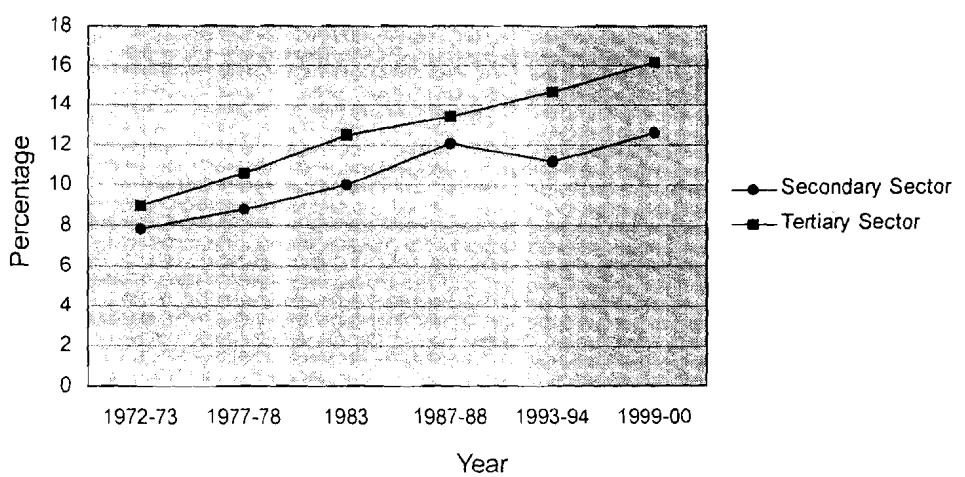


Fig 5 Trends of Secondary & Tertiary Sector of Rural FEMALE Non-Farm Workers in India : 1972-72 to 1999-00

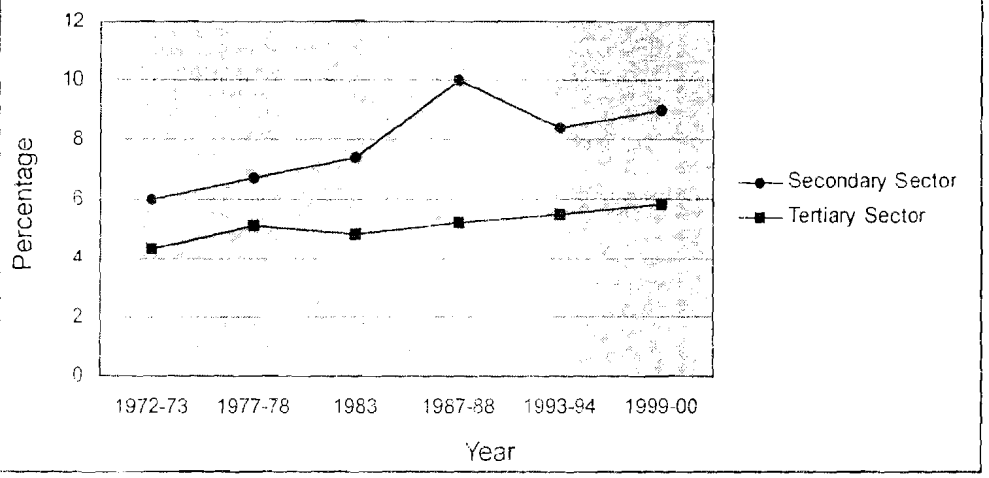


Table 4a : Trends of Rural Poverty in India, 1973-74 to 1997

	S.P. Gupta's Estimation			Datt's Estimation	
Year	Rural	Urban	Combined	Rural	Urban
1973-74	56.4	49.0	54.9	55.7	48.0
1977-78	53.1	45.2	51.3	50.6	40.5
1983	45.7	40.8	44.5	45.3	35.5
1987-88	39.1	38.2	38.9	39.2	36.2
1989-90	33.7	36.0	34.3	34.3	33.4
1990-91	35	35.3	35.1	36.4	32.8
Pre-reform (1989-91)	—	—	—	35.4	33.1
1992	41.7	37.8	40.7	43.5	33.7
1993-94	37.3	32.4	35.1	36.7	30.5
1994-95	38.0	34.2	37.0	41.0	33.5
1995-96	38.3	33.0	36.1	31.2	28.0
1997	38.5	34	37.2	35.8	29.9
Post-reform (1995-97)	—	—	—	36.5	29.0

Sources : 1) Planning Commission, *Ninth Five Year Plane*, S. P. Gupta (1999)
2) Gourav Datta (1999), *EPW*.

N.B. : Estimates based on NSS data on consumer expenditure.

Table 4b : Trends of Rural Poverty in India, 1973-74 to 1999

	S.P. Gupta's Estimation			Datt's Estimation	
Year	Rural	Urban	Combined	Rural	Urban
1973-74	56.4	49.0	54.9	55.7	48.0
1977-78	53.1	45.2	51.3	50.6	40.5
1983	45.7	40.8	44.5	45.3	35.5
1987-88	39.1	38.2	38.9	39.2	36.2
1989-90	33.7	36.0	34.3	34.3	33.4
1990-91	35.0	35.3	35.1	36.4	32.8
Pre-reform (1989-91)	—	—	—	35.4	33.1
1992	41.7	37.8	40.7	43.5	33.7
1993-94	37.3	32.4	35.1	36.7	30.5
1994-95	38.0	34.2	37.0	41.0	33.5
1995-96	38.3	33.0	36.1	31.2	28.0
1997	38.5	34.0	37.2	35.8	29.9
Post-reform (1995-97)	—	—	—	36.5	29.0

Source : S.P. Gupta (1999) & Datta (1999)

IV

Trends in Rural Poverty in India

According to Planning Commission, between 1973-74 and 1987-88, there was a decline in poverty ration from 54.9 per cent to 38.9 percent – a fall of 16 per cent in 14 years. The average rate of decline was 1.14 per cent per annum. But in the subsequent six-year period (1987-88 to 1993-94) poverty ratio declined by only 2.9 per cent and the average rate of decline was 0.48 per cent per annum. According to Datt's estimation, rural poverty had a declining trend in the post reform period.

V

Relationship Between Rural Poverty and Rural Non-Farm Employment

The relationship between rural non-farm employment and rural poverty is studied with reference to states of India. We here examine first the level of rural non-farm employment and rural poverty across the states and then study the relationship between them.

Table 6 gives a profile of percentage share of rural male non-farm employment for 15 major states during the period from 1983 to 1999-2000.

Table 6 : Percentage Share of Rural Non-Farm Employment across States of India, 1983 to 1999-2000

States	1983	1987-88	1993-94	1999-2000	Rank
Andhra Pradesh	22.8	21.9	20.7	21.2	10
Assam	22.9	20.6	20.8	32.3	3
Bihar	16.5	14.9	15.7	19.4	12
Gujarat	15.4	27.8	21.3	20.2	11
Haryana	22.3	18.3	28.1	31.5	5
Karnataka	15.8	34.9	17.9	13	
Kerala	36.9	40.0	43.6	51.7	1
Madhya Pradesh	10.0	11.8	10.2	12.9	15
Maharashtra	14.3	16.4	17.4	17.4	14
Orissa	20.9	23.5	19.1	21.8	9
Punjab	17.5	19.8	25.3	27.4	6
Rajasthan	13.3	25.7	20.1	22.3	8
Tamil Nadu	25.4	28.8	29.5	32.1	4
Utter Pardesh	18.0	14.9	20.0	23.8	7
West Bengal	26.4	28.5	36.7	36.4	2
All Ubdu	**18.6**	**20.4**	**21.6**	**23.7**	—

Source : Same as Table 1

Table 6 gives a profile of the percentage share of rural non-farm employment for 15 major states during 1983 to 1999-2000. The percentage share of rural non-farm employment increased in as many as 10 states out of 15 major states in post-

reform period. Andhra Pradesh, Rajasthan, and Orissa are the three states in which the percentage share has decreased for rural non-farm workers.

Table 7 shows that as compared to 1990-91, rural poverty increased significantly in 1992 in all states except in West Bengal (in case of Punjab, poverty declined marginally). As compared to the year 1992, rural poverty ratio declined significantly in all the states in 1993-94, except Punjab & Haryana and Orissa. If we compare only the quinquennial surveys because of large samples, it is seen that the poverty ration declined in the most of the states except in four states (Assam, Bihar, Punjab and Uttar Pradesh) in 1993-94 in comparison with 1987-88. It declined further in all states in 1999-2000 as compared to previous two surveys (1987-88 and 1993-94). The highest incidence of poverty was recorded in Bihar – 58.6 per cent in 1987-88, 67.8 per cent in 1993-94 and 48.5 per cent in 1999-2000. The incidence of poverty was the lowest in Punjab & Haryana (20 per cent in 1987-88 and 10 per cent in 1999-2000).

Table 7 : Rural Poverty ratio (Percentage) across the States of India, 1087-88 to 1999-2000

States	1987-88	1990-91	1992	1993-94	1999-2000	Rank
Andhra Pradesh	34.0	36.9	41.8	28.9	23.1	5
Assam	43.0	42.4	56.6	48.9	43.7	13
Bihar	58.6	58.3	67.8	63.5	48.5	14
Gujarat	42.9	43.1	46.8	35.3	22.7	4
Karnataka	43.9	42.7	56.9	40.9	27.4	7
Kerala	34.7	33.8	34.1	31.1	13.8	2
Madhya Pradesh	47.8	47.9	56.1	45.4	41.2	12
Maharashtra	52.3	43.1	60.6	47.8	33.7	10
Orissa	47.9	27.1	36.6	40.3	38.2	11
Punjab & Haryana	20.0	18.6	18.1	25.2	10.0	1
Rajasthan	50.4	38.9	50.9	47.5	29.1	9
Tamil Nadu	48.6	42.0	46.6	36.7	26.8	6
Utter Pardesh	41.4	36.9	46.7	41.6	28.3	8
West Bengal	34.9	39.1	28.2	27.3	20.0	3
All Ubdu	**39.2**	**36.4**	**43.5**	**36.6**	**30.7**	—

Source : Datt (1998) & Datt, Kozel, Ravallion (2003)

Table 8 : Rural Non-Farm Employment and Rural Poverty : Cross-Classification of States, 1999-20

Poverty	Rural Non-Farm Employment (Percentage)		
	LOW	MEDIUM	HIGH
HIGH	Bihar Maharastra Madhya Pradesh	Orissa	Assam
MEDIUM	Karnataka	Andhra Pradesh Uttar Pradesh Rajasthan	Tamil Nadu
LOW	Gujarat	Punjab	Kerala West Bengal Haryana

The cross classification of states in respect of percentage of rural non-farm workers and percentage share of people living below poverty line is shown in Table 8. States are arranged as per their high, medium and low percentage shares of rural non-farm employment as well as rural poverty ratio. It is clear that there is a close correspondence between rural poverty and rural non-farm employment and it is negative.

From the result of correlation coefficient it is clear that poverty and rural non-farm employment are positively related in the pre-reform period (1983 and 1987-88), while the inverse relationship is recorded during the post-reform period. In 1999-2000 the coefficient of correlation between the two is negative (– 0.51) and statistically significant (Table 9).

Table 9 : Correlation coefficient between Rural Non-farm employment and rural poverty

	Rural Non-farm Employment			
Year	1983	1987-88	1993-94	1999-2000
Rural Poverty	0.37	0.27	-0.10	-0.51*

**Significant at 5 percent level.*

The significant relation between percentage of rural poverty (RPOV) and percentage share of rural non-farm employment (RNFE) is also explained with the help of the following regression equation. The regression equation, based on the data 1999-2000, shows that states with higher share of RNFE correspond with lower poverty ratio.

$$RPOV = 43.9 - 1.62\ RNFE^{*} \qquad R^2 = 0.27 \qquad F = 4.7$$

$$(-2.15)$$

VI

Summary and Conclusion

In rural India, excessive dependence on agriculture as a source of livelihood has been steadily melting down. Employment base of rural workers clearly witnessed a modest degree of diversification althrough the past three decades, the 1990s being no exception. Our study reveals that in rural India the proportion of rural male workers engaged in non-farm sector hadbeen steadily increasing from 1972-73 to 1999-2000. The uninterrupted trend in the case of the rural female workers is not witnessed as it is witnessed in the case of male counterparts. The percentage share of employment of rural male and female workers in the secondary sector witnessed a steady increase in the pre-reform period. But in the post-reform period these shares declined in 1993-94 and after that they increased. In the tertiary sector we see that the proportion of employment is having a steady increase over time for both rural male and female workers. The progress of tertiary sector is higher than that of secondary sector for rural male workers. In case of rural female workers, the share of the tertiary sector is lower than that of the secondary sector.

In the pre-reform period, it is observed that rural poverty declined upto 1990 and then a sudden increase was noticed. After 1993-94, both rural and urban poverty ratio remains more or less constant.

The cross classification of states shows that there is close correspondence rural poverty and rural non-farm employment and this correspondence is negative.

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INFORMATION SUPPORT FOR PLANNING AND RURAL DEVELOPMENT

Pulakesh Maiti

1. Introduction :

Planning for development involves four different types of activities, formulation, implementation, monitoring during implementation and evaluation on completion. To carry out each of these activities, relevant, reliable and timely information is needed at every stage.

Information have been collected and used in the Indian subcontinent from antiquity, but major changes in collection and use took place during the British period (1757-1947) in Indian history. New imperial needs dictated some of the changes. but much of it took place indirectly as a result of western education and a spirit of scientific curiosity and experimentation. Interest in rapid social, economic and technological development changed the face of information need of the country and added a new dimension to information system after India's Independence in 1947.

2. Historical Background :

Early origin :

As may be traced, the great treatise in Economics, the Arthasastra by Koutilya (normally attributed to 321-296 B.C.) during the Mouryan Period had a detailed description of the system of data collection relating to the agricultural, population and economic censuses in villages and towns during the period. To illustrate, chapter XXXV (Shamsastry. 1029, p.158) gives details such as :

"It is the duty of Gopa, village accountant, to attend the accounts of

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five or ten villages, as ordered by the collector general .... Also, having numbered the houses as tax paying or non-tax paying, he shall not only register the total number of inhabitants of all the four Castes in each village, but also keep an account of the exact number of cultivators, cowherds, merchants, artisans, labourers, slaves, and biped and quadruped animals, fixing at the same time the amount of gold, free labour, toll and fines that can be collected from it (each house)".

Moghul Peirod :

Abul Fazal who belonged to the Court of the Great Moghul Akbar around 1950 A.D. had, in his book 'Ain-I-Akbar', details of several government departments including the system of legalised measurements, land classification, and crop yeields by season among others. Different kinds of land were named as Poloi, Parauti, Chachar and Banjar. Roles of the Karukan, the muqaddm, the bitikchi and the Patwaries as village-level data collectors and/or village level acccountants were spelt in his book 'Ain-I-Akbar'.

Early British Peiod :

The British set foot in India as traders, plantation owners, businessmen and the like during the decline of the Moghul empire and political power got established by the East-India Company (EIC) in Eastern India. We have the following glimpses of some of the information system developed in early British India.

A despatch from the court of the Directors of EIC in 1807 read thus: **"we are of the opinion that a statistical survey of the country, under the immediate authority of your presidency, would be attended with much utility: we therefore recommend proper steps to be taken for carrying the same for execution".**

1807 - A survey of provinces by the Governor General in Council, Dr.Francis Buchanan,

covering an area of 60,000 square miles and about 15 million British Subjects;

1838 - Mr. Montgomery Martin published ' **The History, Antiquities, and Statistics of Eastern India'** in 3-volumes;

1853 - A small department of statistics set up in the India House in 1847 released the first series of statistical papers of India;

- census reports of 1 January, 1855 and 10 January 1868 were published

1870 - Hunter gave a plan for an imperial Gazetter of India. The statistical account of Bengal (the present Bangladesh, West Bengal, Bihar and Orissa) was published in 20 volumes under Hunter's Supervision;

1886 - The need of timely and accurate collection of data was felt by the Indian Famine Commission and agricultural departments were organised in various provinces which resulted in the publication of **'Agricultural Statistics of British India'** in 1886.

Later British Period :

1906: This year saw the first issue of trade journal;

1910: A survey meant for Price Statistics was conducted;

1913: The book on **'Indian Finance and Banking'** by Shirras came into being.

After Independence :

Keeping in view of the need of the country's planning for development, data on economic, social, demographic characteristics started flowing into the information network. At the present, we are having, among others, the following statistics.

Agricultural Statistics ;
Population Statistics ;
Health Statistics;

Labour Statistics;

Trade Statistics;

Transport Statistics etc.

Since Independence, Indian Information system endeavoured to capture a wide variety of data on a very large and decentralised economy and hence the system has over the years built an elaborate infrastructure to capture the wide variety of data generated on a given horizon upto a given **"Vertical distance" - compatible with the process of centralised planning**. Thus, for example, the country has a well-established system of civil registration on births and deaths through an elaborate machinery right upto the district level and below, but not to the grass root level. Similarly, since medieval of ages, India is blessed with a long tradition of comprehensive statistics pertaining to agriculture and also with statistics on a variety of topics like health and employment, literacy and education, standard of living and poverty, labour force and employment, etc.

3. Need of extension of the Vertical Distance to the Village/block level :

Decentralisation of planning had been the concern of the Government long before the 73rd and the 74th amendments of the Constitution needed. As early as 1982, the Planning Commission set up a working group to prepare guidelines for planning at the district level under the chairmanship of Dr. C. H. Honumanth Rao. This report suggested a methodology for district level planning and identified elements of an integrated database for district planing. The structure of the data was outlined by the Committee.

The 73rd amendment of the Constitution of India, 1992 directed individual state legislatures to constitute in rural area Panchayats at the village (gram), intermediate (Janpad/block) and district (Zilla) level to be composed as prescribed in the amendment.

Power, authority and responsibility were to be delegated through the Panchayats so as to enable them

(a) prepare plans for economic development and Social Justice;

(b) implement such schemes as may be entrusted to them including matters listed in the Eleventh Schedule.

The 74th amendment also provides that

"There should be constituted in every state at the district level, a district planning committee to consolidate the plan prepared by the Panchayats and the municipalities in the district and to prepare a draft development plan for the district as a whole" (Article 243ZD(1).

A look into the part IX of the Constitution introduced by the 73rd Amendment 1992 reveals the following.

243 C : Composition of Panchayats;

243 D : Reservation of Seats;

243 E : Duration of Panchayats;

243 G : Plan for Economic Development and Social Justice

Subject to the provisions of the Constitution, the legislature of a state, may by law, endow the panchayats with such powers and authority as may be necessary to enable them to function as institutions of self-government and such law may contain provision to the devolution of powers and responsibilities upon Panchayats at the appropriate level.

243 I : Constitution of Finance Commission to review the finance position of the Panchayat.

Thus decentralised planning process was meant to start from the bottom and proceed upwards, in an inverse way to the process of centralised planning. This necessitates the requirement of information on socio-economic resources, natural and other movable resources at the village level, and hence the information system which was serving the purpose of the centralised planing needed to be stretched vertically to the village level in rural areas, as a village became the lowest administrative

unit needed to be focussed for its planning and development.

In 1997, the Department of Statistics constituted an expert committee on small area statistics under the chairmanship of Professor J. Roy to analyse **data requirements** both at the village as well as block level for **rural development**. The Committee suggested methodology for generation of small area statistics, and the report provided a comprehensive list of information that may be needed for development planning at the panchayat level.

4. General Requirement from an Information system :

Timeliness : The computerised information system for any kind of planning whether at rural and/or urban level, should have the following three major components:

(i) Computer Hardware forming the 'Container of information'
(ii) Computer software to 'process the information and
(iii) Data the actual content of the system.

Relevance : Since the importance of government planning is gradually declining in recent years, the present purpose of data collection system should be directed to many other users. Planning Commission is not the only user now. The private sector is replacing the public sector as the dominant force in the economy and the system must be designed to better meet its information needs.

Information flow : The system should allow information flow to the users at the minimum cost :

5. Need of Information for Rural Development :

The objectives of the decentralised planning process are to ensure balanced regional development and effective implementation of the programmes in a developing economy. Development should be sustainable and executed through the people participating in the development process (243 C, 243 D, 243 E, 243 G of part (ix) of the 73rd amendment). Sustainable and participatory rural development is a

continuous process to be carried out and controlled by rural people and hence they require to be strengthened for the knowledge on the environment they live in — the environment of movable and/or immovable resources, of demographic, cultural and socio-economic particulars and they should be provided also with the skills to make the development sustainable. That is, for any effective strategy towards the development at local level by the people, they should be strengthened for understanding their own resources, their demographic-socio-economic environment, their own problems and the 'know how' of making use of the natural resources to solve the problems. The development process should be helped with inputs in terms of money, information, infrastructure and other necessary supports.

Hence arises the need of developing the information system at the local level to assist the people in

(i) understanding various physical resources in a village;

(ii) identifying financial, social resources and other institutions;

(iii) knowing the living pattern of the people;

(iv) having a picture of houses, ill health, roads, water, population pressure, live stock, birds and animals, land utilisation etc.;

(v) collecting statistics on number of people, schools, sanitary latrines, amounts of land, share croppers etc. and

(vi) identifying gradual extension of habitation due to population increase etc.

5.1 Identification and Quantification of Natural Resources :

Natural resources including natural environment perform the dual function providing inputs to production process and assimilating the wastes generated in the process of production. The input provisioning and waste assimilating capacities are limited and can not go on increasing for ever. Therefore, management of natural resources, particularly land, water and biodiversity calls for "sustainable land use" and to make use of that, one needs to know at the village level,

(i) information on land use and land pattern;

(ii) sectoral issues of land uses; and

(iii) different measures for assessing resource degradation.

(5) **Data on Land use :**

Among six main uses of land and soil as identified by Blum (1994), three are grouped as ecological ones, where as the uses of other three are confined to technical, industrial and socio-economic ones.

(a) **Ecological issues :**

a 1: Production of biomass (Agriculture and Forest Production);

a 2: Acting as a biological habitat;

a 3: Acting as a protective medium against harmful substances by filtering, buffering and transformation actions;

(b) **Technical, Industrial, and Socio-Economic Uses :**

b 1: Soil as a spatial basis (providing technical, industrial and socio-economic structure for industrial production, housing, transport etc.);

b 2: Soil as a source of geo-genic energy raw materials (clay, sand, gravel and water);

b 3: Soil as a geo-genic and cultural heritage (Landscape, and archaeological treasures).

There always exist the following three types of competition between the six main uses of land, namely

(a) between technical land use and ecological use;

(b) intensive competition between three ecological land uses themselves; and

(c) the intensive interactions between infrastructural land uses among themselves;

(ii) Sectorwise use of land :

From land use statistics, the competing land uses can be broadly categorised into the following three sections,

(a) Ecological Sector : It comprises forests, permanent pastures, miscellaneous tree crops, barren and uncultivable land.

(b) Non-Agricultural Sector : It comprises land put to use other than agriculture.

(c) Agricultural Sector : It comprises net area sown, fallow lands, and cultivable waste lands.

(iii) Information on Resource Degradation Assessment :

Just like having the National Resource Management System (NRMS), one should also acquire information on resource degradation. At present, information on the extent of resource degradation is piecemeal and can not be regarded as complete. Hence a need is felt (i) to derive some measures of resource degradation using satelite imageries, simulation models, systems research and informatics etc., (ii) to establish documentation centres where basic data on a variety of parameters for land, water and environment can be collected, stored, retrieved and analysed for evaluation of regional resources as well as assessment of resource degradation.

5.2. Documentation of Socio-Economic Resources :

According to the classification of National Resource Data Management System (NRDMS), Socio-economic environment relating to the members of beneficiary households, community and institutions can be categorized as follows:

(a) Demography and Occupational Pattern :

(i) Population;

(ii) Literacy and level of education;

(iii) Occupation;
(iv) Assets and Expenditure;
(v) Migration and Immigrations;
(vi) Destitute and Disabled persons.

(b) **Socio-economy :**

(i) Industry

(c) **Agro-economy :**

(i) Land use;
(ii) Land ownership pattern:
(iii) Land holding pattern;
(iv) Cropping pattern (improved technique disinfection, technical intervention in agricultural practice);
(v) Storage of foodgrains (conservation of produce);
(vi) Area under principal crops;
(vii) Minor irrigation;
(viii) Major irrigation;
(ix) Livestock and Fisheries;
(x) Agricultural implements and machinery (improved designs of implements and appliances);

(c) **Infrastructure (Amenities) :**

(i) Communication;
(ii) Road network (transport);
(iii) Drinking water;
(iv) Health;
(v) Education Facilities;
(vi) Electricity/Energy/Biogas;
(vii) Financial Institutions
(viii) Marketing Facilities (Fair price-shop);

(ix) Non-government organisations;

(x) Recreation and Tourism.

6. Rural Development

6.1 Economic Development :

Thus, while planning one should be appraised of both types of resources so that planning proposal may be drawn without much damaging natural resources like water bodies etc., rather taking care of the co-existence of men and the environment where they live in. For example, for setting up of small scale rural industries towards the development of rural economy through 'rural industrialisation', urbanisation is needed to have access to better transport facilities, broader and more flexible labour markets and numerous auxiliary business services like banking, insurance, fire and police protection etc.. Plants for power generation and water treatment need to be set up. All these activities in developing the infrastructures will lead to the interaction between technical land use and ecological use. Therefore the degree of urbanisation should be prescribed in harmony with different types of land uses to make the economic development sustainable.

6.2. Development of the general well-being of the rural people :

To have a plan for developing the general condition of the common people, one needs to link population issues to life support system, human development and quality of life and one can Calculate Human Misery Index (HMI) (Bose, 2001). This index will reflect the extent of deprivation at the household level of basic needs like pucca housing, safe drinking water and toilet facilities, proper fuel for cooking etc. A mapping of the villages can be made on the basis of these HMI's and this will identity the most vulnerable villages to be taken care of so that inter-regional variations with respect to the availability of basic needs can be reduced.

7. Existing Data Base :

The earlier recognition of the potential of computer in rural development in India was made during 1979-80 through applied research of some academics and

since then, a general awareness on use of computer is being created through various efforts made by the governments and the non-governmental agencies.

7 (A) NIC (National Informatics Cenentre) :

The National Informatics Centre (NIC) of the National Planning Commission has an office in each district head quarters. The District Information System of the National Informatics Centre is based on primary data collected annually from each and individual village in the district. The village data were supposed to be stored in a computerised database from which information required by a planner or administrator could be easily retrieved. NIC quickly built up its manpower capability to 2000 technical staff. By 1990, each district computer was connected to a state computer through a local dish antena and a satelite communication network and the state computer was connected to a computer in New Delhi.

7 (B) : CRISP (Computerised Rural Information System Project)

The rural development ministry and NIC collaborated to develop software for planning and monitoring IRDP.

Since 1995, the all-india society for electronics and computer technology has been implementing an all-India co-ordinated programme to set up multipurpose electronics and computer centre in rural and tribal areas of the country.

7 (C) : The Integrated Mission for Sustainable Development (IMSD) is a more recent entrant and has been trying to bring out land features and the way these can be utilised on a Block-wise basis. IMSD project undertook the project of preparation of a block-wise analysis for three blocks with one each from the districts of Midnapore, Bankura and Purulia to go into intensive details on land resource, water resources and possible alternative uses of land and water bodies.

7 (D) : National Resource Development Management System (NRDMS) conceived by the Department of Science and Technology (DST) and set up in 1982 in more than ten districts throughout the country was entrusted in developing methodology of generating computer based spatial database on natural resources

and data on socio-economic and agro-economic parameters to facilitate area specific decentralisation planning.

7 (E) : ISI-PWI Project on Development of Statistical Information System (SIS) for Decentralised Planning (1998-99) :

The SIS was envisaged to be a statistical database for rational decision making. It was developed to address the information needed for planning at panchayat, gram-sabha/janpad, district and higher levels. This was developed in accordance with the 73rd and 74th amendments of the Constitution of India, 1992.

The work involved in developing the SIS consisted of

(a) identification of required data items;

(b) designing of formats of data collection, collation and compilation;

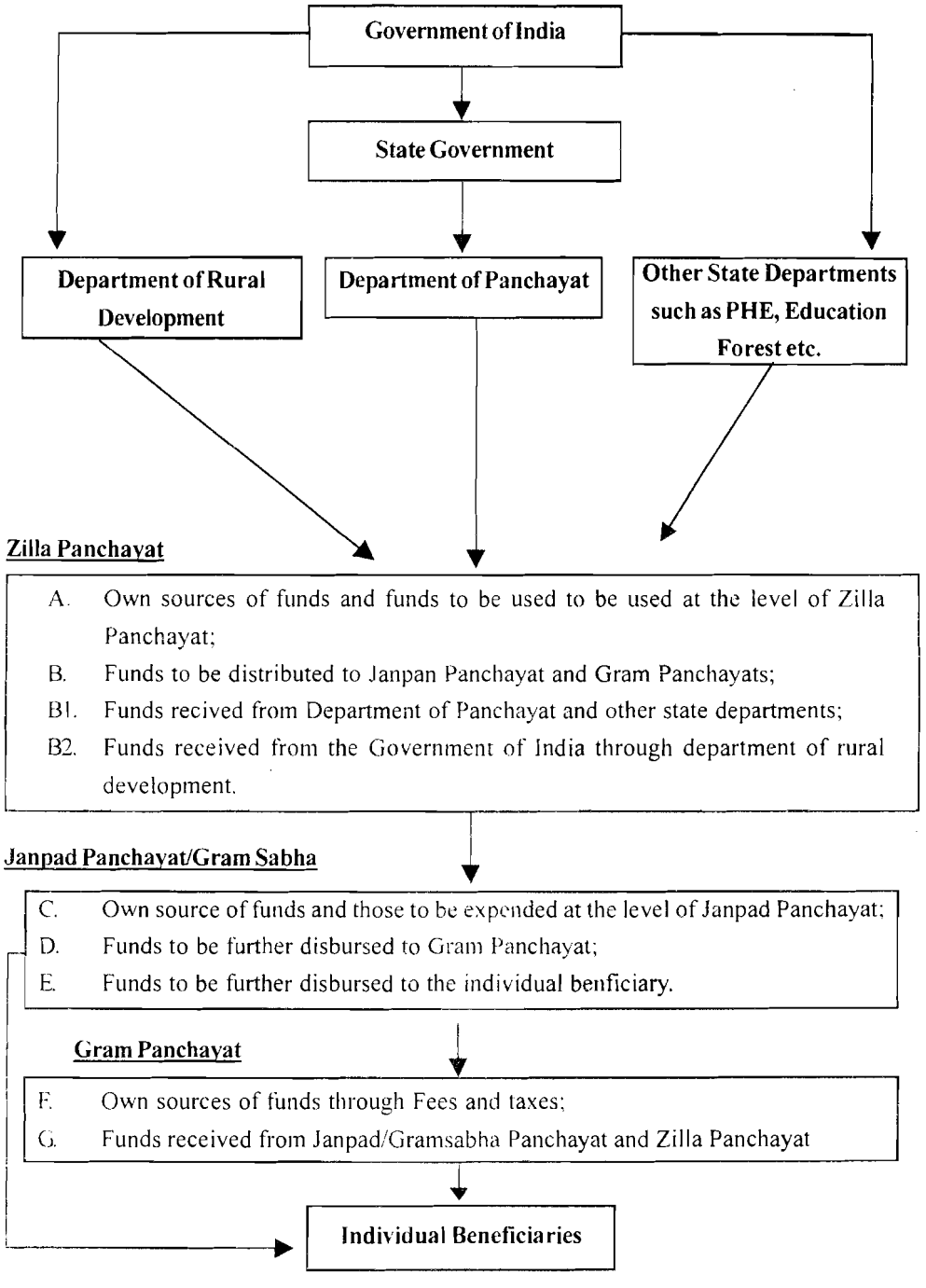
(c) development of methodology of data collection;

(d) specification of output formats amenable to computerised database;

The unit of data collection in rural areas was the village and that in urban areas was a block. For actual formats of data collection we refer to Roy et al (1997), Maiti (2002).

8. <u>Financial Resource flow diagram for rural local bodies</u> :

The flow of resources to rural local bodies necessary to carry out its activities, is illustrated in the following diagram.


Government of India
State Government
Department of Rural Development
Department of Panchayat
Other State Departments such as PHE, Education Forest etc.
Zilla Panchayat
A. Own sources of funds and funds to be used to be used at the level of Zilla Panchayat;
B. Funds to be distributed to Janpan Panchayat and Gram Panchayats;
B1. Funds recived from Department of Panchayat and other state departments;
B2. Funds received from the Government of India through department of rural development.
Janpad Panchayat/Gram Sabha
C. Own source of funds and those to be expended at the level of Janpad Panchayat;
D. Funds to be further disbursed to Gram Panchayat;
E. Funds to be further disbursed to the individual benficiary.
Gram Panchayat
F. Own sources of funds through Fees and taxes;
G. Funds received from Janpad/Gramsabha Panchayat and Zilla Panchayat
Individual Beneficiaries

Gram Panchayat

8.10 Own sources of funds for the Gram Panchayat :

The gram panchayat is responsible for providing various basic services to the people under its jurisdiction. It has been given the right to collect six obligatory taxes and various optional taxes and fees.

Obligatory Taxes :

(i) Property tax;
(ii) Sanitation tax;
(iii) Street lightening tax;
(iv) Professional tax;
(v) Market fees;
(vi) Registration fees for animals sold at village markets.

Other taxes and fees :

The gram panchayat may also levy other fees or taxes at its discretion. As an illustrative example, they are

(i) fees on cortage animals;
(ii) vehicles of hire;
(iii) rents on assets owned by the gram panchayat;
(iv) water charges in areas where water supply system is provided by the gram panchayat;
(v) garbage collection and street cleaning charges.

Royalty and Lease rentals :

(i) Gram Panchayats can lease out water bodies within its jurisdiction for fishing and thereby earn a lease rental;

(ii) Gram Panchayats may also collect a royalty on all quarrying and mineral activity carried out within its jurisdiction.

8.2 Funds Received from Zilla Panchayat and Gramsabha

(i) under various development schemes;

(ii) grant for providing basic services (on recommendation from 10th Central Finance Commission as well as from State Finance Commission);

(iii) Gram Panchayat also receives support towards the establishment cost and other specific projects approved by the Gramsabha and Zilla Panchayat.

In addition to the above financial resources, a state should also play the role of an investor in building the major infrastructure at the rural areas because of the following observation.

Successful development is correlated with an extensive and general regional urbanisation; it calls for a massive scheme of the infrastructural development in rural areas. Production of infrastructure involves larger fixed costs relative to the size of the population involved in their use. If decisions are left to the private sector, production and infrastructure will be hampered. The reason is that.

because of large fixed costs, the average cost of production is less than the marginal cost, when the level of output is optimal. This means that setting price equal to marginal cost of production entails loss, something a private sector would wish to avoid.

Thus, the government should be involved in the **marginal cost** production of Infrastructure.

For very poor regions, the infrastructure (both in terms of carrying information and in developing the rural base), may be supplied free of charges, the expenditure being financed by general taxation.

9. Conclusion : Our "Village-Today" and "Village-Tomorrow":

Our "Village-Today" needs to be documented of (i) the living pattern of its people, (ii) the picture of the houses, health, roads, water, people etc., (iii) number of schools, sanitary latrines, amount of land, share croppers etc. for its planning and development leading to a better 'Village-Tomorrow'. For this purpose, one can take up the following exercises at the village level for understanding one's own village in a better way.

(i) Calculation of Human Misery Index (HMI);

(ii) Determination of the extent of under utilised lands;

(iii) Estimation of the demands for various foods specific to the locality;

(iv) Identification of the cropping pattern according to land use statistics and to look for one which would be capable of meeting the demands;

(v) Determination of carrying capacity;

(vi) Quantifying the alarming factors of resource degradation;

(vii) To know the present human habitat and their profile with respect to day-to-day living; To make the inventory of natural resources such as water, mineral, terrain, agriculture, forest, animal husbandry etc.

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GRAM SANSAD AND GRAM SABHA : A REFLECTION PAPER ON GRASS ROOT REALITY

Dilip Kumar Ghosh

The concept of participation of people in the process of development is not at all a new concept in India. From the very First Five Year Plan it was stressed that the participation of people was very much necessary to make the development successful. In the words of the First Plan document this may be realised. To quote,

> *"A democracy working for social ends has to base itself on the willing assent of the people and not the coercive power of the state..... The ignorance and apathy of large numbers have to be overcome. A clear understanding of the conditions and the problems and of the appropriate remedies has to be carried to the people at all levels. Their own views about their needs and difficulties and the correct solutions must be elicited and give the fullest weight in making the plans, in the execution of which they will be called upon to assist..."*

By concept, people's participation means not only enlistment of the support of the masses but also their active involvement in different stages of formulation and implementation of plans and programmes. The Report of the Team for the Study of Community Projects and National Extension Service (under the Chairmanship of Balvantray G. Mehta) addressed the concept of people's participation. The Report of the Study Team (November, 1957) observed that "generally, the more prosperous sections of the village community have participated in community works less than others; and when they did, it was more by contributions in cash or kind than by actual physical labour". In view of these affairs, the Report suggested that for making participation worthy, it "should be widespread, should be fairly similar for all participants and should not call for a disproportionately large sacrifice from the weaker sections of the community".

After the Report of Balvantray Mehta Committee the singlemost important recommendations for strengthening the local bodies in the rural areas is the Report of the Committee on Panchayati Raj Institutions (under the Chairmanship of Ashok Mehta) in 1978. This Committee conceptualised people's participation in the following words:

> *"The psychic dividends of the association of the rural people with the planning and development process are the crux of the matter. This should help them to raise their sights beyond their village and treating it as part of a widening developmental horizon. More importantly, this should also broaden their vision about the possibilities of growth. Their wings get touched with the desire of the sky. The more they participate in the process, the more self reliant they would become to aspire and work for a future where man will blossom forth from being into becoming".*

Ashok Mehta Committee recommended the strengthening of the Gram Sabha with the feeling that 'the Gram Sabha has not been functioning satisfactorily'. Inspite of this the Committee highlighted some encouraging aspect of the Gram Sabha in the following words. To quote:

> *"The Gram Sabha has an important role in activating the democratic process at the grassroots level, in inculcating community spirit, in increasing political awareness, in strengthening developmental orientations, in educating the rural people in administrative and political processes and in enabling the weaker sections to progressively assert their point of view".*

In its report the Committee made the expectation that the governments of various states and union territories would move in such a direction that the meeting of Gram Sabha could be convened at least twice in a year. In the view of the Committee members the meetings of Gram Sabha were not functioning satisfactorily because of lack of interest on the part of the office bearers and apathy on the part of the public on one hand and lack of political interest and the administrative indifference

on the other. In his dissent note to this committee, Siddharaj Dhadda strongly advocated the case of Gram Sabha and opined that the Gram Sabha should be an integral part of the panchayati raj institutional framework. To quote from his dissent note as reference:

> *"There is no doubt in my mind that to talk of democratic decentralization or of the participation and involvement of the people in the democratic process has no meaning when the opportunity for them to do so at the only level where they can effectively function is denied to them. Gandhiji's concept of society as an oceanic structure comprising of concentric circles of live and vibrant communities of which the village or the primary face to face community was to be the hub and the centre is vital to democracy. I am strongly of the opinion that the village must be the base, and the Gram Sabha an integral part of Panchayati Raj. Without this base not only Panchayati Raj or democratic decentralisation would have no meaning but democracy itself would remain fragile".*

This dissent note and the recommendations of Ashok Mehta Committee are enough to present the case for utility of people's meeting like gram sabha. In fact this report laid the basics of people's participation in the affairs of the panchayat institutions. After more or less fifteen years, gram sabha received the Constitutional legality through the passage of the Constitution (Seventy third Amendment) Act, 1992. According to the Constitutional provision (Article 243A), a gram sabha may exercise such powers and perform such functions at the village level as the Legislature of a State may by law provide. The gram sabha has been defined as a body consisting of persons registered in the electoral rolls relating to a village comprised within the area of a panchayat at the village level.

With this historicity, the present study is being taken up with the objective to present the status of people's participation in the affairs of the panchayats.

The study is divided into three sections. The section I discusses provisions contained in West Bengal Panchayat Act, 1973 and its subsequent provisions. In this section provisions in pre-73rd Amendment to the Constitution and the changes made after 73rd Amendment are discussed to portray the continuity. The Section II deals with districtwise scenario. In Section III, a case study undertaken in a block of Hooghly district is presented to capture the grass root reality.

Section I

West Bengal Provisions :

In West Bengal, the Panchayat Bodies (Gram Panchayat at the village level, Panchayat Samiti at the block level and Zilla Parishad at the district level) are guided by the West Bengal Panchayat Act, 1973 and its subsequent amendments. For making the panchayats people's institutions in real sense of the term, this act contains many provisions. According to section 16A of W.B.P. Act, 1973 every constituency of a Gram Panchayat shall have a Gram Sabha consisting of persons whose names are included in the electoral roll of the West Bengal Legislative Assembly for the time being in force pertaining to the area comprised in such constituency of the Gram Panchayat. This means all voters of the constituency of the Gram Panchayat are the members of that Gram Sabha. As per the provisions made in the said section, Gram Sabha was to meet twice in a year (one annual meeting and the other half yearly meeting). The Gram Panchayat has the responsibility to fix up place, dates and time for such meeting. The W.B.P. Act also suggested that the annual meeting may be organised in the month of May and half yearly meeting in the month of November every year. For holding such meeting, the Gram Panchayat is required to make adequate publicity announcing the agenda, place, date and hour of the meeting, so that the people may become interested to participate in the affairs of the Gram Panchayats. This section also made it clear that the attendance of the members of the Gram Sabha in the annual and half yearly meeting were to be recorded alongwith the comments, observations and recommendations of the members attending such

meeting. This was the arrangement for ensuring people's participation in the pre-73rd Amendment days.

With the passage of 73rd Amendment to the Constitution, the Govt. of West Bengal amended the section 16A by enacting West Bengal Panchayat (Amendment) Act, 1994. The Gram Sabha has been substituted by the Gram Sansad. As in Gram Sabha, where all adult persons whose names appear in the electoral roll of the West Bengal Legislative Assembly for the time being in force pertaining to the area of the constituency of the Gram Panchayat are the members of the Gram Sansad. This may be called an innovation by the Left Front Government for organising effective participation of the people in the development process. In the words of the WBP Amendment Act, 1994 (to quote) : " A Gram Sansad shall guide and advise the Gram Panchayat in regard to the schemes for economic development and social justice undertaken or proposed to be undertaken in its area and may, without prejudice to the generality of such guidance and advice :

(a) identify or lay down principles for identification of the schemes which are required to be taken on priority basis for economic development of the village;

(b) identify or lay down principles for identification of the beneficiaries for various poverty alleviation programmes;

(c) constitute one or more beneficiary committees, comprising not more than nine persons who are not members of the Gram Panchayat, for ensuring active participation of the people in implementation, maintenance and equitable distribution of benefits of one or more schemes in the area;

(d) mobilise mass participation for community welfare programmes and programmes for adult education, family welfare and child welfare;

(e) promote solidarity and harmony among all sections of the people irrespective of religion, faith, caste, creed or race;

(f) record its objection to any action of the Pradhan or any other member of the Gram Panchayat for failure to implement any development scheme properly or without active participation of the people of the area".

From this extract it can be easily realised that the philosophy behind grounding this forum is to ensure the unflinching participation of the local people in all spheres of development activities undertaken by the panchayat. It becomes an widely accepted view that inspite of spending so much of fund, the rural development is not picking-up. Late Prime Minister Rajiv Gandhi once remarked that "only 15 percent of the real value of the schemes reached the genuine beneficiaries and the rest was lost due to red tapism". This situation can be changed if and only if people be put at the centre of the process of development and related decision making. For achieving this end, the Govt. of West Bengal through Panchayat Amendment Act, 1994 incorporated the provision that budget and the plan of the Gram Panchayat must be placed at the meeting of the Gram Sansad for getting the approval.

In addition to the Gram Sansads, by inserting a new section 16B through W.B.P. Amendment Act, 1994, the State Govt. made provisions for Gram Sabha in respect of every gram panchayat. The basic purpose was to consolidate people's participation. In the words of section 16 B, "every Gram Panchayat shall hold within the local limits of the Gram an annual meeting, ordinarily in the month of December every year, of the Gram Sabha after completion of the half yearly meeting of the Gram Sansads". The objective of constituting Gram Sabha is to supplement the efforts of organising Gram Sansads and thereby to augment the scope of people's participation. All persons registered in the electoral roll pertaining to the area of the Gram (i.e. Gram Panchayat) are the members of the Gram Sabha (i.e. a Gram Sabha area is equivalant to a Gram Panchayat territory).

In case of a Gram Sansad, the presence of one tenth of the total number of members shall form the quorum. A Gram Sabha being a larger body than Gram Sansad, the presence of one twentieth of the total number of members (that is five percent of the total members) shall form the quorum for a meeting. However, for the adjourned meeting no quorum is necessary. This is true for both the Gram Sabha and the Gram Sansad and the adjourned meeting will be held at the same time and the place after seven days. Section 16B of the W.B.P. (Amendment) Act, 1994 urged that notice for a Gram Sabha meeting should be given at least seven days

before the date of the meeting and wide publicity of the meeting need to be made by beat of drums announcing the agenda, place, date and hour. According to the provisions of the W.B.P. Amendment Act, 1994, all resolutions of the Gram Sansads are to be placed before the Gram Sabha for deliberations. The proceedings of the meeting of a Gram Sabha shall be placed in Gram Panchayat meeting for decision making.

Section II

District Scenario :

As no village constituency specific data of the districts are available at the state level, this section is developed with district level data. For developing any such study, availability of appropriate data set is a remote possibility. Keeping this constraint in view, this section presents data released by the Department of Panchayats and Rural Development in their different reports. The system of convening two meetings of gram sansad was introduced in the year 1994. But in practice, it picked up only from the year 1996. Though the provisions of the West Bengal Panchayat Act in respect of people's participation are very specific and well noted, but in real world the scenario is not that much optimistic. The participation of people in the activities of the panchayats is normally not regular, rather most often the local people seem to be very skeptical about the activities of the panchayats. From the available statistics on the meetings of Gram Sansads and Gram Sabhas it can be seen that the people do not feel encouraged to attend these meetings. To the common people in majority of the cases, the panchayat bodies are something like a Government department. Even after the period of twenty two years of panchayati raj, in general the panchayat bodies are yet to be successful in drawing large number of people, particularly the disadvantaged and marginalised section of the rural populace in people's forum.

Districtwise number of meetings held upto the month of May 1998 are given in table 1. Here, it needs to be mentioned that 5th Panchayat General Election was held in the month of May 1998. Hence the period of May 1996 to May 1998 is

related to the panchayat bodies constituted through 4th Panchayat General Election held in May 1993.

Table 1 : Meeting of Gram Sansads

District	Total number of Gram Sansads	Number of Meetings held in				
		May 1996	November 1996	May 1997	November 1997	May 1998
Bankura	2100	919	1285	1700	2100	1003
Birbhum	1748	NA	1666	1681	1670	345
Burdwan	3305	2274	3127	2880	2837	1031
Cooch Behar	1469	836	1469	1453	1457	1469
Dakshin Dinajpur	773	445	769	678	750	274
Darjeeling	754	427	416	302	719	555
Hooghly	2322	796	2102	1692	2207	200
Howrah	1694	NA	947	1361	1361	116
Jalpaiguri	1335	NA	1546	948	1330	695
Malda	1654	772	1279	1152	1502	788
Midnapore	5069	4241	4949	4297	5010	1935
Murshidabad	3087	1348	2259	1752	2346	NA
Nadia	2007	1552	1974	1816	1995	1638
North 24 Parganas	2474	626	2154	2102	2450	NA
Purulia	1540	461	1311	1078	1420	NA
South 24 Parganas	3726	NA	3096	2232	1861	207
Uttar Dinajpur	1160	726	1110	916	1160	179
TOTAL	**36217**	**15423**	**31459**	**28040**	**32175**	**10435**

Source : Panchayat & R.D. Department, Govt. of West Bengal.
NA = Not available.

From the Table 1 it transpires that in the year 1996 (two year after the amendment of West Bengal Panchayat Act) of 36217 Gram Sansads in 3314 Gram

Panchayats of the State only 15423 meetings were held - in percentage term this is only 42.58 percent. The scenario was changed significantly in the month of November, 1996 when in case of 86.86 percent Gram Sansads meetings were held. This so happened mainly due to increasing government persuasion for making Gram Sansads meaningful. But the performance was slided down again in May, 1997 when in 77.42 percent Gram Sansads meetings were held. In November 1997 in case of 88.84 percent Gram Sansads the meetings were held. As the 5th Panchayat General Election was held throughout the state in the last week of the month of May, 1998, only in 28.81 percent Gram Sansads it became possible to hold meetings. In the 1998 election the representation of people for each member was extended. For example at the Gram Panchayat tier (in plain areas) there is one member for every seven hundred voters and one additional member for the fraction thereof. For the hill areas, the corresponding figure is 250. Due to this reason the number of Gram Sansads increased by 22.89 percent. The situation after 1998 Panchayat election is presented in Table 1(a).

Table 1(a) : Meeting of Gram Sansads since November 1998

District	Total number of Gram Sansads	Number of Meetings held in								
		Nov. 1998	May 1999	Nov. 1999	May 2000	Nov. 2000	May 2001	Nov. 2001	May 2002	Nov. 2002
Bankura	2488	2431	2125	2175	2175	2265	2372	2468	2404	1800
Birbhum	2108	2108	2087	2018	2028	2055	2063	2050	1973	NA
Burdwan	3833	3829	3823	3735	3745	3769	3798	3813	3805	1844
Cooch Behar	1701	1701	1701	1690	1700	1667	1670	1327	1396	990
Dakshin Dinajpur	925	924	922	924	924	922	921	925	925	925
Darjeeling	1390	727	853	852	854	928	1132	1387	1390	1116
Hooghly	3001	2957	2853	2497	2512	2678	2867	2970	2991	2447
Howrah	2218	2218	2217	2161	2165	2188	2143	1956	2203	988
Jalpaiguri	2095	2022	2027	2095	2095	2076	2082	2095	2057	1828
Malda	2021	2019	1980	1893	1899	1832	1842	1570	1743	1520
Midnapore	6419	6330	6268	6323	6343	6359	6375	5978	6351	5574
Murshidabad	3614	3614	3446	3460	3455	3449	3457	3484	3493	3156
Nadia	2639	2639	2567	2567	2572	2567	2558	2580	2566	2595

North 24 Parganas	2923	2922	2871	2890	2875	2859	2874	2795	2827	2532
Purulia	1925	1921	1876	1826	1841	1914	1889	1753	1859	1315
South 24 Parganas	4324	4285	4260	4269	4257	4248	4259	4219	4132	2323
Uttar Dinajpur	1470	1457	1470	1470	1470	1470	1468	1459	1470	1454
TOTAL	**45094**	**44104**	**43346**	**42845**	**42910**	**43246**	**43770**	**42829**	**43585**	**32407**

Source : Panchayat & R.D. Department, Govt. of West Bengal.

In November 1998 out of 45094 Gram Sansads, meetings were held in 44104 – in percentage term this is 99.10. In May 1999, in 97.39 percent Gram Sansads, meetings were held while in November 1999 this figure was 96.27 percent. Thus from the available statistics it can be seen that in no year since May 1996 it is possible to hold the meeting of all the Gram Sansads as desired by the West Bengal Panchayat Act.

Though the Gram Sansads in the panchayati raj system is the basic unit of democracy yet in many cases the meetings of these units are simply denied without any fault of the people at large. In general most of the meetings are held without giving any wide publicity. Though the months of meeting of Gram Sansad are fixed (May and November months of a year) the gram panchayats gear up themselves only one week or two weeks before the meeting. The people in general do not feel encouraged to attend such meetings because the gram sansad priorities are mostly not respected by the gram panchayats. This powerlessness of the gram sansads makes the people disinterested in spending their time in the meetings. Until and unless the gram sansad resolutions become the agenda of activities of the gram panchayats, the gram sansad meetings will continue to be a meeting of the gram panchayat without the participation (rather involvement) of the people. Through the persuasion of the State Government it becomes possible to cause improvement in the holding of the meetings but it cannot be emphatically stated that the people in general feel the urge to attend the meetings. The discussion on attendance in the meeting reveals this reality.

If the average attendance of the members in Gram Sansad meetings be considered the picture is not at all encouraging. In most of the cases the attendence

is just more than the minimum requirement of the quorum specified in the West Bengal Panchayat Act. Let us have a glance on this aspect (Table 2).

Table 2 : Average attendance in the Gram Sansad Meetings

District	Attendance in the meetings held in percentage				
	May 1996	November 1996	May 1997	November 1997	May 1998
Bankura	12.00	16.00	12.00	12.00	21.00
Birbhum	12.00	11.00	12.00	11.40	15.00
Burdwan	12.00	14.00	11.00	11.57	17.00
Cooch Behar	15.45	29.00	32.00	16.00	19.00
Dakshin Dinajpur	11.00	12.00	12.00	11.00	20.00
Darjeeling	16.00	24.00	15.00	14.00	21.00
Hooghly	15.00	13.00	11.00	24.00	28.00
Howrah	14.00	15.00	13.00	17.00	19.00
Jalpaiguri	18.00	19.00	17.00	26.00	27.00
Malda	19.00	11.00	10.00	8.20	11.00
Midnapore	30.00	34.00	18.00	30.00	32.00
Murshidabad	18.00	12.00	13.00	14.00	13.00
Nadia	43.00	26.00	15.00	15.00	18.00
North 24 Parganas	21.00	13.00	10.00	24.00	12.00
Purulia	33.00	21.00	22.00	29.60	32.00
South 24 Parganas	11.00	13.00	14.50	13.00	17.00
Uttar Dinajpur	20.00	28.00	13.00	12.00	15.00

Source : Panchayat & R.D. Department, Govt. of West Bengal and District office.

From Table 2 it can be easily apprehended that the local people rarely feel encouraged to attend the meeting of the Gram Sansad. According to the West Bengal Panchayat Act the quorum for a meeting of the Gram Sansad is one tenth, i.e., 10 percent of the total number of members of the Sansad. The desirable limit is the maximum participation of the members of that Gram Panchayat Constituency (i.e.,

the Gram Sansad). In West Bengal on an average there are 746 members in a Gram Sansad (i.e. number of voters in a Gram Panchayat constituency). In case of May, 1997 meetings, the maximum presence is 32 percent in Cooch Behar. The participation percentage varies from district to district reflecting only the strength of the panchayats to mobilise the local people towards the activities of the panchayats. The main reason for such low participation, as it is felt, is that the panchayats are not interested (mostly) in making people interested in the activities of the panchayats. According to people's perception, these institutions are nothing but extension of the block level government offices. In addition to this, the proper respect to the common people is not shown by the panchayats when people approach panchayat for their work. Until and unless the common people be given adequate and proper attention the belongingness with the panchayats will not emerge. The attendance in the Gram Sansad meetings did not improve perceptively even after the 5th Panchayat General Election in May 1998. In table 2(a), the average attendance of members in the gram sansad meetings of the panchayats constituted after May 1998 are given.

Table 2 (a) : Average attendance in the Gram Sansad meetings (since November 1998)

District	Attendance in the meetings held in percentage								
	Nov. 1998	May 1999	Nov. 1999	May 2000	Nov. 2000	May 2001	Nov. 2001	May 2002	Nov. 2002
Bankura	11.00	12.00	12.00	11.00	11.70	10.59	8.40	9.00	4.00
Birbhum	11.00	12.00	10.00	10.00	10.00	9.00	8.86	8.00	NA
Burdwan	11.00	10.00	14.00	13.20	14.20	13.25	11.38	12.00	11.00
Cooch Behar	27.00	13.00	18.00	18.00	18.00	17.40	12.95	17.00	19.00
Dakshin Dinajpur	17.00	11.00	10.00	10.00	12.00	11.00	11.05	7.00	9.00
Darjeeling	12.00	12.00	12.00	11.75	13.00	12.00	12.26	11.00	12.00
Hooghly	15.00	10.00	11.00	11.00	11.20	11.00	10.24	11.00	11.00
Howrah	13.00	11.00	11.00	11.00	11.00	9.70	7.35	6.00	6.00
Jalpaiguri	20.00	16.00	17.00	17.30	17.35	17.50	18.01	18.00	19.00
Malda	10.00	11.00	11.00	11.00	12.50	11.00	10.57	9.00	9.00
Midnapore	32.00	15.00	18.00	11.20	16.60	13.50	9.89	12.00	11.00
Murshidabad	17.00	12.00	13.00	11.50	12.10	12.00	18.11	18.00	6.00

Nadia	22.00	16.00	14.00	13.75	13.70	13.65	10.78	10.00	10.00
North 24 Parganas	11.00	11.00	11.00	11.00	12.65	10.30	10.03	10.00	7.00
Purulia	30.00	10.00	12.00	10.00	11.00	10.70	11.00	11.00	11.00
South 24 Parganas	13.00	11.00	10.00	9.30	11.00	10.20	7.54	8.00	12.00
Uttar Dinajpur	13.00	11.00	12.00	13.00	13.00	11.20	9.32	9.00	10.00

Source : Panchayat & R.D. Department, Govt. of West Bengal and District office.

In comparing tables 2 and 2(a) it can be seen that even after fifth time election to the panchayat bodies no discernible improvement occurs in attendance of common people in the gram sansad meetings. For corroborating this hypothesis in table 2(b) state average of attendance in gram sansad meetings since 1996 are given.

Table 2(b) : Attendance of Gram Sansad Meetings : State Level (%)

Year	May	November
1996	18.64	18.05
1997	14.55	16.53
1998	19.35	16.65
1999	12.06	12.70
2000	11.00	12.10
2001	11.00	10.53
2002	12.00	11.00

Source : Panchayat & R.D. Department, Govt. of West Bengal.

If the average of seven years is taken it is only 14.01 percent. This is certainly very low in terms of the votes a winning candidate secured. This indicates that even the ruling political party of the gram panchayat fails to mobilize their followers. However, there is a point to clarify that at the time of noting the attendance only the persons present are noted – households representation are not counted. It may be that from a household all adult members remain present whereas from another household all adult members remain absent. If the presence of one member at least from every household is ensured, the attendance in the meeting is sure to be improved remarkably. Starting from the Gram Panchayat level to the district level, all are satisfied

with achieving the quorum prescribed in the WBP Act. This is something like achieving the target set from the above – quantity is to be ensured in lieu of the quality. But Gram Sabha / Gram Sansad meeting has a definite end in view, that is, the involvement of more people in the panchayat activities and to bring transparency and accountability in the works of the panchayats.

Next to Gram Sansad, Gram Sabha is another forum for the people's participation in panchayat activities. In spite of the State Government's best efforts since the passing of the WBP Amendment Act in 1994, at the end of December 1995 only 8 districts (Table 3) reported that the Gram Sabha meetings were held in time (the Gram Sabha meeting is scheduled to be held in the month of December every year). However since December, 1996, the situation improved a lot and in all the districts the meetings were held (but not in all the gram panchayats of the districts except Cooch Behar). For example, in December 1996 only 62.48 percent of GPs in the state hold this meeting while in 2001 this percentage increases to 95.44 percent. This indicates that through persuasion from the State government, the situation is improving.

Table 3 : Meetings of the Gram Sabha (1995-97)

District	No. of Gram Sabha	In 1995	In 1996	In 1997
Bankura	190	169	NA	163
Birbhum	169	NA	146	156
Burdwan	278	NA	186	188
Cooch Behar	128	72	128	128
Dakshin Dinajpur	65	31	51	56
Darjeeling	103	NA	55	58
Hooghly	210	NA	128	168
Howrah	157	89	79	98
Jalpaiguri	124	NA	62	65
Malda	147	NA	99	105
Midnapore	514	508	312	389
Murshidabad	255	131	187	198
Nadia	187	187	171	178

North 24 Parganas	205	NA	84	158
Purulia	170	NA	105	115
South 24 Parganas	312	150	195	208
Uttar Dinajpur	99	NA	82	86
Total	**3313**	**1337 (40.36)**	**2070 (62.48)**	**2517 (75.97)**

Source: Panchayat & R.D. Department, Govt. of West Bengal.

Note: Percentage figures in brackets.

With the 5th Panchayat General Election the total number of gram panchayats increased to 3358 in 1998. Again with some territorial changes and bringing tea estates under the jurisdiction of gram panchayats, the number of gram panchayats in Darjeeling district became 134. In table 3(a) number of gram sabha meetings held during 1998-2001 are given. The table indicates steady improvement.

Table 3 (a) : Meetings of Gram Sabha, 1998 – 2001

(Figures in numbers)

District	No. of Gram Sabha	1998	1999	2000	2001
Bankura	190	46	115	175	190
Birbhum	167	162	117	142	115
Burdwan	277	277	160	263	277
Coochbehar	128	127	128	123	122
Dakshin Dinajpur	65	65	65	65	65
Darjeeling	134	97	65	122	134
Hooghly	210	183	140	186	200
Howrah	157	148	152	151	154
Jalpaiguri	146	41	114	137	145
Malda	147	141	143	143	139
Midnapur	514	362	280	455	490
Murshidabad	255	229	232	228	228
Nadia	187	182	182	183	182

North 24 pgs	200	187	189	187	163
Purulia	170	132	146	165	156
South 24 pgs	312	296	227	288	297
Uttar Dinajpur	99	98	87	89	98
Total	**3358**	**2773 (83.00)**	**2569 (76.50)**	**3102 (92.00)**	**3205 (95.44)**

Source: Panchayat & R.D. Department, Govt. of West Bengal.

Note: Percentage figures in brackets.

The year wise state scenario (Table 4) in respect of holding of Gram Sabha meeting will make this clear.

Table 4 : Gram Sabha Meeting : State Scenario, 1995 to 2001

Year	Total No. of Gram Sabha	No. of Gram Sabha where meetings held	No. of Gram Sabha where meetings not held
1995	3313	1337 (40.36)	1976 (59.64)
1996	3313	2070 (62.48)	1243 (37.52)
1997	3313	2517 (75.97)	796 (24.03)
1998	3330	2773 (83.27)	557 (16.73)
1999	3330	2569 (77.15)	761 (22.85)
2000	3358	3102 (92.00)	256 (7.62)
2001	3358	3205 (95.44)	153 (4.56)

Note : percentage figures in bracket

The average number of electors in a Gram Panchayat is around 10000. For example, as in December 2001, in Purulia average number of electors in a Gram Panchayat was 7512 while it was 11074 in Burdwan, 9707 in Malda. But the average attendance was very poor. As an illustration, the case of few districts (as in December 2001) for which information available is given below :

District	Average Number of electors per Gram Sabha	Average attendance in Gram Sabha meeting
Jalpaiguri	10672	747 (7 percent)
South 24 Parganas	10197	248 (2 percent)
Purulia	7512	557 (7 percent)
Malda	9707	419 (4 percent)
Uttar Dinajpur	10604	349 (3 percent)
Dakshin Dinajpur	10833	150 (1 percent)
Hooghly	11318	421 (4 percent)
Burdwan	11074	505 (5 percent)

Note: Percentage figures in bracket

To complete the discussion it is necessary to throw some light on adjourned meetings of gram sansad and gram sabha. When a meeting is adjourned no quorum is necessary for validation of the meeting. The meetings are in general adjourned due to non-availability of quorum. It is desirable that there should be as minimum as possible cases of adjourned meeting in the interest of more participation of people. In table 5, number of adjourned meetings in gram sansad and gram sabha are given for the period 1996 to 2001.

Table 5 : Number of adjourned meetings : All West Bengal, 1996 to 2001

Year	Gram Sansad		Gram Sabha
	May	November	
1996	NA	9108 (25.14)	457 (13.79)
1997	NA	NA	386 (11.65)
1998	3275 (9.04)	11175 (24.78)	115 (3.42)
1999	11092 (24.60)	9141 (20.27)	508 (15.12)
2000	11354 (25018)	11005 (24.40)	726 (21.62)
2001	9832 (21.80)	11711 (25.97)	962 (28.65)

Source: Dept. of Panchayats and Rural Development, Govt. of West Bengal
Note: Percentage figures in brackets.

From the information furnished above it can be easily apprehended that people are rarely participating in the meetings of gram sabha. There are efforts from the end of the state government but the contents and philosophy of the government directions are not being realised appreciably by the grass root panchayati raj institutions. The main reason of people feeling disinterested in coming to the forum of Gram Sabha is that the decisions of this forum are not binding on the Gram Panchayat on one hand and on the other hand the members of panchayats pay little heed to the demands and decisions of the people at large. Like the platform of Gram Sansad, the Gram Sabha is also powerless. For obvious reason mostly the common people like to dissociate them from the panchayat functions.

Section III

In this section, the case study undertaken in Polba-Dadpur Block of Hooghly district is presented. Polba-Dadpur is a block with rural background. The block has twelve gram panchayats. For this study information on gram sansad meetings held during May and November 2002 are collected and analysed. Reflections on the matters discussed in some gram sansad meetings are also given so as to understand the people's priority. In table 6, the average number of electors in the gram sansads are given – these electors are the members of their respective gram sansads.

Table 6 : Average Number of electors in gram sansads : Polba – Dadpur Block

Gram Panchayat	Number of electors	Male electors	Female electors	Number of Gram Sansads	Average number of electors	Average male electors	Average female electors
Satithan	12698	6385	6313	17	747	376	371
Mohanad	14332	7230	7102	18	796	402	394
Akna	12404	6293	6111	16	775	393	382
Dadpur	10767	5353	5414	15	718	357	361
Goswami Malipara	11071	5496	5575	15	738	366	372
Polba	11307	5657	5650	14	808	405	403
Rajhat	11484	5844	5640	16	718	365	353

Sugandhya	13629	7026	6603	18	757	390	367
Amnan	13946	6964	6982	18	775	387	388
Harit	14464	7241	7223	19	761	381	380
Babnan	10740	5398	5342	15	716	360	356
Makalpur	10362	5246	5116	13	797	404	393
Block Total	**147204**	**74133**	**73071**	**194**	**759**	**382**	**377**

Source: Block Development Office, Polba-Dadpur block.

From the table 6 it can be seen that average number electors in a gram sansad of the block is 759. The sex ratio of elctors is quite high – it is 987. So it is expected that large number of women electors would come out for attending the gram sansad meetings. Information on this aspect are also collected. In table 7, attendance in gram sansad meetings of May 2002 and November 2002 are presented alongwith male-female break up. With the reservation of one third seats of the panchayats for women it is desirable that the women members would be able to mobilise their own folk towards gram sansads for sharing their own issues and deliberations.

Table 7 : Attendance in Gram Sansad meetings

Gram Panchayat	May 2002			November, 2002		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Satithan	2771 (21.90)	1598	1173	2476 (19.50)	1434	1042
Mohanad	3654 (25.45)	2016	1638	3349 (23.37)	1879	1470
Akna	3024 (24.40)	2000	1024	2783 (22.44)	1764	1019
Dadpur	2625 (24.42)	1860	765	2514 (23.35)	1735	779
Goswami Malipara	2700 (24.41)	1785	915	2522 (22.78)	1568	954
Polba	3108 (27.45)	2072	1036	2417 (21.38)	1382	1035

Rajhat	2944 (25.59)	2224	720	1936 (16.86)	1092	844
Sugandhya	3600 (26.39)	2880	720	2276 (16.70)	1262	1014
Amnan	3042 (21.84)	2178	864	2841 (20.37)	1689	1152
Harit	3401 (23.51)	2793	608	3380 (23.37)	2057	1323
Babnan	2505 (23.32)	1845	660	2302 (19.36)	1843	459
Makalpur	2639 (25.47)	1885	754	2007 (19.36)	1476	531
Block Total	**36013 (24.46)**	**25136 (33.90)**	**10877 (14.88)**	**30803 (20.92)**	**19181 (25.87)**	**11622 (15.90)**

Source: Block Development Office, Polba-Dadpur block.

Note: Percentage figures in brackets

From table 7 it can be seen that male participation in gram sansad meetings is predominant. Though on the basis of electoral roll of the constituencies, the number of male electors and female electors are very close, yet their participation is very uneven. In table 8, female-male ratio (FMR) in attendance of gram sansad meetings for each gram panchayat is calculated vis a vis FMR of electors. FMR is calculated to indicate persistent social inequality in the villages. Even having their equal rights to vote, women are not coming (mostly they are not allowed to come) to people's forum for sharing their experiences. In course of discussion with women and panchayat officials, it is felt that women are not interested to come to the gram sansad meeting for a number of reasons. Of them, dominant reasons are (a) women issues are not getting priorities in the agenda of the meeting; (b) women most often are not allowed to express their views and even if allowed their suggestions are mostly not respected, and (c) social inhibitions like unwillingness of husband or in-laws to come before the public etc.

Table 8 : Female – Male Ratio in attendance of Gram Sansad meetings

Gram Panchayat	FMR of electors	FMR May 2002	FMR Nov. 2002	Change in percentage
Satithan	0.988	0.734	0.727	- 0.95
Mohanad	0.982	0.812	0.782	- 3.69
Akna	0.971	0.512	0.577	+ 12.69
Dadpur	1.011	0.411	0.449	+ 9.25
Goswami-Malipara	1.014	0.512	0.608	+ 18.75
Polba	0.998	0.500	0.749	+ 49.80
Rajhat	0.965	0.324	0.773	+ 138.58
Sugandhya	0.940	0.250	0.803	+ 221.20
Amnan	1.002	0.397	0.682	+ 71.79
Harit	0.997	0.218	0.643	+ 194.95
Babnan	0.989	0.358	0.249	- 30.45
Makalpur	0.975	0.400	0.360	- 10.00
Block Total	**0.985**	**0.433**	**0.606**	**+ 39.95**

From the table 8 it can be seen that the situation is improving. In comparing FMR in May 2002 meetings and November 2002 meetings, it can be seen that FMR improved in case of 8 gram panchayats. Of them, very significant improvements are noticed in Rajhat, Sugandhya and and Harit gram panchayats. The contribution of mahila samities is widely acknowledged behind such changes.

In the present study, the cases of adjourned meetings are also noticed. In May 2002 meetings, out of 12 GPs, in 5 the meetings had to be adjourned. The main reason is low turn out of people in the meetings. When the timing of meetings are fixed around 3 or 4 o' clock in the afternoon, the chances of low turn out are high. Because, normally the rural people working in the field return to their home after sunset. It is desirable that the timing should be fixed around 6 PM or 7 PM - at least experience says so. Again in November 2002 meetings, the cases of adjourned meetings are greater in comparison to May 2002 – in this study out of 12 GPs, in case of 11 GPs there are cases of adjourned meetings. In the month of November,

rural people are very busy in the field for harvesting and the duration of day light is also shortened. Timing of meeting is thus a crucial factor for curtailing the cases of adjourned meetings. In Table 9, the number of adjourned meetings in different Gram panchayats of Polba – Dadpur block are given.

Table 9 : Number of adjourned meetings

Gram Panchayat	No. of Gram Sansad	Adjourned meetings No.	
		May 2002	November 2002
Satithan	17	5	6
Mohanad	18	-	-
Akna	16	-	3
Dadpur	15	-	4
Goswami-Malipara	15	4	2
Polba	14	-	1
Rajhat	16	-	3
Sugandhya	18	7	2
Amnan	18	-	3
Harit	19	-	2
Babnan	15	5	3
Makalpur	13	4	5

As in adjourned meetings there is no obligation regarding quorum, the panchayats are found to be not interested in bringing people to the meetings. Holding of adjourned meetings is thus reduced to mere formalities. In table 10, attendance in adjourned meetings is given, but no male-female break up is available.

Table 10 : Attendance in adjourned meetings

(figures in percentage)

Gram Panchayat	May 2002	November 2002
Satithan	9.47	8.41
Mohanad	-	-
Akna	-	10.38
Dadpur	-	12.38

Goswami-Malipara	8.54	15.68
Polba	-	11.31
Rajhat	-	10.13
Sugandhya	11.30	9.32
Amnan	-	16.68
Harit	-	19.60
Babnan	6.61	12.37
Makalpur	11.42	13.43

Table 7 and 10 together corroborate that in adjourned meetings attendance is poor if compared with the original meeting.

From this case study it has been realised that organising the meeting of gram sansads of the panchayats becomes the responsibility of block administration – what it should not be. The panchayats should be more interested in using this forum to share their strength and weakness with the people of their constituencies and consider their priorities as the panchayats' priorities. Thus, the will of the political party to open up is very crucial for the success of the gram sansad meetings. It is the political parties who should take the responsibilities for mobilising the people towards the gram sansad, not the bureaucracy. The bureaucracy can at best extend their support to the panchayats as development partners. For getting glimpses of deliberations, a few resolutions of the gram sansad meetings are consulted.

In all Gram Sansad meetings, the general trend is after briefing of the activities of the Gram Panchayats, deliberations start. Though not in all cases, yet in some cases, the Panchayats have to face stiff interactions from the people attending the meetings. The main issues relate to expenditure on schemes and beneficiary selection. In not a single Panchayat under the study there exists system of publishing the list of beneficiaries or expenditure in different schemes. There are provisions in WBP Act that the Gram Sansad will identify or lay down principles for identification (a) of the beneficiaries for various poverty alleviation programmes; and (b) the schemes which are required to be taken on priority basis for economic development of the village.

In the Gram Sansad meetings the first one is mostly taken care of. But there are variations among the Gram Panchayats regarding adherences to the second provision. Only in case of Polba Gram Panchayat, in case of three schemes to be implemented by the Gram Panchayat, beneficiary committees were formed according to the provision of WBP Act. The provision of the Act states that Gram Sansad shall constitute one or more beneficiary committees comprising not more than nine persons, who are not members of the Gram Panchayat, for ensuing active participation of the people in implementation, maintenance and equitable distribution of benefits of one or more schemes in its area. There are many provisions in WBP Act to empower Gram Sansads, but in reality most of them are quite on papers. One example is the recording objection to any action of the Prodhan or any other member of the Gram Panchayats for failure to implement any development scheme properly or without active participation of the people of that area - such recording was not found in single resolution of the Gram Sansads. Of the schemes on high demand from the people, road connectivity occupies the largest share; next to road comes electricity connection. The social sector demands like sanitation, primary health or education are in lower position in priority list of the Gram Sansads. It is a fact that Gram Sansads are the platform for people's participation – but in reality this forum is not exploited suitably by the panchayats for ushering in people's participation.

Conclusion :

From the discussion above it is being realised that the working of gram sabha in general do not present a promising picture. But it is of no denying fact that this forum has immense importance in making development participatory and strengthening democracy at the grass root level. The forum needs necessary powers and functions. The state governments are authorised to frame law underlying the powers and functions of the gram sabha – for this reason the functions assigned to the gram sabha differ from state to state. The Kerala example of formulating people's plan demonstrated that without the political will of the government in power the meetings of this forum cannot be made successful. It must be reiterated that for strengthening

the democracy in the country the forums of Gram Sabha and Gram Sansad have tremendous potentiality. Through this forum the participatory process will be established, promoted and consolidated. In view of Jayaprakash Narayan : "To me gram sabha signifies village democracy. Let us not have only representative government from the village upto Delhi. One place, at least let there be direct government direct democracy.... The relationship between panchayat and gram sabha should be that of Cabinet and Assembly".

For making the people, participation in the development process ensured it is disirable that the relationship between gram sabha and gram panchayat should be harmonious and supportive. But a workable relationship between gram sabha and gram panchayat is yet to be built up – in more or less all the states. In most of the states the gram sabha recommendations are not paid adequate attention at the gram panchayat level. A consequence the demands of the local people remain unfufilled and recurrence of this sort of situation leads to apathy of the local people in such meetings. The apathy and lack of interest of the people towards the gram sabha and gram sansad can only be reduced if these grass root forums of people can be strengthened through assignment of more powers and functions. The Report of the Study Team on the position of Gram Sabha in Panchayati Raj Movement set up by the Govt. of India in 1963 made a useful recommendation for building up a working relationship in between gram sabha and gram panchayat. It is better to conclude the present chapter by quoting from the report. To quote :

"... in order to strengthen the Gram Sabha, it is necessary to strengthen the Panchayat itself and to enable the two to work out a proper relationship between them. Since panchayat is the executive of Gram Sabha, strengthening of the executive and defining the role and relationship of the Panchayat and Gram Sabha will strengthen the Sabha itself."

Sometimes it is also suggested that enhancement of the frequency of the meeting of Gram Sabha (in case of West Bengal Gram Sansad) from the existing two (the most of the states prescribed two meetings of Gram Sabha in a year) to four can

increase the effectiveness of the Gram Sabha meeting. More meetings of the people can build up better rapport and mutual exchange. The Committee on Decentralisation of powers in Kerala (known as Sen committee) recommended the increasing of the frequency of the gram sabha meeting from the existing two to four in a year. Therefore Gram Sabha should be made an effective body in the panchayat framework for ensuring the participation of people in the process of development. This is obligatory too in view of the provision envisaged in the Article 243 A of the Constitution. In the words of the Article 243 A of Constitution : "A Gram Sabha may exercise such powers and perform such functions at the village level as the legislature of the State may by law provide." The effective and vibrant people's forum will help to bring transparency in the activity of the panchayats which in turn will help the panchayats to become more a people's body than a bureaucratic organisation.

References:

1. Government of India	a) Report of the Team for the study of Community Projects and National Extension Service, November 1957
	b) Report of the Committee on Panchayati Raj Institutions, 1978
2. Government of West Bengal	a) The West Bengal Panchayat Act. 1973 (with subsequent modification)
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OWN RESOURCE MOBILISATION OF PANCHAYATS A STUDY WITH SPECIAL REFERENCE TO WEST BENGAL

Sachinandan Sau
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I

Introduction

The issue of own resource mobilization (ORM) of panchayats has assumed great significance in recent years on account of two recent landmark developments in the history of governance of the country, namely

i) Structural adjustment programme (SAP) of the Government of India since 1991,

ii) The 73rd Amendment Act of the Constitution of India.

The SAP has led the state to gradually withdraw from economic, social and infrastructural development programmes and hence growth of panchayats' development receipts from government sources in real terms has been decelerating over the last decade. On the other hand, following the Constitution amendment panchayats have been introduced as a distinct third tier of government in the rural areas and they have been given the constitutional responsibility of planning for economic development and social justice and enjoined to mobilize their own resource.

The other justifications for emphasis on ORM are :

i) Improvement of panchayats' revenue autonomy and fiscal autonomy which are largely determined by panchayats' own resources,

ii) Smoothing out large fluctuations over years in devolution of development funds on panchayats,

iii) Enlisting people's participation in planning and ensuring their contributions to implementation of development projects, and

iv) Improvement of the value of the measure of self-governance.

Own receipts of panchayats come from tax and non-tax sources including voluntary contributions. Village level tier of panchayats has been empowered to levy taxes on property / house while all the three tiers are entitled to charge fees and develop income generating development assets. Property tax / house tax is the single most important tax in a majority of the states of India. In many states the user charges are levied for the operation and maintenance of drinking water supply and many other civic services. Remunerative assets of panchayats also generate substantial amounts of revenue for panchayats. Panchayats vary substantially across regions. The questions that arise in this context and that need to be addressed are : What are the level and pattern of own revenue and own resource differential of panchayats across regions of India and the extent of their revenue and fiscal autonomy over the recent years? What factors explain the own resource differential? The present study is a modest attempt to address these and allied questions.

Objectives of the Study: The paper thus sets the following objectives for itself.

i) To examine the level and pattern of own revenue and own revenue differential of panchayats across regions of India,

ii) To examine the extent of their revenue and fiscal autonomy over recent years,

iii) To analyse the factors that explain the own resource differential.

Hypotheses : Level and pattern of own revenue of panchcyats and their revenue and fiscal autonomy vary substantially across states of India and districts of West Bengal and this is explained significantly by the level of development of the states and districts.

Database and Methodology : Report of the Eleventh Finance Commission provides the necessary database for discussion of the issues of ORM across states of India.

Directorate of Panchayats, Government of West Bengal does the same for the districts of West Bengal. Report of the First West Bengal Finance Commission and the office of the West Bengal Second Finance Commission provide some data for West Bengal as a whole and its districts. Simple statistical tools have been used to analyse the data.

The rest of the paper is organized as follows. Section II examines the above issues across selected states of India and section III does so across selected districts of West Bengal. Section IV discusses the factors that explain the own resource differential across regions. Section V summarizes the earlier discussion and makes concluding observations.

II

Own Resource Mobilization of Panchayats across Selected States

Own Resource Mobilization of Panchayats (ORM) - Total and Per capita

In respect of total own revenue mobilized by panchayats (all tiers combined) Andhra Pradesh led the selected states of India to be followed by Maharashtra and Kerala. With regard to per capita own revenue (PCOR), however, Haryana led the selected states to be followed by Punjab and Kerala during 1990-91 and 1994-95 while during 1997-98 Kerala led the states to be followed by Haryana and Punjab. West Bengal is among the low total and per capita own revenue mobilizing states of India. Another noticeable feature is that states like Andhra Pradesh, Assam, Gujarat, Kerala and Tamil Nadu registered a consistent increase in PCOR during 1990-91 to 1997-98 while other states including West Bengal recorded a decline. In 1997-98 for which latest available data are available for states from the Eleventh Finance Commission source, West Bengal ranked last but one in respect of PCOR among the 13 selected states. PCOR in the state in 1997-98 amounted to as low as Rs 3.39 which was just higher than that of Orissa (Rs 2.24) but lower than those in Maharashtra (Rs 20.14), Gujarat (Rs 12.73), Uttar Pradesh (Rs 11.43), Karnataka (Rs 8.66), Tamil Nadu (Rs 8.06) and India as a whole (Rs 9.13) [Table 1].

Table 1 : Total Own Resource and Per capita Own Resource of Panchayats in Selected States of India, 1990-91 to 1997-98

States	OR (Rs million)			Percapita OR (Rs)		
	1990-91	1994-95	1997-98	1990-91	1994-95	1997-98
West Bengal	142.3	145.8	195.9	2.89	1.86	1.96
Andhra Pradesh	627.0	930.0	1378.0	11.38	12.16	14.30
Gujarat	274.5	336.6	403.6	3.52	4.10	6.10
Haryana	293.9	427.2	530.1	23.68	21.43	20.69
Karnataka	173.3	246.4	301.4	5.58	5.09	1.85
Kerala	313.2	556.1	990.9	14.62	16.77	23.91
Madhya Pradesh	119.4	258.1	320.4	2.34	3.73	3.06
Maharashtra	342.1	630.7	1121.7	6.93	12.17	11.52
Orissa	59.0	80.2	69.9	2.15	1.86	1.29
Punjab	215.6	45.3	538.7	15.09	20.35	19.21
Rajsthan	242.8	255.4	307.5	7.16	5.40	6.49
Tamil Nadu	157.2	247.1	340.4	4.28	4.61	5.31
Uttar Pradesh	227.5	390.3	466.5	2.04	1.86	0.93
India	**3703.6**	**4779.4**	**6770.8**	**5.95**	**7.62**	**9.13**

Note: ( ) Figures within parentheses indicate respective ranks.

Source: Report of the Eleventh Finance Commission.

The information contained in Table 1 is summarily presented in Table 2, which shows the dynamics of states in respect of PCOR. Distribution of selected states by per capita own revenue shows that four states, namely Madhya Pradesh, Orissa, Uttar Pradesh and West Bengal had per capita revenue of panchayats below Rs 5 during 1990-91 to 1997-98. During 1990-91 and 1994-95 both Gujarat and Tamil Nadu also belonged to this class of PCOR below Rs 5 but during 1997-98 these two states got promoted to the next higher class of PCOR, i.e., Rs 5.0 to Rs 9.9. Karnataka, on the other hand, originally belonged to the PCOR class of Rs 5.0 to Rs 9.9 during 1990-91 and 1994-95 but slipped to the lower class, i.e., below Rs 5 during 1997- 98. Rajsthan remained in the PCOR class of Rs 5 to Rs 9.9 all along during the period from 1990-91 to 1997-98 but Maharashtra, which belonged to this class during 1990-91, got promoted to the next higher class, i.e., Rs 10.0 to Rs 14.9 during 1994-95 and retained this position during 1997-98. Andhra Pradesh remained all along during the whole period in the PCOR class of Rs 10.0 to Rs 14.9 but Kerala which belonged to this class during 1990-91 got promoted to the next higher class of PCOR, i.e., Rs 15.0 and above during the next period, i.e., 1994-95 and retained the same during the next period, i.e., 1997-98. Haryana and Punjab belonged to the highest class of PCOR during the whole period.

Table 2 : Distribution of Selected States by Per capita Own Revenue, 1990-91 to 1997-98

PCOR (Rs)	States		
	1990-91	1994-95	1997-98
Below 5.0	6[G, MP, TN, O, WB, UP]	6 [G, MP, O TN, WB, UP]	5 [MP, O, Ka UP, WB]
5.0-9.9	3 [M, R, Ka]	2 [R, Ka]	3 [G, R, TN]
10.0 – 14.9	2[AP, Ke]	2 [AP, M]	2 [AP, M]
15.0 and above	2 [P, H]	3 [Ke, P, H]	3 [Ke, P, H]
Total	**13**	**13**	**13**

Source : Same as in Table 1

Notes : G = Gujarat, MP = Madhya Pradesh, TN = Tamil Nadu, O = Orissa, WB

= West Bengal, UP = Uttar Pradesh, Ka = Karnataka, M = Maharashtra, R = Rajasthan, AP = Andhra Pradesh, Ke = Kerala, P = Punjab, H = Haryana

Pattern of ORM

Proportions of Tax and Non-tax Revenue of Panchayats varied across selected States of India. During 1997-98 percentage of tax revenue to total own revenue of panchayats was as high as 96.8 in Tamil Nadu to be followed by Kerala (88.4 %), Karnataka (86.0%), Maharashtra (66.5%) and Orissa (66.1%), the national average being 55.7 per cent which was above 40.0 per cent for West Bengal, the lowest being 1.3 per cent for Punjab.

Variation of PCOR over Years and Across States

PCOR of panchayats varied over years for individual states and across states over individual years. Coefficient of variation (C.V.) as a measure of fluctuation of PCOR over years and across states is seen to be substantial for most of the selected states. For states like Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Uttar Pradesh it was above 20 per cent during the period from 1990-91 to 1997-98. Coefficient of variation across states is seen to increase from 83.64 per cent during 1990-91 to 95.14 per cent during 1997-98 (Table 3).

Table 3 : Per capita Own Revenue of Panchayats and Coefficient of Variation (C.V.) over Years and Across Panchayats in Selected States of India, 1990-91 to 1997-98

States	Percapita OR (Rs)								C.V
	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	(%)
West Bengal	2.89	2.10	2.07	1.92	1.86	2.01	2.00	1.96	15.62
Andhra Pradesh	11.38	12.43	11.22	11.97	12.16	13.27	18.10	14.30	17.29
Assam	1.51	1.34	1.35	1.33	1.54	1.36	1.36	1.56	6.98
Gujarat	3.52	6.76	7.31	7.63	4.10	7.51	8.55	6.10	27.52
Haryana	23.68	17.14	23.51	22.37	21.43	23.50	21.62	20.69	9.93

Karnataka	5.58	3.85	4.23	4.11	5.09	5.14	5.60	1.85	29.99
Kerala	14.62	12.68	13.07	15.71	16.77	18.43	29.10	23.91	31.85
Madhya Pradesh	2.34	2.28	2.22	2.38	3.73	3.59	4.19	3.06	26.20
Maharashtra	6.93	5.17	4.93	7.02	12.17	7.37	10.70	11.52	34.55
Orissa	2.15	2.64	2.00	2.12	1.86	2.39	2.06	1.29	19.17
Punjab	15.09	11.68	14.30	18.32	20.35	20.80	21.01	19.21	19.77
Rajsthan	7.16	5.17	4.51	4.98	5.40	5.25	6.27	6.49	15.79
Tamil Nadu	4.28	3.29	2.93	4.08	4.61	4.24	4.90	5.31	18.74
Uttar Pradesh	2.04	1.76	2.05	2.50	1.86	2.56	2.48	0.93	26.58
C.V.	**83.64**	**81.05**	**94.59**	**89.74**	**88.08**	**89.27**	**90.86**	**95.14**	

Revenue Autonomy (RA) and Fiscal Autonomy (F.A.) of Panchayats

Revenue autonomy is measured as a ratio of own revenue to total revenue and fiscal autonomy as that of own revenue to total expenditure of panchayats. Both revenue autonomy and fiscal autonomy of panchayats tend to decline during 1990-91 to 1997-98 in most of the states and in India as whole exceptions being Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu (Table 4).

Table 4 : Revenue Autonomy (RA) and Fiscal Autonomy (FA) of Panchayats in Selected States of India, 1990-91 to 1997-98

States	Revenue Autonomy (%)				Fiscal Autonomy (%)			
	1990-91	1993-94	1995-96	1997-98	1990-91	1993-94	1995-96	1997-98
Andhra Pradesh	6.26	5.67	6.45	5.49	6.26	5.70	6.33	5.50
Gujarat	2.70	2.71	2.11	1.81	2.54	2.37	1.98	1.78
Haryana	63.49	69.78	63.44	62.22	43.30	40.23	31.49	36.21
Karnataka	1.32	.89	0.98	0.80	1.39	0.93	1.05	0.82
Kerala	32.42	30.05	27.91	10.08	31.72	29.52	25.77	13.56

Madhya Pradesh	5.11	5.21	6.14	18.01	5.27	5.18	6.05	17.95
Maharashtra	3.28	3.45	3.08	3.39	2.37	2.37	2.40	2.45
Orissa	3.31	1.96	1.37	10.92	3.31	1.96	1.37	10.92
Rajsthan	3.22	2.79	2.04	2.02	3.27	2.79	2.06	2.00
Tamil Nadu	5.62	5.23	9.48	8.06	7.16	9.03	11.26	8.94
Uttar Pradesh	5.30	5.93	5.22	5.28	5.24	5.98	5.22	5.14
West Bengal	19.71	3.21	2.72	4.02	11.76	3.28	2.57	3.53
India	**5.60**	**3.99**	**3.99**	**3.50**	**4.62**	**6.35**	**3.72**	**3.23**

Source : Report of the Eleventh Finance Commission.

III

Own Resource Mobilisation of Panchayats across Selected Districts of West Bengal

As in selected states of India OR of panchayats varied significantly across the selected districts of West Bengal. Burdwan led other districts in total OR. During 2002-03 Howrah topped all other districts in respect of PCOR to be followed by Hooghly and Burdwan (Table 5)

Table 5 : Total Own Resource and Per capita Own Resource of Panchayats in Selected Districts of West Bengal, 2000-01 to 2002-03

States	Or (Rs. lakh)			Percapita OR (Rs)		
	2000-01	2001-02	2002-03	2000-01	2001-02	2002-03
Jalpaiguri	120.73	129.75	145.34	4.3	4.6	5.2
Uttar Dinajpur	29.42	28.34	38.32	1.4	1.3	1.8
Dakshin Dinajpur	33.88	35.87	40.08	2.6	2.7	3.1
Murshidabad	127.06	161.10	182.89	2.5	3.1	3.6
Nadia	114.98	129.85	218.82	3.2	3.6	6.2

North 24-Parganas	150.85	176.87	193.03	3.7	4.3	4.7
South 24-Parganas	190.77	177.25	239.56	3.3	3.4	4.1
Howrah	160.32	145.21	165.28	7.6	6.8	7.8
Hooghly	169.53	212.17	258.04	5.1	6.3	7.7
Midnapore	185.02	214.77	266.32	2.1	2.5	3.1
Bankura	52.62	67.66	96.92	1.8	2.3	3.3
Burdwan	269.52	310.93	307.29	6.2	7.2	7.1

Source : Office of the Directorate of Panchayats, Government of West Bengal

In 2000-01 the PCOR of panchayats varied from Rs 7. 6 in Howrah district to Rs 1.4 in Uttar Dinajpur district. As many as eight out of twelve selected districts had PCOR below Rs 4 while four districts, namely Howrah, Burdwan, Hooghly and Jalpaiguri had PCOR Rs 4 and above (Table 6).

Table 6 : Distribution of Districts of West Bengal by Per capita Own Revenue of Panchayats, 2000-01

PCOR (Rs)	Districts	
Below 2	2	UD, BKA
2.0-3.9	6	DD, MUR, NAD, N24-P, S24-P, MID
4.0 – 5.9	2	JAL , HOOG
6.0 and above	2	BUR, HOW
Total	**12**	

Source : Office of the Directorate of Panchayats, Government of West Bengal and offices of the Zilla Parishads.

Notes : UD = Uttar Dinajpur, BKA = Bankura, DD = Dakshin Dinajpur, MUR = Murshidabad, NAD = Nadia, N24-P = North 24 Parganas, S24P = South 24 Parganas, MID = Midnapore, JAL = jalpaiguri, HOOG = Hooghly, BUR = Burdwan, HOW = Howrah.

IV

Factors Explaining Variations in Per capita Own Revenue

The variations in PCOR of panchcyats across states of India and districts of West Bengal are largely attributable to levels of development of the sample states and districts to which these panchayats belong. The relatively developed states like Haryana, Punjab, Maharashtra, and relatively developed districts of West Bengal like Hooghly, Howrah, North 24-Parganas and Purba Medinipur had panchayats mobilising larger own receipts than the relatively backward states like Uttar Pradesh and Orissa, and relatively backward districts of West Bengal like Jalpaiguri, Murshidabad, South 24-Parganas and Paschim Medinipur.

PCOR in relation to socio-economic development indicators like per capita state domestic product (PCSDP) and rural literacy rate (RLTR) of selected states of India are shown in Table 7.

Table 7 : Per capita Own Resource of Panchayats in Relation to Some Socio-Economic Variables in Selected States of India, 1997-98

States	PCOR	PCSDP	RLTR
Andhra Pradesh	14.30	8214	48.0
Gujarat	6.10	13286	64.0
Haryana	20.69	13297	59.0
Karnataka	1.85	9228	56.0
Kerala	23.91	9381	91.0
Madhya Pradesh	3.06	7013	49.0
Maharashtra	11.52	14114	65.0
Orissa	1.29	5272	53.0
Punjab	19.21	13705	64.0
Rajsthan	6.49	8675	44.0
Tamil Nadu	5.31	11301	65.0
Uttar Pradesh	0.93	5848	50.0
West Bengal	1.96	8438	67.0

Source : Government of India, *Statistical Abstract*

The regression equations concerning per capita own revenue (PCOR) of panchayats at the state level are as follows.

PCOR = -5.37 + 1.46 e^{-3} PCSDP F = 4.69 R^2 = .299 $\bar{R}^2$ = .235
(-.78) (2.17) [.053]
[.053]

PCOR = -12.15 + 0.354 RLTR F = 4.36 R^2 = .284 $\bar{R}^2$ = .219
(2.09) [.06]
[..06]

PCOR = -16.41 + 0.25 PCSDP + 1.065 e^{-3} RLTR F = 3.60 R^2 = .418 $\bar{R}^2$ = .302
(-1.62) (1.43) (1.52) (.067)
[..18] [.18]

Notes : PCOR = Per capita own revenue, PCSDP = Per capita State Domestic Product, RLTR = Rural literacy rate.
( ) Figures within parentheses indicate respective t-ratios, [ ] indicate level of sognificance.

Per capita state domestic product alone is seen to have explained the variation in PCOR to the extent of 23.5 per cent and the coefficient of this explanatory variable as well as the whole model is seen to be statistically significant at 10 per cent level. Rural literacy rate is also statistically significant to influence the PCOR. In the multiple regression framework the explanatory variables, PCSDP and RLTR are not, however, statistically significant though they have the desired positive signs. The whole model is statistically significant at 10 per cent level.

At the district level of West Bengal per capita district domestic product and percentage of rural agricultural labourers to total rural workers are seen to have explained the variation in PCOR to the extent of 68 per cent and the coefficients of these explanatory variables as well as the whole model are seen to be statistically significant at 5 per cent level.

Regression Equation :

$$PCOR = -0.18 + .0001\ PCDDP - 0.01\ AL \quad F = 12.84 \quad R^2 = .74 \quad \bar{R}^2 = .68$$
$$(-.57)\ (3.01) \qquad (-2.49]$$
$$[.015] \qquad [.035]$$

Notes : PCOR = Per capita own revenue, PCDDP = Per capita District Domestic Product, AL = Percentage of rural agricultural labourers to total rural workers.

( ) Figures within parentheses indicate respective t-ratios, [ ] indicate level of significance.

V

Conclusions

The issue of own resource mobilization (OMR) of panchayats has assumed great importance in recent years, particularly after two recent developments in the history of governance of the country, namely structural adjustment programme (SAP) of the Government of India beginning in 1991, which led to gradual withdrawal of the state from economic, social and infrastructural development programmes resulting in deceleration in the growth of panchayats' development receipts from government sources during the last decade, and the 73rd Amendment Act of the Constitution of India, which has introduced panchayats as a distinct third tier of government in the rural areas giving them the constitutional responsibility of planning for economic development and social justice. Own receipts of panchayats come from tax and non-tax sources including voluntary contributions. In 1997-98, per capita own receipts in West Bengal was lower than that in Kerala, Punjab, Haryana, Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu and Rajsthan, and India as a whole. Both revenue autonomy and fiscal autonomy in West Bengal were low compared to many other selected states of India. Per capita own revenue of panchayats varied across districts of West Bengal.

The variations in own revenue of panchcyats across selected states of India and districts of West Bengal are largely attributable to levels of development of the selected states and districts to which these panchayats belong. The relatively developed states like Punjab, Haryana, Maharashtra and Tamil Nadu had relatively high per capita revenue, revenue autonomy and fiscal autonomy than relatively backward states like Uttar Pradesh and Orissa. Per capita state domestic product and rural literacy rate significantly explain the variation in per capita own revenue of panchayats across selected states. In West Bengal relatively advanced districts like Hooghly, Howrah, North 24-Parganas and Purba Medinipur had gram panchayats and panchayats samities mobilizing larger per capita own receipts than the relatively backward districts like Jalpaiguri, Murshidabad, South 24-Parganas and Paschim Medinipur. Per capita district domestic product and percentage of agricultural workers to total rural workers significantly explain variation in per capita own revenue across districts of West Bengal, the former positively and the latter negatively.

The following concusions emerge from the above discussion.

a) A database on the finances of the panchayats needs to be developed at the District, State and central Government levels and be easily accessible by computerizing it and linking it through V-SAT.
b) The data could be collected and compiled in statndard formats, to be prescribed by the C&AG.This will facilitate comparison of performance and state of development of local bodies among the States.
c) Efficiency of panchayats in utilization of funds may be enhanced to have some positive impact of ORM.
d) Economic development of backward regions may be speeded up to have positive bearing on ORM
e) Proportion of agricultural labourer may be shifted from agriculture to more productive activities, namely rural industries and tertiary activities.
f) Waste lands and water resources may be identified, resource inventory of panchayats may be prepared and their proper developmental plans may be prepared so that non-tax resources may be enhanced.

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