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Rural Livelihood Diversification in West Bengal: Nature and Extent[§]

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Abstract

The study, conducted in the state of West Bengal, has examined the nature, extent and causes of livelihood diversification among different livelihood groups. It has found that the level of livelihood diversification highly varies across regions and also across different livelihood groups. The importance of agriculture as a source of livelihood is decreasing and that of the non-farm sector is increasing in West Bengal. For the resource-poor households, livelihood diversification is a survival strategy to cope up with the adverse livelihood shocks and to manage the risky environments. On the other hand, for resource-rich households, livelihood diversification is an attempt to reap the benefits of development. In backward regions like Purulia district, not only the average household income or numbers of income sources are limited but their level of diversification is also quite low. The government needs to develop appropriate strategies, especially for the resource-poor rural households, to facilitate successful livelihood diversification. A comprehensive development plan, including increasing the scope for non-farm activities, is urgently needed for the backward regions in the state.

Key words: Livelihood diversification, rural livelihoods, coping strategy

JEL Classification: Q31

Introduction

Livelihood diversification is an important strategy to help the rural people to come out of poverty. It is a process by which rural families construct a diverse portfolio of activities and social support capabilities in their effort to improve their standard of living (Ellis, 1998). A study of Food and Agriculture Organization (FAO) on farming systems and poverty has suggested that diversification is the most important source of

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poverty reduction for small farmers in South and South-East Asia (FAO/World Bank, 2001).

The studies on income diversification are receiving increasing attention all over the world and two common outcomes of these studies are: (a) non-farm income is a significant component of rural income, and (b) share of non-farm income has risen over time (Reardon *et al.*, 2006). The studies on income diversification seem very limited in India. The ICRISAT village level studies, based on six villages of Andhra Pradesh and Maharashtra over the ten-year period 1975–1984 (Walker and Ryan, 1990) found that landless and smallholding class had more sources of income than the large landholding-size group. But, a resurvey by Livelihood Options Project, Department for International Development (DFID) in 2001 has found that households from all landholding groups have

diversified income sources. A few studies have been carried out on rural incomes but these vary widely in their coverage and assignment of income sources. Rawal *et al.* (2008) in their study on three villages of Andhra Pradesh, found that agriculture is the main source of income and only one village showed greater livelihood diversification may be due to its location on a national highway. Vatta *et al.* (2008) in their study on Punjab have found that more than two-thirds of the non-cultivating households have non-farm sector as the major source of their income. Bhaumik (2007) in his study on two districts of West Bengal has observed that levels of non-farm income are higher in agriculturally-advanced villages than less-advanced villages, and the share of non-farm income falls with increase in farm-size.

Under the above background, this study has examined the nature and extent of livelihood diversification in West Bengal across the livelihood groups because all the previous studies have analysed the issue of livelihood diversification according to different farm-size categories. Each livelihood group has some specific problems and its capabilities are also different. Therefore, we get a clear picture of rural livelihood diversification if the analysis is done across livelihood groups. The specific objectives of the study were: (i) to study the extent and nature of livelihood diversification in West Bengal; and (ii) to suggest some policy measures based on the results.

Data and Methodology

The study was conducted in the state of West Bengal during the period 2009-2010. Two districts were selected purposively, one representing a more diversified agriculture (Burdwan) and the other less diversified one (Purulia) based on the livelihood diversification indices mentioned below (Khatun, 2010). Then, one sub-division from each district, one block from each sub-division, two villages from each block, and finally 50 households from each village were selected randomly in probability proportionate to major livelihood groups. Based on their primary source of income, all these households were categorized into following seven different livelihood groups: (i) Agriculture and allied activities, (ii) Agricultural labourers, (iii) Non-agricultural labourers, (iv) Salaried groups, (v) Casual labourers, (vi) Petty businesses, and (vii) Other groups.

Analytical Tools

Level of diversification is measured by various types of concentration and diversification indices (Chand, 1995; Shiyani and Pandya, 1998). Six different measures of diversification used in the study are mentioned in Table 1.

Results and Discussion

Extent of Livelihood Diversification

The extent of livelihood diversification was analysed from three points of view: (i) number of sources of income of different livelihood groups, (ii) shares of agricultural (or farm) and non-agricultural (or non-farm) income in the total household income, and (iii) by constructing appropriate diversification indices.

Number of Income Sources and Crops Grown

Table 2 presents the number of different income sources by livelihood groups in Burdwan and Purulia districts. It shows that almost all livelihood groups have diversified income sources, but the extent varies. In Burdwan district, the number of income sources varied from 2 to 6 per household and the majority of households had 3 (41 %) or 4 (39 %) income sources. While in Purulia district, the highest number of income sources of a household was only 3 and that too for only 15 per cent of total households. The majority of households (57 %) had 2 sources of income. In Burdwan district, the number of income sources was highest for land-owning cultivator group (3.84), followed by salaried class (3.75). The average number of income sources was comparatively less among labourer groups who were mostly landless or marginal farmers. A similar pattern was observed in Purulia too. It shows that except one or two groups, all livelihood groups have diversified income sources but the level of diversification is higher in comparatively more advanced regions and among resource-rich households. This may be due to the fact that households in Burdwan district diversify their livelihoods due to pull factors, i.e. to increase income and employment, whereas in Purulia livelihood, diversification is driven by push factors, i.e. to cope with the challenges/ shocks and for spreading risk. The reason might be that agriculture as well as overall economic development is better in Burdwan than Purulia district, which is one of the most backward districts in West Bengal. Dry and rough agro-

Table 1. Diversification indices used in the study

Index name	Formula	Full concentration	Full diversification	Remarks
Herfindahl Index (H.I.)	$H.I. = \sum_{i=1}^N P_i^2$	1	0	It is a measure of concentration. It cannot assume theoretical minimum, i.e., zero.
Simpson Index (S.I.)	$S.I. = 1 - \sum_{i=1}^N P_i^2$	0	1	It is a measure of diversification and most widely used. It is inverse of H.I.
Ogive Index (O.I.)	$O.I. = \frac{\sum_{i=1}^N \left\{ P_i - \left(\frac{1}{N} \right) \right\}}{\left(\frac{1}{N} \right)}$	Maximum as set by N	0	It is a measure of concentration. The upper bound tends to zero in extreme cases of perfect concentration as well as perfect diversification.
Entropy Index (E.I.)	$E.I. = \sum_{i=1}^N P_i \log \left(\frac{1}{P_i} \right)$	0	log N	The upper limit is sensitive to choice of base for logarithms, thus it does not give standard scale for assessing the degree of diversification.
Modified Entropy Index (M.E.I.)	$M.E.I. = - \sum_{i=1}^N P_i \log_N P_i$	0	1	It measures deviations from equal distribution among existing activities and does not incorporate the number of activities in it.
Composite Entropy Index (C.E.I.)	$C.E.I. = M.E.I. * \left(1 - \frac{1}{N} \right)$	0	1 - 1/N	Since $-\log_N P_i$ is used as weights, it assigns more weight to lower values and less weight to higher values of P_i .

Note: P_i represents acreage (income) proportion of the i-th crop (income) in total cropped area (household income).

Table 2. Average numbers of income sources in Burdwan and Purulia districts

Livelihood groups	Average number of income sources	
	Burdwan	Purulia
Agriculture and allied activities	3.84	2.16
Agricultural labourer	3.14	N.A.
Non-agricultural labourer	3.22	1.83
Salaried group	3.75	1.92
Casual labourer	3.67	1.50
Petty business	3.33	1.83
Others	2.83	1.66
All occupations	3.67	1.87

ecological conditions of the district make the livelihood of rural household much challenging. In general, for the poor households like non-salaried households in Purulia, livelihood diversification is mainly a survival

strategy to cope with the adverse livelihood shocks and to manage risky environments. For the resource-rich households in Burdwan, the livelihood diversification is an attempt to reap the benefits of diversification.

Table 3. Sources of household income in Burdwan district

Livelihood groups	Income (₹ /annum/household)			Share (%)	
	Total	Farm	Non-farm	Farm	Non-farm
Agriculture and allied activities	64658	47145	17512	72.91	27.09
Agricultural labourer	20431	16459	3971	80.56	19.44
Non-agricultural labourer	31188	10866	20322	34.84	65.16
Salaried group	165666	35362	130303	21.35	78.65
Casual labourer	34258	8066	26191	23.55	76.45
Petty business	33190	10793	22396	32.52	67.48
Others	66854	8475	58379	12.68	87.32
All occupations	55591	29203	26387	52.53	47.47

Income from Agricultural and Non-agricultural Sources

The magnitude and proportion of farm and non-farm incomes in total income by each livelihood group are presented in Table 3 for Burdwan district and in Table 4 for Purulia district. Agriculture remains the most important source of livelihood in more diversified regions (Burdwan), and not in backward regions (Purulia). In Purulia district, wage earning, particularly in the non-farm mining and construction sector, was the main source of livelihood. A high reliance on non-farm sources of income, particularly by the non-agricultural labourers, in Purulia is also evident from Table 4.

The study has revealed that on an average 47 per cent of rural households derived their income from non-farm sources in Burdwan district, but it was as high as 88 per cent in Purulia district. However, these proportions varied widely across different livelihood groups. For cultivators and agricultural labourers in

Burdwan district, farm income was the main source of livelihood. For other livelihood groups too, farm sector contributes a sizable amount of income. In contrast, in Purulia district almost all the livelihood groups, except cultivators, less than 10 per cent of the households derived income from the farm sector. This is mainly because of low income level from the rainfed farming and pre-dominance of non-farm labourers livelihood groups in Purulia district. The rainfed agriculture alone does not provide them income even for meeting the basic needs for subsistence. So people are forced to do non-farm work for their survival. The existence of mining creates only some opportunities for non-agricultural work in this area. Therefore, seasonal migration to the neighbouring towns for employment is very common in Purulia.

In the more diversified region, agriculture and related activities are still the predominant source of livelihood for the farming community and as high as 68 per cent of the rural households depend on it in

Table 4. Sources of household income in Purulia district

Livelihood groups	Income (₹ /annum/household)			Share (%)	
	Total	Farm	Non-farm	Farm	Non-farm
Agriculture and allied activities	28833	16500	12333	57.23	42.77
Non-agricultural labourer	28765	1665	27100	5.79	94.21
Salaried group	71824	2294	69529	3.19	96.81
Casual labourer	31500	1500	30000	4.76	95.24
Petty business	57250	2083	55167	3.64	96.36
Others	39000	3556	32746	11.64	88.36
All occupations	37059	4312	32746	11.64	88.36

Burdwan district (Khatun, 2010). This may be due to better irrigation facilities in this area. But, in this area too, the dependence on non-farm activities for livelihood is increasing and during past 10-15 years, the per cent of rural households primarily dependent on non-agriculture sector for their livelihood has increased from 19 to 32 per cent (Khatun, 2010). On the other side, in Purulia, the percentage of household primarily dependent on agriculture, has reduced from 20 per cent (10-15 years ago) to 16 per cent in recent years. So, in both the districts, the dependence on agriculture as primary source of livelihood is diminishing *albeit* at varied pace. Our experience during focused group discussions was that more women than men are entering into the non-farm activities through self-help groups (SHG).

Livelihood Diversification Indices

Six types of diversification indices were used to measure the level of livelihood diversification in the study area. The values of all these indices are shown in Table 5 for Burdwan district and in Table 6 for

Purulia district. A perusal of these tables revealed that the level of diversification, measured by Simpson index (SI), for almost all major livelihood groups was very low in Purulia district (SI= 0.2063) than Burdwan district (SI= 0.5615). Other indices also had more or less similar values. Therefore, in the Purulia district not only the average household income or number of income sources are limited but their level of diversification is also quite low. Among different livelihood groups, the level of diversification was highest across salaried class in Burdwan and for cultivator group in Purulia. In general, the livelihood is less diversified for the labourer groups in both the districts.

Nature of Diversification

The study also attempted to find what are the most common activities that poor and rich households adopt for diversification? For this SI index was computed for above the poverty line (APL) households and below the poverty line (BPL) households and the results are presented in Table 7. It shows that though the poorer

Table 5. Livelihood diversification indices in Burdwan district

Livelihood groups	Burdwan					
	HI	SI	OI	EI	MEI	CEI
Agriculture and allied activities	0.4232	0.5768	6.3254	0.8418	0.3190	0.7817
Agricultural labourer	0.4318	0.5682	5.0452	1.0294	0.3901	0.9558
Non-agricultural labourer	0.4867	0.5133	5.8137	0.8819	0.3342	0.8189
Salaried group	0.3889	0.6111	5.8446	0.8965	0.3397	0.8324
Casual labourer	0.4440	0.5560	5.2155	1.0648	0.4035	0.9887
Petty business	0.4168	0.5832	4.8354	0.9893	0.3749	0.9187
Others	0.5732	0.4268	7.0251	0.7250	0.2747	0.6732
All occupations	0.4385	0.5615	5.8387	0.9093	0.3446	0.8444

Table 6. Livelihood diversification indices in Purulia district

Livelihood groups	Purulia					
	HI	SI	OI	EI	MEI	CEI
Agriculture and allied activities	0.6777	0.3223	5.6884	0.7895	0.2991	0.7331
Agricultural labourer	NA	NA	NA	NA	NA	NA
Non-agricultural labourer	0.8444	0.1556	10.8215	0.2662	0.1009	0.2472
Salaried group	0.7318	0.2682	12.0445	0.1298	0.0492	0.1205
Casual labourer	0.8674	0.1326	8.3430	0.4989	0.1890	0.4633
Petty business	0.8603	0.1397	11.0443	0.2557	0.0969	0.2375
Others	0.7245	0.2755	6.3426	0.7736	0.2931	0.7183
All occupations	0.7937	0.2063	10.2822	0.3241	0.1228	0.3010

Table 7. Nature of diversification based on Simpson Index

Category of households	Level of diversification (SI)	Common diversification activities
Above poverty line (APL)	0.334	1. Agriculture and allied activities 2. Petty business activities 3. Salaried job
Below poverty line (BPL)	0.394	1. Non-agricultural wage earning 2. Casual wage earning 3. Agricultural wage earning

households diversified slightly more than their richer counterparts, there was a sharp difference regarding the activities they adopted to diversify. The APL households diversified towards self-employment through livelihoods like agriculture and allied activities, petty business and service, while the BPL households diversified towards wage employment through livelihoods like non-agricultural works, casual labour and agricultural labour. It is obvious that the activities adopted by the richer households were more remunerative. The poor households lack resources, assets, skill and education which constrain their diversification towards more remunerative activities and they are forced to diversify to low return activities. Therefore, our results are in accordance with the previous studies (Dercon, 1998; Carter and May, 1999; 2001; Barret *et al.*, 2000; 2001).

Diversification within Agricultural Sector

Table 8 shows the major changes in cropping patterns in the study districts during the period 1990-95 to 2005-2010. In the Burdwan district, a spectacular change was observed in *boro* cultivation — a four-fold increase during past 10-15 years. Due to rapid development in irrigation facilities, a substantial crop diversification took place towards *boro* rice, potato, oilseeds and vegetables away from sugarcane and wheat in the Burdwan district. Earlier, potato was cultivated mainly for self-consumption in Burdwan, but presently potato is cultivated largely for marketing.

Another important point is the negligible area under pulses, though cultivation of pulses does not require much irrigation, but Burdwan district has shown preference for cultivation of paddy and potato. A perusal of Table 8 indicates that the cropping pattern in Purulia is largely stagnant with mono-cropping of *kharif*-rice due to lack of water. A notable feature of

agriculture in Purulia is the limited use of pesticides and chemical fertilizer (Khatun, 2010). The main problem of this area is the lack of irrigation facilities due to which farmers cannot opt for multiple cropping. So, for the development of this region irrigation facilities should be developed and farmers should be encouraged to diversify towards pulses and horticultural crops like papaya, pumpkin, guava, etc.

Diversification Out of Agricultural Sector

In recent years, the real income from traditional crop cultivation has declined despite increase in the prices of agricultural commodities. At the same time the costs and risks in agricultural production have also increased. Under this situation, the only way for the rural households to survive is to either adopt additional sources of livelihoods or change cropping pattern. As a consequence, the rural households in the study area are engaged in various types of agricultural and non-agricultural activities. For instance, they are adopting crop farming with animal husbandry, agricultural labourer also work as trolley pullers, fisherman works as agricultural labour and fish-monger works in local markets, rural artisans are engaged in limited cultivation.

The status of agriculture is very poor in Purulia and it is difficult for the rural households to rely on agriculture for survival. Dry and rough agro-ecological conditions of the district have increased uncertainty and risks, and made the livelihood of the rural household too challenging. Many household try to earn a bit through backyard poultry keeping and piggery. The employment opportunities in the local area are also very poor. Under this situation, the only way out for the poor household is the seasonal out-migration in search of wage earning in the non-agricultural sector. A large number of people from the study area go to the

Table 8. Cropping pattern in Burdwan and Purulia districts

(in per cent)

Season	Crop	Burdwan		Purulia	
		1990-95	2005-10	1990-95	2005-10
<i>Kharif</i>	Paddy	79.18	50.32	97.53	97.75
	Sugarcane	2.07	0.49	0.05	0.00
<i>Rabi</i>	Mustard	5.17	8.95	0.00	0.00
	Til	2.07	4.44	0.00	0.00
	Potato	3.22	5.50	0.15	0.00
	Pulses	0.01	0.05	0.12	0.00
	Wheat	0.79	0.00	0.18	0.00
	Aurum	0.05	0.02	0.00	0.00
	Vegetables	0.00	1.00	1.97	2.25
	<i>Boro</i>	Paddy	7.44	29.23	0.00

nearby towns like Asansol, Burnpur, Durgapur, Kulti, Adra, etc. in search of jobs in construction sector, mines, steel factories, rickshaw pulling, etc. But that too fails to provide the poor households a reasonable standard of living. Out-migration is always difficult and more so seasonal migration for few weeks or months in a year cannot be a sustainable livelihood alternative. The present situation warrants farmers in Purulia to take either non-crop enterprises or modify their farming system for higher productivity.

In the Burdwan district, the situation is not that bad. In fact, agriculture is quite developed in this district but it is not able to provide sustainable livelihood to the majority of households, who have chosen to construct a diverse portfolio of livelihoods. *Bidi* making is an important livelihood option for a number of rural households in the study area. Another important activity is drum paddling, an occupation, across a large number of SC/ST households in Burdwan. Though a part time activity, its demand is increasing from the urban areas. During festivals like Puja, and functions like marriages, birthdays, the demand for the paddlers rises up substantially. The rural households in Burdwan also earn substantially from backward poultry keeping and livestock rearing, particularly goat and buffalo. Many rural youths are also engaged with petty business activities like sale of telecommunication items, consumer durables in urban area, sales agent, etc.

Summary and Policy Implications

The study has shown that in both the regions — diversified or less-diversified — the importance of

agriculture as a source of livelihood is decreasing. The number of people who derive their livelihoods from non-farm sector is increasing. In the resource-poor Purulia district, not only the average household income or number of income sources is limited but also their level of diversification is quite low. The low level of livelihood diversification in Purulia district may be due to the distress induced by the socio-economic factors. Among different livelihood groups, the level of diversification is highest for salaried class in Burdwan and for cultivator group in Purulia. In general, the livelihood is less diversified for the labourer groups in both the districts. The richer households diversify towards self-earning activities like agriculture and allied sector, petty business and services while the resource-poor people diversify towards wage-earning activities like non-agricultural works, casual labour, agricultural labour, etc. The government should develop appropriate strategies, especially for the resource-poor rural households to facilitate successful livelihood diversification. This study recommends the following strategies.

- The rural livelihoods being location-specific, the government should devise appropriate livelihood policy as per regional needs.
- Education being an effective means of increasing livelihood diversification strategies, targeting of education and skill development trainings for the poor households in rural areas would have a large impact on their ability to diversify livelihood options.

- There is a strong need of developing infrastructural facilities like irrigation network, road network, marketing network, telecommunication, etc.
- More farmer-friendly and effective insurance products should be developed to protect the farmers from adverse shocks.
- There is a need to develop small food processing industries in the state, particularly in the backward regions like Purulia.

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