

Economic growth and rural transformation in Eastern India: Strategies for Inclusive Growth¹

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ABSTRACT

There is an emerging consensus that the well-being of rural households improve with the blending of farm activities with non-farm economic activities. The diversification of rural livelihood positively impacts the well-being of the rural households. Eastern states however remained laggard in rural transformation due to myriad of endogenous as well as exogenous factors. With uneven distribution of production assets, poor infrastructure and governance, low levels of literacy, skills, awareness and connectivity and limitations of alternative options for livelihood, the high prevalence of poverty in the region becomes the structural corollary. This paper delves into its multiple dimensions of rural transformation with focus on selected eastern states of India. Considering very small landholding of the farmers and thereby negligible employment elasticity to agricultural growth, creation of non-agricultural opportunities, diversification and transformation of rural economy towards expanding rural non-farm employment are adjunct to the strategies of managing vulnerabilities associated to the region bringing meaningful structural change in the rural socio-economic conditions.

Keywords: Rural transformation, Eastern India, Infrastructure, Diversification

Introduction

India has witnessed rapid transformation in the employment structure and source of income in the past couple of decades, which has never been seen ever before. Nationally representative household survey based studies showed high growth in rural economy (Hossain, 2004; Hossain and Byes, 2008, Balagtas et.al, 2012, Papola, 2013) and relatively faster growth in non-farm sector than the agriculture sector in rural area. Share of agriculture sector in India's gross domestic product (GDP) has declined from about two-third of the rural national domestic product in 1980-81 to about 14 per cent by 2013-14 (Economic Survey, 2013-14). Interestingly, the decadal population growth in rural area of agriculture dominated eastern states namely, Bihar, Jharkhand and Orissa has been the highest among all the states in India. The share of agriculture and allied sector in these states have reduced sharply in recent years, while more than three-fourth of the population still resides in rural area and mostly depend on agriculture and allied activities. During last decade (2004-2013), share of this sector declined by about 12 per cent in Bihar and about 8 per cent in Orissa, while it has

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increased marginally in Jharkhand. Although, the overall state economy during the period, has grown faster in three states than that of national average of 7.74 per cent annually. Albeit, the performance of agriculture and allied sector have been dismally poor in Bihar and Orissa as compared to overall economic growth. The region is endowed with immense natural resources viz., fertile soil, plenty of water resources, good rainfall, minerals (in Jharkhand and Orissa). Yet, it has continued to remain in the trap of backwardness with extrem poverty and deprivation. It is evident that every third person in the region live in absolute poverty, particulalry in rural area and lagged behind with respect to all the development indicators compared to any other major states of India.

The rural sectors in these states are primarily net suppliers of primary produce and generally, the net consumers of secondary and tertiary goods and services. Usually, employment in rural labor markets and agriculture are characterized as casual or informal, requiring low skill and with low productivity and returns. Therefore, development of the rural economy in general and agriculture sector in particular, is a key factor for achieving inclusive growth. Inclusive growth in rural area envisages the change in economic structure, anchored on productivity growth in agriculture, involving a movement of labor away from the traditional sector. It must focus on small and marginal farmers, landless labours and women who face constraints of capital, land, access to credit market and modern inputs. Globally, it has been realised that agricultural growth also causes non-agricultural growth, and has a differential impact on employment of the unskilled labor, indirectly reduce economywide labor cost by keeping food affordable (Lanjouw and Lanjouw, 2001). Against this backdrop, the key questions that emerge are- why these states (Bihar, Jharkhand and Orissa) are in such state? What are the drivers of change that contributed to vibrant growth and progress in other states, but not in eastern states? How the ongoing rural transformation influenced the income and livelihood of the rural population? And, finally, what strategies needs to be adopted for inclusive growth in rural area of eastern states? These states are of special significance for International Crops Research Institute for Semi-Arid Tropics, as a flagship project on 'Village Dynamics Studies in South Asia' expanded to these states in 2009-10, exploring the dynamics of economic growth and rural poverty at household level.

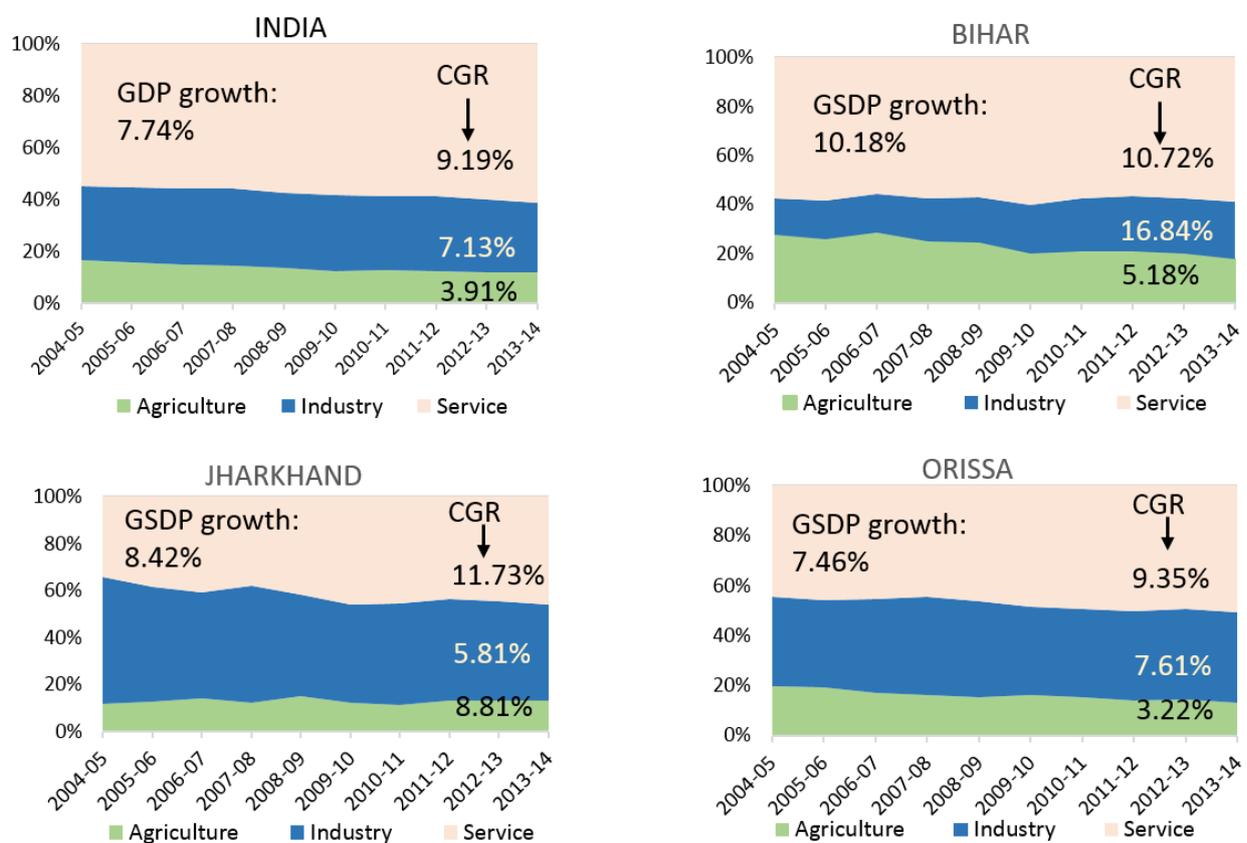
Recent economic growth in eastern states

Last one decade (2004 to 2013) has been consistent growth phase for the eastern states in India. During this period, 3 poorest states of the country i.e. Bihar, Jharkhand and Orissa performed slightly better than or equally good as compared to the country as a whole. The year 2004-05³ is considered to have structural break in Indian agriculture (Deokar and Shetty,

³ Several policy measures were introduced to boost agricultural production and income of the population depending on this sector. During 2005-06 a National Horticulture Mission became operational. Much awaited reform in domestic agricultural marketing was initiated through the formulation of a model Agricultural Produce Marketing Committee (APMC) Act in 2003. The launch of the Bharat Nirman project in 2005-06 was significant move by the government to upgrade rural infrastructure comprising six components, namely, irrigation, electrification, roads, water supply, housing and telecom connectivity.

2014 and Ramesh Chand and Shinoj, 2012). Therefore, overall economic growth and that of agriculture and allied sector in three states were compared for 2004-05 to 2012-13 period and presented in Fig 1. It may be observed from Fig 1 that the Gross State Domestic Product (GSDP) of these states has grown by 7.5 to 10 per cent annually. These states individually contributed only 2-3 per cent to the Gross Domestic Product (GDP) of the country. The contribution of agriculture and allied sector in GSDP of Bihar and Orissa has decreased by 10% and 6% respectively, while in Jharkhand, it has increased marginally. But, in all three states, its contribution is not only much lower than that from industry or service sector, but its growth is also the slowest in past decade. It gives rise to growing rural-urban divide and rising labour productivity in two sectors leading to rural-urban migration.

Fig 1. Share of major sectors in GSDP during 2004-2013 (at 2004-05 prices)



Source: Planning Commission (2014)

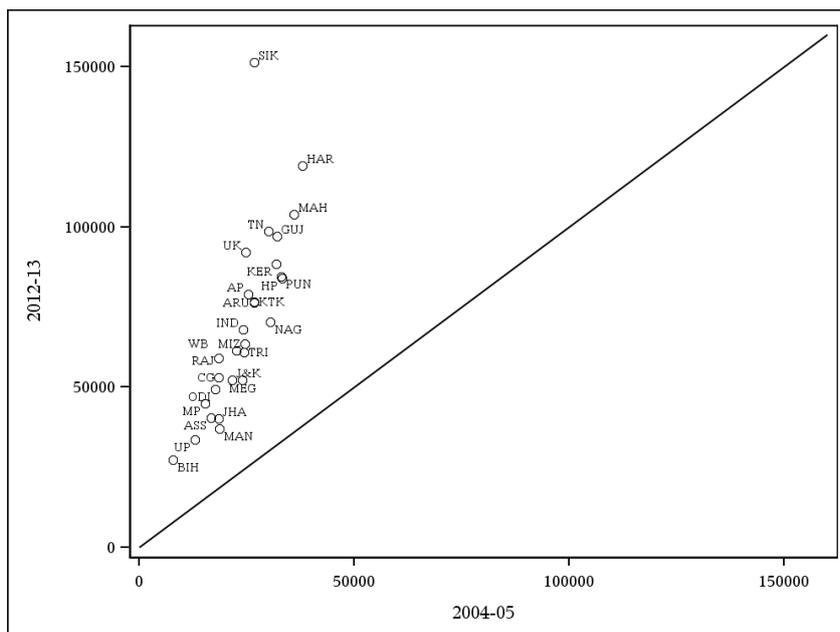
Note: CGR is the annual compound growth rates of the respective sectors during 2004-2013 period.

Although the 3 states' economies has been growing with 8-10 per cent annually since last one decade, however it has not been the fastest among all the states. Several other major states of the country has also grown by more than 9 per cent during same period like Andhra Pradesh, Gujarat, Haryana, Maharashtra, Tamil Nadu, etc.. This raises serious doubt of any possible convergence in economic growth of eastern states with other major states. Fig 2

Finally, the most vital policy initiative was the targeted doubling of credit flow to agriculture within a period of three years, 2004-05 to 2007-08.

clearly exhibits that the eastern states were at the bottom in 2004-05 in terms of per capita NSDP and even in recent years (2012-13) continue to remain at the bottom. Other states like Tamil Nadu, Gujarat, Maharashtra, Haryana and Sikkim has taken non-comparable lead. Per capita NSDP (at 2004-05 prices) for Bihar, Jharkhand and Orissa states increased from Rs. 7915, Rs. 18510 and Rs. 17650, respectively in 2004-05 to Rs. 15650, Rs. 28882 and Rs. 25891, respectively in 2013-14. The overall income of the population has increased by 98% in Bihar, 56% in Jharkhand and 47% in Orissa during this period. Though, these levels of income were achieved by several other major states even before 2004-05.

Fig 2. Per capita net state domestic product at current prices during 2004-05 and 2012-13



Authors' compilation

BIH- Bihar; UP- Uttar Pradesh; MAN- Manipur; ASS- Assam; JHA- Jharkhand; MP- Madhya Pradesh; ODI- Odisha; MEG- Meghalaya; CG- Chhattisgarh; J&K- Jammu & Kashmir; RAJ- Rajasthan; TRI- Tripura; MIZ- Mizoram; WB- West Bengal; IND- India; NAG- Nagaland; ARU- Arunachal Pradesh; KTK- Karnataka; AP- Andhra Pradesh; HP- Himachal Pradesh; PUN- Punjab; KER- Kerala; UK- Uttarakhand; TN- Tamil Nadu; GUJ- Gujarat; MAH- Maharashtra; HAR- Haryana; SIK- Sikkim

Monthly per capita expenditure (MPCE) is usually considered as proxy for income of the household. MPCE in rural area of Bihar, Jharkhand and Orissa during 2004-05 and 2011-12 has been estimated across different income decile of the population using 61st and 68th survey round, respectively of National Sample Survey Organisation (NSSO). The results were also compared with those of other progressive states like Andhra Pradesh, Tamil Nadu, Punjab, Maharashtra and Gujarat (Annexure I). It was observed that income inequality has increased in all these states in rural area. Income for the bottom 20-30 per cent population has increased with much slower rate than those for top 20-30 per cent population. Therefore, it may be concluded that in spite of sound agricultural as well as other sectors' growth in eastern states, per capita income is still very low as compared to other states. Secondly, even if overall economic growth has been high, the spill-over effect or trickle-down effect of it has not been uniform in rural area. Only top 20-30 per cent of household could ride the economic growth wave of the states.

Demographic structure in Eastern India

Broadly speaking, while the demographic centre of gravity (population pressure) has been shifting in the northern and eastern direction in India, the economic centre of gravity (economic growth) has been moving in the opposite direction. The western and southern states have continuously experienced faster economic growth, while the northern and eastern states lagged behind. As a result, the per capita income differentials have been widening even further (Kurian, 2007). With a staggering 40 to 49 per cent of total population in selected 3 eastern states are under 20 years of age, could turn out to be its greatest asset— or a demographic disaster if it doesn't get appropriate work opportunities. Bihar is the third largest populated state (9%) with the highest population density, while Orissa and Jharkhand has about 3.5% and 3% of country's population, respectively in 2011 (Table 1). Further, more than three-fourth of total population lives in rural areas. The continuous and rapid growth in population in these states also led to further pushing the population density upward.

Table 1. Population density and rural demography in eastern states

States	¹ Population density	² Rural population, %	Percentage of rural population (2011)				*Children (<5 years) under-weight (%)
			Illiterate		Literate above primary level		
	2011	2011	Male	Female	Male	Female	2005-06
Bihar	1102 (8.58)	88.70	32.0	51.1	31.3	16.7	56
Jharkhand	414 (2.73)	75.95	32.1	49.0	30.2	17.8	57
Orissa	269 (3.47)	83.32	29.0	42.9	38.9	26.9	41
All India	382 (100)	68.84	28.4	44.5	36.1	33.9	47

Source: Census (2011); #NSSO (2014) *National Family Health Survey (NFHS)

¹Figures within parentheses indicate percentage population share of the state in total population of India and ²percentage of total population in the state living in rural areas

Low levels of literacy and skills result in lower earning capacity and conspire to keep people in the poverty trap, preventing them from embarking on new activities to earn income or build assets (DFID, 2012). Bihar and Jharkhand suffers badly from such nexus, where average rural literacy is far below than the national average. Though, the gender gap in literacy has been declining over the decades, still there exists considerable difference (20 per cent). Furthermore, hardly 17-18% of female population in Jharkhand and Orissa are literate above primary level. Low level of female literacy in the region is often associated with poor access to health and family planning facilities, poor awareness of proper child care and other hygienic practices which adversely affect the productivity of labour and welfare of the whole family. Although evidence on the relevance of educational level to farm incomes varies (e.g. Rodriguez and Smith, 1994), the poor are excluded from well-paid wage or profitable self-employment opportunities in the non-farm sectors. In these states, malnutrition among children below 5 years of age are rampant. It also affects negatively the future development and ultimately affecting the labour productivity.

Land and agricultural-based resources

Poverty persists in any region because of limited and inequitable access to productive resources, such as land, water, improved inputs and technologies, easy credit, as well as vulnerability to drought and other natural disasters. It is evident from the Table 2, eastern states are not only predominantly rural in nature but also have very large share of marginal farmers (70 to 90%). Average size of operational holding of these marginal farmers in Bihar (0.25 ha), Jharkhand (0.41ha) and Orissa (0.57 ha) are too small for making it economically viable for sustaining the livelihood. Further, the land quality differs widely among these small holdings (von Braun et al. 2009). In Punjab, even households with holdings up to 4 ha find it increasingly difficult to meet their living expenses from farming alone (Singh et al, 2007; Singh and Bhogal, 2014). Chand et al (2011) also cautioned that if agriculture were to be the sole source of livelihood, a majority of the households cultivating such tiny pieces of land would be poor.

Table 2: Land distribution among marginal section of the society

Eastern states	% of marginal farmers (<1ha land holding)	Average land holding of marginal farmers (ha)
Bihar	91.0	0.25
Jharkhand	68.2	0.41
Orissa	72.2	0.57
India	67.0	0.38

Source: Census 2011, Agriculture Census 2010-11

Note: Overall average land holding in Bihar, Jharkhand and Orissa are 0.39 ha, 1.17 ha and 1.04 ha, respectively.

Basic and rural infrastructure in eastern states

Structural transformation in any region depends largely on the availability and accessibility of different infrastructure in the region. Chakraborty and Guha (2009) constructed composite index of various infrastructure-related variables and ranked all the states in India. It was observed that eastern states ranked most poorly among all the 20 major states in all the parameters (Table 3).

Bihar, Jharkhand and Orissa have been deficient in physical infrastructures like electricity connectivity, *pucca* drainage system, drinking water, canal and tube wells, the distance from metalled roads and banks. These states are also way behind in terms of social infrastructure like access to veterinary hospital, primary health centres, primary and secondary schools, vocational training centres, etc. Similarly, coverage of government support programmes on creation of employment and presence of private initiatives in the states like reach of self-help groups (SHGs) and co-operatives were considered for ranking of the states. These facilities together are capable of improving the livelihood condition of rural population owing to the potentially lower transaction costs and development of opportunities for non-farm sectors. In Punjab, it may be observed that if very good infrastructure only is ensured, poverty can be reduced even without much presence of other government programmes and private initiatives like SHGs or co-operatives.

Table 3. Ranking of eastern states in terms of infrastructure and public-private supports

State	Score in Physical and social infrastructure	Score in reach of Govt Support Programmes	Score in Presence of Private Initiatives	Overall Score	¹ *Rural persons below poverty line, % (2011-12)
Bihar	1.75 (19)	2.20 (16)	0.69 (18)	1.80 (18)	34.06 (778)
Jharkhand	1.84 (18)	1.14 (19)	0.15 (20)	1.51 (20)	40.84 (748)
Orissa	1.48 (20)	3.92 (12)	0.73 (17)	1.74 (19)	35.69 (695)
Andhra Pradesh	3.73 (11)	6.52 (4)	6.94 (3)	5.04 (4)	10.96 (860)
Punjab	6.08 (3)	1.55 (17)	3.18 (12)	4.53 (6)	7.66 (1054)
Tamil Nadu	5.06 (4)	6.36 (5)	7.36 (2)	6.20 (3)	15.83 (880)

Source: Chakraborty and Guha (2009) *Planning Commission (2013)

Figures within parentheses indicate the state's rank in respective category.

¹Figures within parentheses indicate rural poverty line i.e. per capita expenditure (Rs per month)

As can be observed from Table 3, the selected states have about 3-4 per cent each of total net sown area of the country, barring Jharkhand. However, it hardly share 3 per cent of total surfaced road in India, less than 0.5% of total electricity consumption in agriculture, less than 5% of total institutional credit disbursed in agriculture & allied sector and equally dismal spread of number of factories, which could have stimulated the non-farm employment in the region. Besides, condition of irrigation particularly in Jharkhand and Orissa states, is more precarious, restricting the growth of crop productivity and profitable crop diversification towards high value crops. Near absence or poor coverage of these variables usually raise the cost of crop production, the transaction cost and the cost of credit for all purposes.

Table 3. Share of different resources of eastern states in India (in Percentage)

	% NSA of India (2010-11)	% NIA of India (2010-11)	Length of surface road (2011)	ECA, (2010)	CDA, (2012)	No. of factories, (2011)
Bihar	3.71	4.76	2.44	0.31	2.33	1.49
Jharkhand	0.77	0.20	0.70	0.06	0.78	1.17
Orissa	3.31	2.01	2.51	0.14	1.58	1.23
India	100 (141.6 mha)	100 (63.6 mha)	100 (2.34 million km)	100 (126,377 GWh)	100 (Rs. 583, 340 crores)	100 (217, 554)

Source: Census, 2011; Agricultural Statistics at a Glance, 2013; Basic Road Statistics of India, Govt. of India (2012); Reserve Bank of India; Ministry of Labour & Employment, Govt. of India.

Figures within parentheses are respective total for India

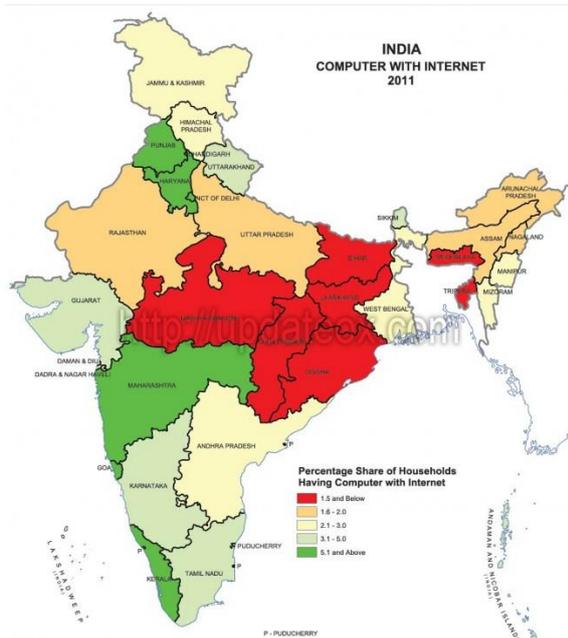
NSA- Net sown area; NIA- Net irrigated area; ECA- Electricity consumption in agriculture; CDA- Credit disbursement in agriculture

There are long-standing debates on the viability and the role of small farms in economic development (Schulz, 1964; von Braun and Kennedy, 1995; Hazell et al, 2010). Moreover, the optimal farm size is considered the one under which labour productivity of the agricultural

sector approaches that of the non-agricultural sector, given the same quality of labour. On the other hand, according to NCAER (1996), nearly 70 per cent of the landless wage earners and nearly 45 per cent of the marginal farmer households in India live below poverty line. Despite all the challenges smallholders face, they continue to increase in number across India, particularly in eastern region. There are about 20 million farmers today who farm less than 1 hectare of land in 3 states (14.74 million in Bihar, 1.85 million in Jharkhand and 3.37 million in Orissa out of 92.36 million in the country) and struggling to make an adequate living from farming. Although there is a lot of regional variation, the overwhelming story is- rising marginal farms, shrinking farm sizes and increased income diversification. Despite significant growth at macro-level (NSDP or GSDP), there is no sign of farm consolidation in eastern states. Rather, small farmers are further fragmenting and becoming marginal farmers while marginal farmers are migrating to cities or diversifying into non-farm activity. However, transitions to such a state can take a longer time due to institutional rigidities, transformation risk, and policies.

Appropriate communication technologies is considered to be one of the best leveller in the way of inclusive growth of any economy. The Internet and related information and communication technologies (ICTs) have the potential to play a pivotal role in helping achieving more inclusive innovation and development. According to Census 2011, Bihar, Jharkhand and Orissa states ranks lowest among all the states in terms of computers and internet penetration. Only 7.1 % household has computer and less than 1% have internet connection in Bihar state. While in Jharkhand and Orissa, households having computers account for 6.9 % and 5.1%, respectively and with internet, it further reduces to 1.5 % and 1.4%, respectively as compared to national average of 3.1% (Fig 5). With a very low awareness level, several benefits of internet in eastern India seems to be in its infancy and there is a pressing need to educate and inform the user of the benefits of the internet services to drive the growth of internet usage.

Fig 5. Spread of computer and internet connectivity in India, 2011

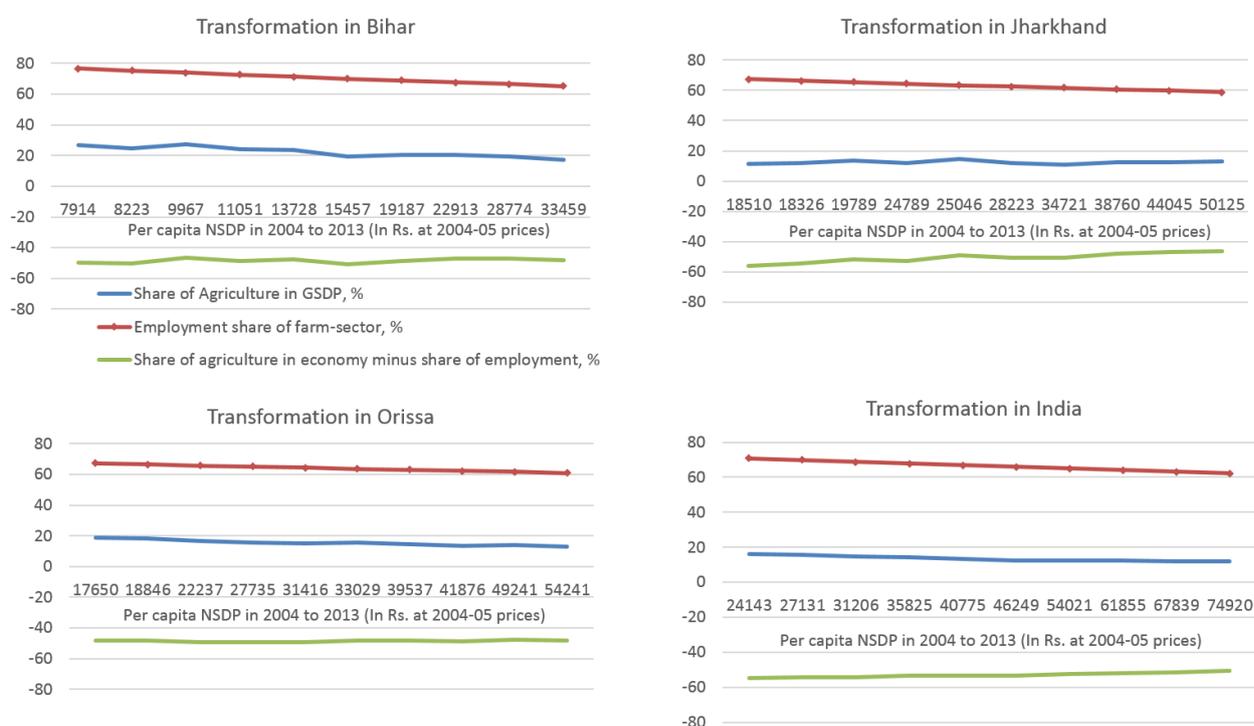


Rural Transformation- Multiple dimensions

Eventually, the diversity of production and economic activities of the people results into income flows from diverse sources. Even in the heartland of Green Revolution, i.e. Punjab and Haryana, rural people who had prospered with the revolution and were connected closely to the market economy also aspired to go beyond the village (Jodhka, 2014). The agrarian economy could not satisfy their aspirations for social and cultural mobility. The surplus they generated from agriculture went into education, urban trade and other non-agricultural activities.

During past 10 years, the transformation in the economy of 3 eastern states took different forms as compared to national average (Fig 6). Bihar has been traditionally agricultural based economy. But share of agriculture in state's economy has declined to one-fifth in 2013-14, however, still 70 per cent of the workforce are engaged in agriculture and allied sector. Thus, the difference between these two shares remain constant (around 48-50%). The share of agriculture and allied sector in the GSDP of Jharkhand and Orissa both are about 13 per cent in 2013-14, but the trend has been opposite. In Jharkhand, the sector has grown faster than rest of the sector, therefore its share has improved slightly, while workforce dependent on it has come down to about 59 per cent. On the other hand, in Orissa, share of agriculture sector came down but the workforce dependence on it has not shifted significantly. In comparison to this trend, the difference between share of agriculture in India's economy and workforce's dependence on it has declined by 5 percentage point, exhibiting healthy sign.

Fig 6. Share of agriculture and allied sector in gross state domestic product and employment during 2004-05 to 2013-14



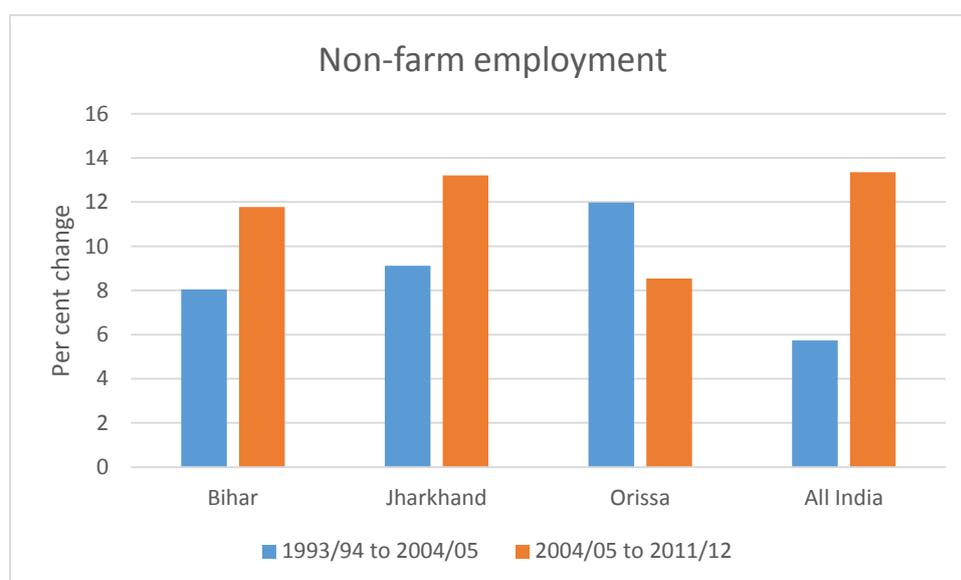
Rural employment diversification

According to the 2004 NCAER-University of Maryland India Human Development Survey, nearly one-half (48%) of the income of the average rural household comes from non-farm earnings (Dubey, 2008). This is true also of farming households for whom the share of their income from non-agricultural activities (46%) matches the contribution of agricultural incomes (Cai et.al., 2008). Policymakers in developing countries increasingly recognise that diversification in the structure of rural employment holds the key to reducing unemployment and poverty. This is associated with a shift of the workforce from the farm sector to nonfarm sectors of the economy. Many economists have focused on structural shifts in employment patterns. Bhalla and Hazell (2003) showed that economies experience shifts in their structure of employment. A major reason for this is that the agricultural sector in many countries is in trouble from declining employment elasticity, falling productivity, and shrinking returns (Singh et al 2007).

Even in the selected eastern states, the share of the cultivators in total active population employed in agriculture is declining. Still agriculture plays quite substantial role in employment, more than three-fourth in rural areas. This complicates the already existing precarious situation as agriculture is providing much lower incomes and wages than other sectors, whereby the poorest households in the region are predominantly employed in agriculture. Even labour farm productivity in these states are much lower than that of in other states (Reddy et al, 2014; Basu and Nandi, 2014).

From Fig 7, it can be observed that in most recent years, more employment opportunities emerged in non-farm sector particularly in Bihar and Jharkhand, while in Orissa, it has slowed down. At all India level also, the percent change in share of non-farm-employment during 2004/05 to 2011/12 has been faster than that in 1993/94 to 2004/05.

Fig 7. Change in share of non-farm employment in rural eastern states



In eastern states, most of the increase in workforce over past one decade has come from rural area. From Table 4, it can be inferred that the increase in labour force were mainly absorbed as agricultural labourers and remaining as daily wage labourers, construction and other service sectors. Interestingly, the number of cultivators have come down significantly in all 3 states, however with different patterns. In Jharkhand, male cultivators have declined, while in Orissa, number of female cultivators have come down drastically. Second important trend is even among agricultural labours, the number of male labours have increased more than the female labours. It indicates that recent trends of reverse migration taken place in Bihar has added to agricultural labour force pool. But more disturbing picture is highlighted in Fig 8, which states that over the years, use of human labour has decreased in cultivation of all the crops in 3 states. In other words, rise in agricultural labour on one hand and drop in per hectare labour use in crop cultivation indicates the underemployment of agricultural labour in rural area of eastern states.

Table 4. State-wise change in number of workers in in the selected states during 2001 and 2011

(Number in '000)

State	Increase in total number of workforce	Change in number of rural non-farm workers		Change in rural agricultural workforce			
				Cultivators		Agricultural Labourers	
		Male	Female	Male	Female	Male	Female
Bihar	6750.4 (83.06)	1022.6	965.4	-711.8	-285.6	3640.8	1045.5
Jharkhand	2989.2 (73.85)	498.8	286.3	-134.8	28.7	818.0	710.6
Orissa	3265.1 (77.08)	694.5	292.8	8.0	-175.5	865.4	831.6
All-India	79508.6 (48.60)	8336.6	5492.8	-3636.8	-6114.5	23224.0	11339.2

Figures within parentheses indicate share of rural labour force in increase in total labours in 2001-2011
Source: Census of India, 2001; 2011.

Farm diversification

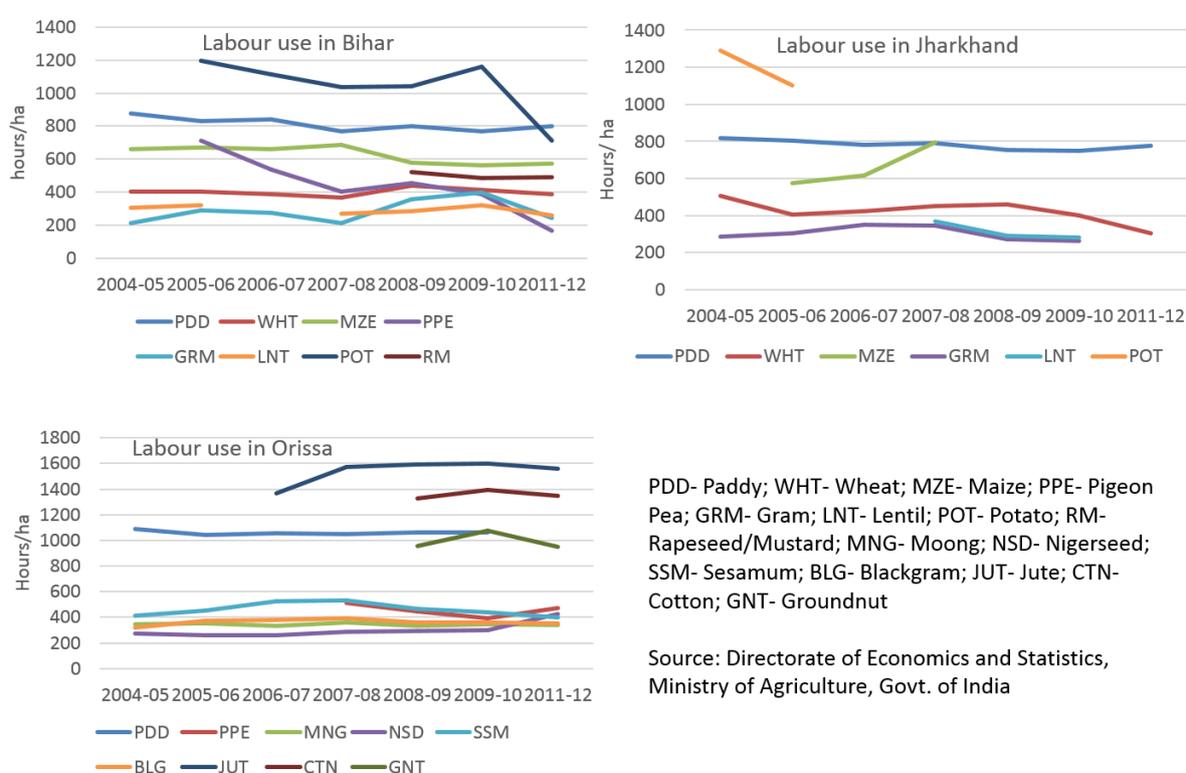
Although eastern states supports more than 85 per cent of small and marginal farmers, who remain attached to their tiny piece of lands, as it is the only asset they own. Though, livestock have been an integral and important component of India's agricultural economy. It has a synergistic relationship with crop production, and in turn provide draught power and manure for cropping activities. They also assume the role of a financial institution – a living bank with offspring as interest – and are an insurance against income shocks (Birthal and Negi, 2012).

From Table 5, it is clear that sectoral diversification within agriculture and allied sectors is similar in eastern states as compared to any other developed states, as diversification index (Simpson Index) varied in very narrow range of 0.7 in Punjab to 0.88 in Gujarat. It also didn't change much in the span of last 6-7 years across the states. It indicates that the eastern states

which are dominated by marginal farmers have limited scope for diversifying their crop portfolio. Although, non-farm diversification is taking place, for instance, livestock sector in Bihar as well as in Orissa and fisheries in Jharkhand.

Growth in value of output from agriculture, fruits & vegetables, livestock and fisheries has been positive and high, particularly in Jharkhand and Orissa states. Jharkhand state has witnessed phenomenal growth in fruits & vegetables production, livestock and fisheries, though with high variability. Although, the growth in Bihar has been relatively slow but these sectors are growing consistently. Moreover, during 2004-2010, the growth in all the agriculture and allied sectors have been very good in all the major states.

Fig 8. Declining labour use in crop production in selected states



PDD- Paddy; WHT- Wheat; MZE- Maize; PPE- Pigeon Pea; GRM- Gram; LNT- Lentil; POT- Potato; RM- Rapeseed/Mustard; MNG- Moong; NSD- Nigerseed; SSM- Sesamum; BLG- Blackgram; JUT- Jute; CTN- Cotton; GNT- Groundnut

Source: Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India

Table 5: Farm sector diversification and growth of different sectors in eastern states vs other major states

State	Diversification Index (Simpson)		Growth rates of Value of Output from different sources, % (2004- 2010)			
	2004-05	2010-11	Agriculture	Fruits & Vegetables	Livestock	Fisheries
Bihar	0.788	0.773	3.5 (8.6)	2.5 (6.5)	4.6 (9.7)	2.2 (5.7)
Jharkhand	0.794	0.794	5.4 (15.8)	4.6 (18.4)	4.5 (12.4)	17.9 (33.6)
Orissa	0.808	0.814	3.3 (7.7)	4.1 (10.0)	10.2 (21.1)	4.6 (10.1)
All India			3.2 (7.3)	5.3 (11.2)	4.8 (10.2)	4.5 (9.5)
Andhra Pradesh	0.849	0.836	5.1 (13.5)	9.8 (18.8)	6.2 (13.4)	6.5 (14.0)

Gujarat	0.882	0.870	3.2 (12.5)	8.0 (17.1)	6.3 (13.1)	3.1 (10.1)
Haryana	0.775	0.758	2.7 (7.6)	5.2 (11.8)	6.1 (12.7)	14.7 (28.5)
Maharashtra	0.868	0.888	4.3 (13.3)	0.0 (5.7)	4.4 (9.4)	0.6 (5.8)
Punjab	0.701	0.703	2.0 (5.9)	10.9 (23.7)	1.7 (3.7)	3.1 (8.4)
Tamil Nadu	0.842	0.816	2.7 (6.8)	3.8 (9.9)	8.3 (18.9)	4.8 (13.2)

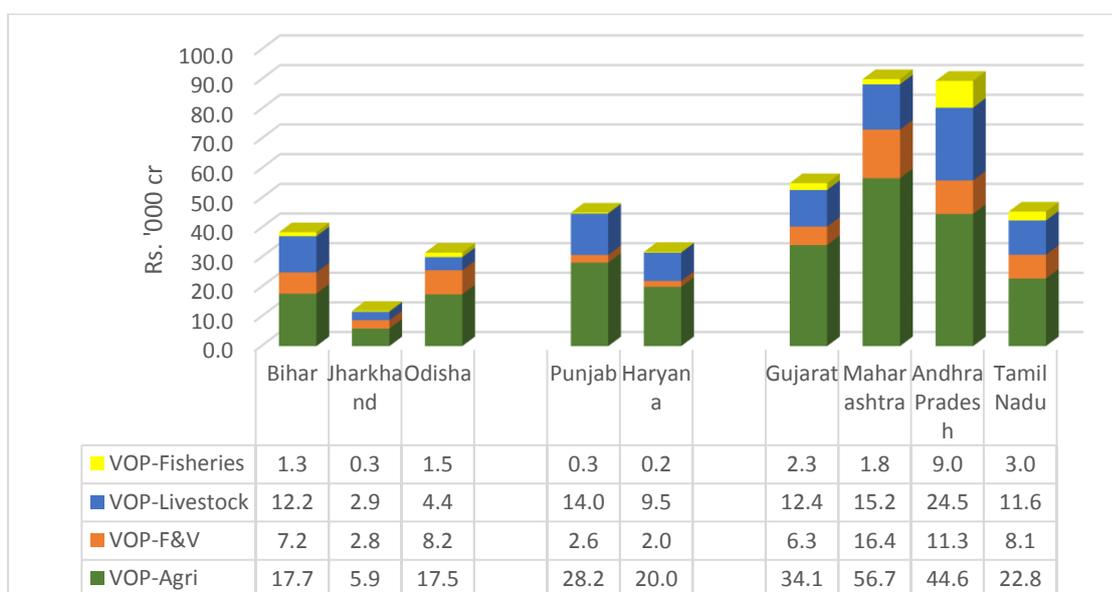
**at 2004-05 prices

Figures within parentheses are Coefficient of Variation during 2004-2010

Note: VOP from Agriculture excludes livestock, fisheries and forestry

Fig 9 provides the contribution of different sectors in the agricultural sector's value of output during 2004-2010. There is a wide interstate variation in the contribution of livestock to the gross value of output from agricultural sector. The livestock sector generated 50% to 65% of the agricultural output in Bihar and Jharkhand state. Among states that had already a high share of output from livestock (greater than the all-India average), like Bihar and Punjab experienced a rapid increase. Among states that had a low share of output from livestock in the early 1990s, like Orissa, Andhra Pradesh, Gujarat, and Karnataka realised a moderate to significant improvement. This indicates the importance of livestock in generating sustainable agricultural growth. Birthal and Taneja (2006) reported reduction in rural poverty being more responsive to growth in the livestock sector than growth in the crop sector. Evidence from other developing countries also suggests that livestock can serve as an important pathway to poverty reduction. From a study of poultry producers in south Asia, Dolberg (2003) concluded that animal husbandry can be an entry point for reducing poverty among landless and near landless households.

Fig 9: Value of output (VOP) from agriculture and allied sector in eastern states vs other major states for the period 2004-2011 (at 2004-05 prices)



More surprising, the net sown area as well as gross cropped area is declining very fast in 3 states in recent years due to exponential growth in diversion of land from farm to non-farm sector, which has never been observed before for any other states (Table 6). This is cause of

concern as large proportion of the rural population in the region still depend on agriculture directly or indirectly. Within crops, the crop productivity of major crops in eastern states have not reached to the level of that in other progressive states like Punjab, Haryana, Andhra Pradesh and Tamil Nadu. Even then, the region started showing fatigue, as the yield growth in recent years for rice, wheat, maize, pulses, etc. became very slow or in some cases negative. Area under paddy, maize, gram and rapeseed-mustard has squeezed in Bihar during 2001-2009, while in Jharkhand and Orissa, area under paddy has seized to expand. On the yield front, paddy yield has stagnated in Bihar and, yields of maize, gram, rapeseed-mustard as well as vegetables in Jharkhand started declining. Orissa state has shown good resilience in recent years as the crop yield has been improving in the range of 2-5 per cent annually.

Table 6. Crops yield growth in selected states during 2001 - 2011

Crop	Area Growth				Yield Growth			
	-ve	0-2%	2-5%	>5%	-ve	0-2%	2-5%	>5%
Gross cropped area	Bihar (-0.6%), Jharkhand (-4.05%), Orissa (-4.96%)							
Paddy	BH, JH, OR				BH		JH, OR	
Wheat		BH, OR		JH	JH	BH	OR	
Maize	BH		JH, OR		JH		BH	JH, OR
Gram	BH		OR	JH	JH		BH, OR	
Rapeseed-Mustard	BH	OR		JH	JH		BH, OR	
Potato	OR	BH		JH	BH, JH			
*Vegetables				BH, JH, OR	JH, OR		BH, OR	

Note: For Bihar (BH) and Jharkhand (JH), 2001 to 2009 taken while for Orissa (OR), 2001-2010 was considered

** For vegetables, data is available for 2005-2012 in case of Bihar and 2010-2013 for Jharkhand and Orissa*

It is believed that for transformation of agriculture and rural area per se, there is a need for growth in non-agriculture sector also (Visaria et al, 1994; Acharya and Mitra, 2000). In other words, the solution for low income region lies in growth of non-agriculture sector in order to absorb surplus labour in agriculture, which is evident from low productivity. Vaidyanathan (1986) found a positive association between the unemployment rate and the incidence level of rural non-agricultural employment in states. He argues that in a situation where the labour absorptive capacity of agriculture becomes limited and the urban industrial sector is not able to accommodate the ever-growing labour force, the non-farm sector tend to act as a 'sponge' for the surplus labour. The rural non-farm sector thus acts like a residual sector in which rural workers concentrate on account of their distress conditions. This is popularly known as the

push phenomenon or distress hypothesis which was subsequently, supported by several scholars. The above discussion suggests that pull as well as push-related factors promote rural non-farm employment (RNFE) growth. These labour needs to be trained for more skilful work, as more than 30 per cent of rural population in these states are still illiterate. RNFE is especially dynamic with farm households diversifying into the sector to increase income (Binswanger-Mkhize, 2013). Moreover, the rural transformation should help men and women build assets and develop their skills so that they can access new opportunities for income generation and employment. Though, supportive policies, robust institutions and reliable services (micro-credit, veterinary and crop advice, markets, etc.) are essential for inclusive growth and to increase people's participation in development.

Some evidences from Village Dynamics Studies

The present study of Village Dynamics Studies in South Asia (VDSA) piloted by International Crops Research Institute for Semi-Arid Tropics (ICRISAT) expanded to eastern India in the year 2009. Two districts in 3 eastern states each- Bihar, Jharkhand and Orissa, were selected and 2 villages from each selected district were considered for observation and collection of longitudinal data from selected 40 households in each village. A resident investigator posted in the village collects information on continuous basis. Table 7 presents the average operational holding with different category of households alongwith the number of plots. The households with less than 0.5 acre land were considered under landless class. It appears that within two years, the operational holding of landless and small holding class has increased in all 3 states, which were taken on lease from medium and large farmers. However, the fragmentation of holding restricts the landless and small holders to get the benefit of economy of scale in field operations.

Table 7. Average operational holding (Acre) in VDSA Eastern India Villages

State	2010				2012			
	Landless (LB)	Small (SM)	Medium (MD)	Large (LA)	Landless (LB)	Small (SM)	Medium (MD)	Large (LA)
Bihar	0.13 (1)	1.04 (5)	1.94 (7)	6.30 (11)	0.28 (1)	1.22 (6)	1.67 (7)	5.09 (11)
Jharkhand	0.38 (2)	0.89 (4)	1.65 (4)	5.51 (5)	0.48 (2)	1.26 (4)	1.84 (5)	4.03 (6)
Odisha	0.73 (1)	1.36 (3)	2.98 (4)	5.98 (5)	1.77 (2)	1.41 (3)	2.87 (4)	5.25 (5)

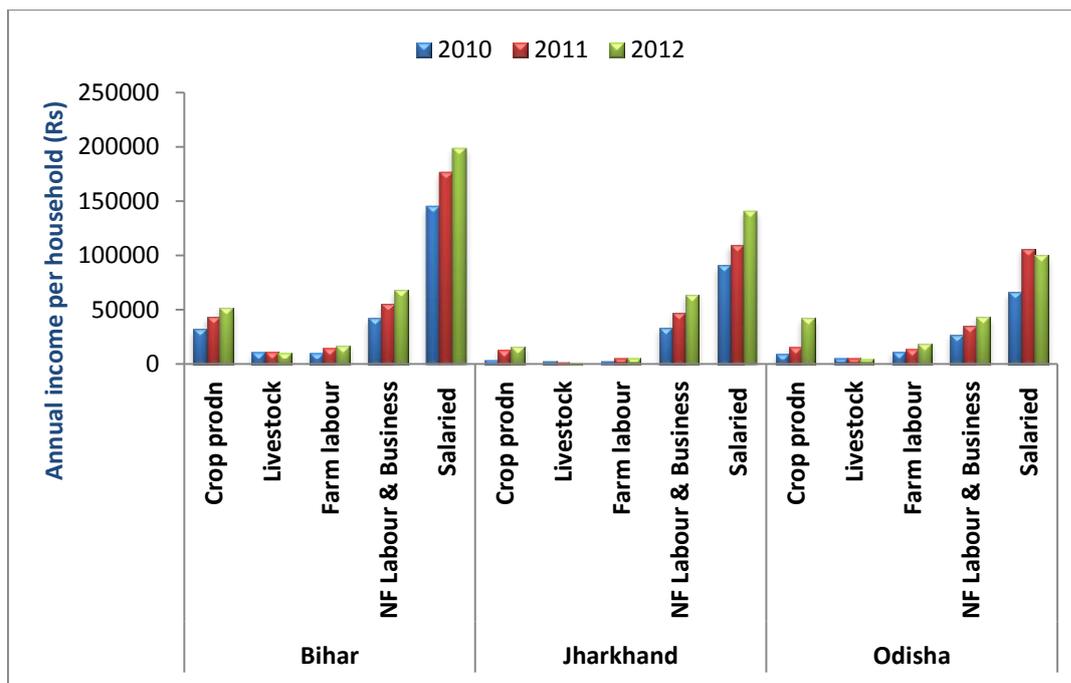
Figures within parentheses indicate average number of plots under respective category

One of the key findings emerged from 3 years observation that there are not a single household who completely depends on crop production only for their livelihood. They diversify their income sources into livestock, wage income, small business (shop), service provider or salaried job in nearby market. Income from all the sources increased during last 3 years, however the absolute income as well as increase in income has been slowest in crop as well as livestock sector. Even income from farm wage also is very low and slow. Instead,

many household members are joining salaried job or doing business in daily commutable market. The trend is a clear evidence of discernible expansion of non-farm employment in the village economy.

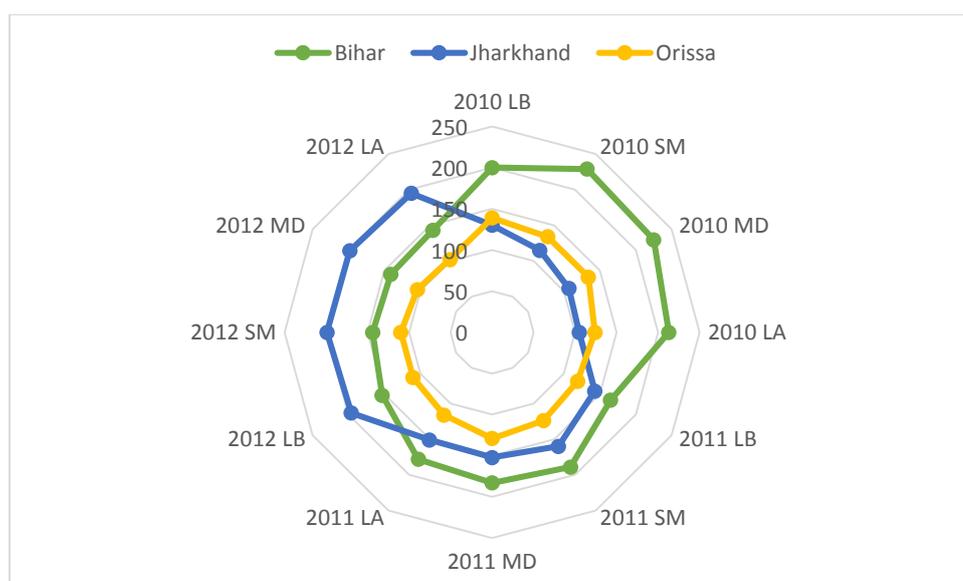
Fig 11 also substantiate the declining interest of farmers of Bihar in crop production as cropping intensity has come down significantly in the recent year, while same has increased in Jharkhand state. Though, in Orissa, there is no significant difference.

Fig 10. Averages Income from all sources in VDSA villages in eastern India



Note: Wages income including salaried job, farm and non-farm Income & others (Temporarily wage income)

Fig 11. Cropping Intensity in VDSA Eastern India



LB- Landless labour; SM- Small farmers; MD- Medium farmers; LA- Large farmers

Rural transformation taking place in rural area of eastern India is more visible in Table 8, which highlights the shift in occupational preferences by the rural population. It may be observed that in Bihar, about 10 per cent of farmers, who were earning their livelihood from farming have left farming by the year 2012. Similar is the case with farm labours, who are preferring to work in non-farm activity.

Table 8. State wise Occupational mobility matrix: 2010 Vs 2012

Occupation	100 % (2010)	Farming	Farm labor	Business	Salaried job	Caste occupation	Non-farm labor	Livestock	Other NF*
BIHAR: 2010 vs 2012									
Farming	109	90.8	0.0	0.0	2.8	0.9	0.9	0.0	4.6
Farm labor	10	0.0	70.0	0.0	0.0	0.0	30.0	0.0	0.0
Business	12	0.0	0.0	83.3	8.3	0.0	0.0	0.0	8.3
Salaried job	68	4.4	0.0	4.4	83.8	1.5	2.9	0.0	2.9
Caste occupation	3	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Non-farm labor	80	1.3	2.5	6.3	6.3	3.8	80.0	0.0	3.8
Livestock	5	0.0	0.0	0.0	20.0	20.0	0.0	60.0	0.0
Other NF	10	20.0	0.0	0.0	30.0	10.0	10.0	0.0	30.0
JHARKHAND: 2010 vs 2012									
Farming	152	79.6	1.3	0.0	2.0	0.7	15.8	0.0	0.7
Farm labor	12	8.3	33.3	0.0	0.0	0.0	58.3	0.0	0.0
Business	7	14.3	0.0	71.4	14.3	0.0	0.0	0.0	0.0
Salaried job	20	5.0	0.0	0.0	80.0	0.0	10.0	0.0	5.0
Caste occupation	5	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Non-farm labor	51	5.9	0.0	2.0	3.9	0.0	88.2	0.0	0.0
Livestock	1	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
Other NF	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
ORISSA: (2010 vs 2012)									
Farming	120	81.7	5.8	1.7	1.7	1.7	5.0	0.0	2.5
Farm labor	48	14.6	54.2	10.4	2.1	0.0	12.5	2.1	4.2
Business	17	5.9	0.0	88.2	0.0	0.0	5.9	0.0	0.0
Salaried job	34	11.8	0.0	5.9	76.5	0.0	2.9	0.0	2.9
Caste occupation #	2	50.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0
Non-farm labor	34	5.9	14.7	0.0	5.9	0.0	73.5	0.0	0.0
Livestock	4	25.0	0.0	25.0	0.0	0.0	0.0	50.0	0.0
Other NF	14	0.0	0.0	0.0	14.3	0.0	14.3	7.1	64.3

*Other NF - Other Non- Farm work (Private contract job, Retired, Searching job "unemployed", Daily wages job)

However, the trend is not the same in other two states. In Jharkhand, on one hand, some of the farmers have shifted their main occupation away from farming, while new generation of farmers are turning to this sector from erstwhile small business, farm labour and non-farm labour category. Similar trend is true in Orissa, where significant number of rural folks who were earlier engaged in different kinds of non-farm activities are getting interested in farming.

Different government programmes launched by central as well as state governments play important role in rural transformation. There are several programmes which are meant for either crop/livestock productivity improvement, asset creation or social protection. However, all are not widely spread with similar enthusiasm everywhere. In the study area of eastern India, it may be noted that there are only few programmes particularly related to productivity improvement, which are implemented in all the villages. Interestingly, programmes like KCC, NFSM, NHM, RKVY, SHG, Livestock insurance, etc. have completely disappeared in all the villages of Bihar and Jharkhand. Orissa state has been quite aggressive in expanding the reach of these programmes very well.

Table 9. Government sponsored social safety net and development programmes in selected states

Sr No.	Government Development Program	2010			2012		
		Bihar	Jharkhand	Odisha	Bihar	Jharkhand	Odisha
I.	Crop/ Livestock Improvement						
1	Kisan Credit Card Scheme(KCC)	***	**	*			*
2	National Food Security Mission (NFSM)	*	*	*		*	****
3	National Horticulture Mission	*				*	***
4	Rashtriya Krishi Vikash Yojana (RKVY)	*			*		****
5	Self-help group (SHGs)/ Farmers club	*	*	***			
6	Subsidy on farm well/ Farm ponds			*		*	***
7	Subsidy on purchase of agril. implements/machinery	*			***		
8	Livestock insurance	*		*			
II.	Social Protection						
10	Anganwadi	****	****	****	**	***	****
11	Drought/Flood relief	**	*	*			*
12	Mid Day Meal Scheme	**	***	****	****	****	**
13	National Rural Emp. Guarantee Scheme (NREGS)	**	***	****		***	*
14	Old age pension	***	***	***	***	***	*
15	Pension for physically handicapped	*	*	***			****
16	Public Distribution System (PDS)	****	****	****	****	****	****
III	Health & Sanitation						
17	Family planning	*	*	*			**

Note: Number of * indicate number of villages covered under the scheme

Key issues to catalyse rural transformation

Mellor (1978) argues that rural diversification in India is the outcome of technology-induced growth in the agricultural sector. On the production side, a growing agriculture requires inputs of fertilizer, seeds, herbicides, pumps, sprayers, equipment and repair services either produced or distributed by non-farm enterprises. Increased agricultural output in a forward direction also stimulates milling and processing activities. The consumption linkage in agriculture arises when growing farm income boosts demand for basic consumer goods. This linkage increases over time as rising per capita income (PCI) induces diversification of consumption spending into non-foods. Improved access to physical or produced capital (basic infrastructure and the production assets and means which enable people to pursue their livelihoods) is an essential element to provide meaning employment for rural people engaged in farming and other activities. In addition to physical capital, the financial resources available to people (including savings, credit, remittances and pensions) provide them with different livelihood options (Carney, 1998). Therefore, to catalyse the rural transformation in rural eastern region, where still large population are engaged in farming, following strategies may be considered:

1. **Agriculture-led growth:** The large population in eastern states depend on agriculture, therefore rural transformation in these states require an agriculture-led growth, which include-
 - a. Productivity improvements, through appropriate R&D efforts, transfer of modern technologies and capacity building of farmers. Higher crop productivity and livestock productivity is a key factor in rural poverty reduction.
 - b. Management of water economy, including water harvesting, increasing water productivity and bringing larger area under irrigation. It would help in shifting traditional crop production to more high value crops production.
 - c. Development of market infrastructure at district-level
 - d. Promotion of agro-based industries in rural areas according to the comparative advantage
 - e. Climate change preparedness
2. **Building up rural infrastructure**, with special focus on energy, roads and financial services
3. **Improving social infrastructure**, primary health care facilities and schooling in rural areas and, finally
4. Strengthening wide scale **usage of ICTs**.

Conclusions

Agriculture and allied sector (livestock, fisheries and poultry) is strategically important for sustainable and inclusive development of rural eastern region. It is a major employer and a means of reducing poverty and ensuring food security. In coming years, agriculture needs to change profoundly in the region to meet increasing demands while facing more competitive and volatile markets, and the effects of climate change. Small family farms while highly

heterogeneous, growing demand for high-quality nutritious food and other agricultural goods would create opportunities for them to become viable businesses. However, many of the factors underlying constrain the entrepreneurship of smallholder farmers. Due to unviable land holding and low profitability of farming, small farmers in eastern states are entering into labour market to supplement their livelihood. Therefore, small farming has to be made viable through massive public investment in basic and social infrastructure and, establishing new institutions like farmers groups, so as to reduce the cost of cultivation and contributes to more marketed surplus. Although the production of high-value agriculture is labour-intensive and thus more suitable for smallholders, they face a number of constraints- high perishability, fragmented markets, high price volatility, low volumes of marketable surplus and remote location of operation with poorly developed infrastructure. As a result, smallholders face high transaction costs and risks in production and marketing of such commodities. The evidence suggests that the support should be oriented towards enhancing agricultural productivity, effective delivery of public goods and associated services such as R&D, irrigation, and other infrastructure. The next biggest challenge in the region (Bihar, Jharkhand and Orissa) is educating and skilling large and growing young population. In this context, significant upgradation of rural education, health care and infrastructure are vital. Further improving the effective scale-neutral technological intervention providing accurate information of market and monsoon will help everyone better return in the long run. Public-private partnership will play an important role in realizing strategies that promote resilience, such as by providing incentives for investments that reduce vulnerability to shocks; or that improve risk management capacity (social protection and education); fostering well-functioning markets; and ensuring good governance.

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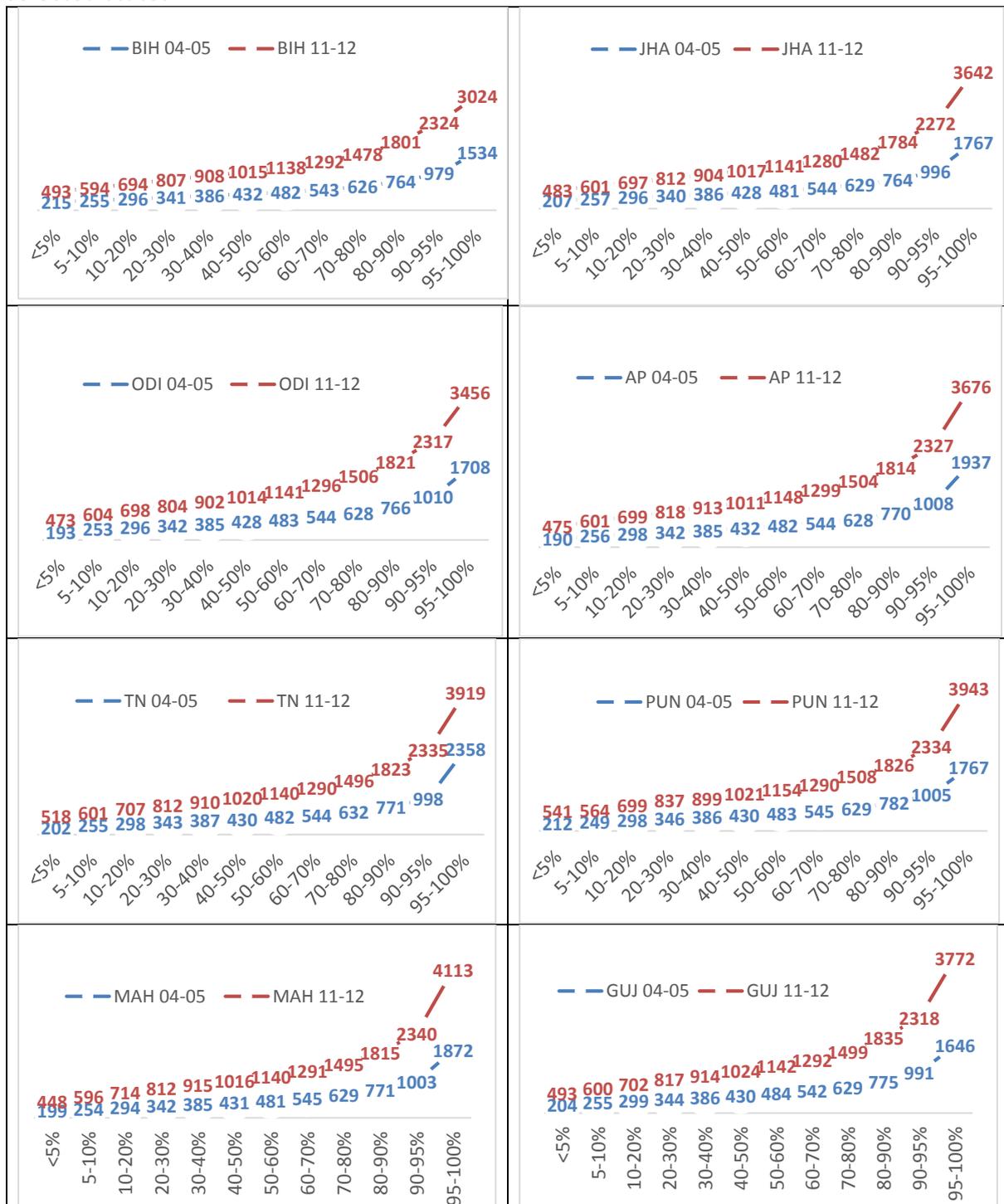
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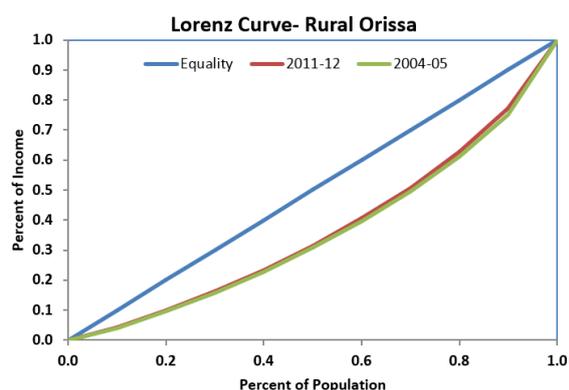
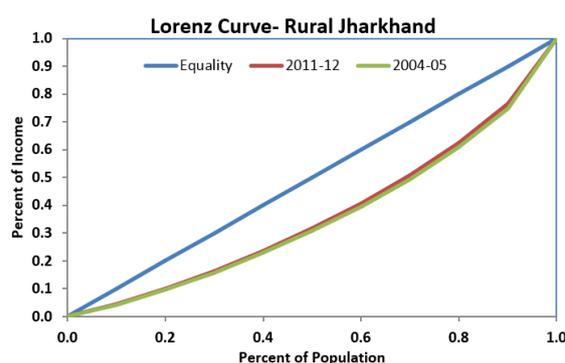
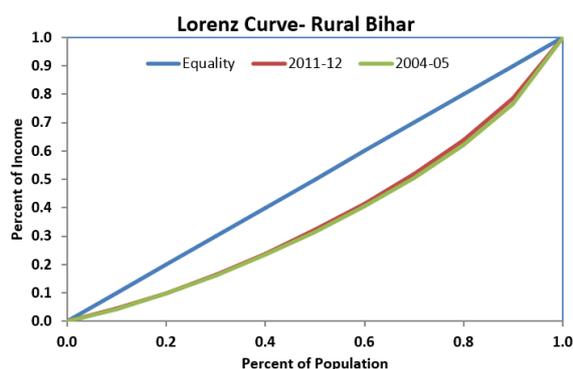
Annexure I. Monthly per capita expenditure by different income categories in rural area of selected states



Source: Authors own estimation

Bih- Bihar, JHA- Jharkhand, ODI- Odisha, AP- Andhra Pradesh, TN- Tamil Nadu, PUN- Punjab, MAH- Maharashtra, GUJ- Gujarat

Annexure II. Income distribution in rural area of selected states in 2004-05 and 2011-12



Gini coefficient	2004-05	2011-12
Bihar	0.909	0.907
Jharkhand	0.911	0.908
Orissa	0.910	0.908

Annexure IV. State-wise Comparison of Trend Growth (2000-01 to 2009-10) in Production of Major Crops

Commodity	Low (< 2.0 %)	Medium (>2% and <4%)	High (> 4%)
Rice	BH , HP, ASM, TN, UP, UTL, WB, MH, MP	J&K, PJ, KAR, AP	HR, CHT, OR , GJ, JH , RJ
Wheat	ASM, HP, WB, PJ, UP, HR, UK, BH	RJ	KAR, JH , J&K, MP, MH, GJ
Maize	MP, UP, GJ, HP, J&K, BH	PJ, RJ	JH , KAR, AP, MH, WB, TN
Total cereals	BH , UP, WB, PJ, TN	HR, MH, MP, KAR, RJ, AP	CHT, OR , JH , GJ
Gram	WB, UP, BH , ASM, UTL, HAR	-	RJ, MP, KAR, CHT, OR , MH, AP, GJ
Arhar	TN, UP, BH , AP	MH, MP	OR , KAR, GJ, JH
Total pulses	PJ, TN, WB, BH , UP, MP	HAR, MH, RJ	KAR, CHT, AP, OR , GJ, JH
Total foodgrains	BH , ASM, UP, WB, UTL, TN, PJ	HR, MP, MH, RJ, KAR, AP	CHT, OR , JH , GJ
Groundnut	KAR, TN, MH, UP, AP, MP		GJ, RJ, OR
Rapeseed/mustard	PJ, ASM, UP, BH	HAR	GJ, RJ, MP

Total oilseeds	TN, PJ, ASM, UP, KAR, AP, HR	BH, WB	OR, GJ, MP, RJ, MH
Sugar cane	PJ, HP, WB, KAR, UTL, OR, AP, UP, ASM, BH, GJ, TN	--	MP, MH

Source: Ramesh Chand and Shinoj (2012)

AP: Andhra Pradesh; ASM: Assam; BH: Bihar; CHT: Chhattisgarh; GJ: Gujarat; HR: Haryana; HP: Himachal Pradesh; J&K: Jammu and Kashmir; JH: Jharkhand; KAR: Karnataka; KL: Kerala; MP: Madhya Pradesh; MH: Maharashtra; OR: Orissa; PJ: Punjab; RJ: Rajasthan; TN: Tamil Nadu; UP: Uttar Pradesh; UK: Uttarakhand; WB: West Bengal

Annexure V. State-wise Comparison of Trend Growth (2000-01 to 2009-10) in Production of Major Livestock Products

Commodity	Low (< 2.0 %)	Medium (>2% and <4%)	High (> 4%)
Milk	KL, KAR, ASM, HP, J&K	CHT, HR, PJ, TN, WB, UTL, MH, RJ	UP, MP, GJ, AP, OR, BH
Egg	JH, KL, ASM, MP, RJ, MH	WB, PJ, J&K, KAR, UP, CHT	AP, BH, UTL, OR, TN, GJ, HR
Wool	TN, JH, HR, PJ, MP, RJ, BH, UTL, UP, HP, MH, GJ, WB, CHT, KAR	J&K	AP
Meat	WB, KL	KAR, UTL, BH	RJ, GJ, AP, MH, MP, OR, UP, TN, HR, PJ

Source: Ramesh Chand and Shinoj (2012)

Annexure VI. Village Profile of selected villages under VDSA study

State/District	BIHAR		JHARKHAND		ORISSA	
	Darbhanga	Patna	Dumka	Ranchi	Bolangir	Dhenkanal
House hold in village	1234	1225	591	566	478	730
Population in Village	8090	6901	2701	2812	1968	3424
% SC/ST Population	31	24	56	83	28	18
% Landless Labor in village	54	29	17	12	17	17
% Small Farmers	8	13	17	12	9	8

Annexure VII. Cropping Pattern in selected VDSA study area in Eastern India

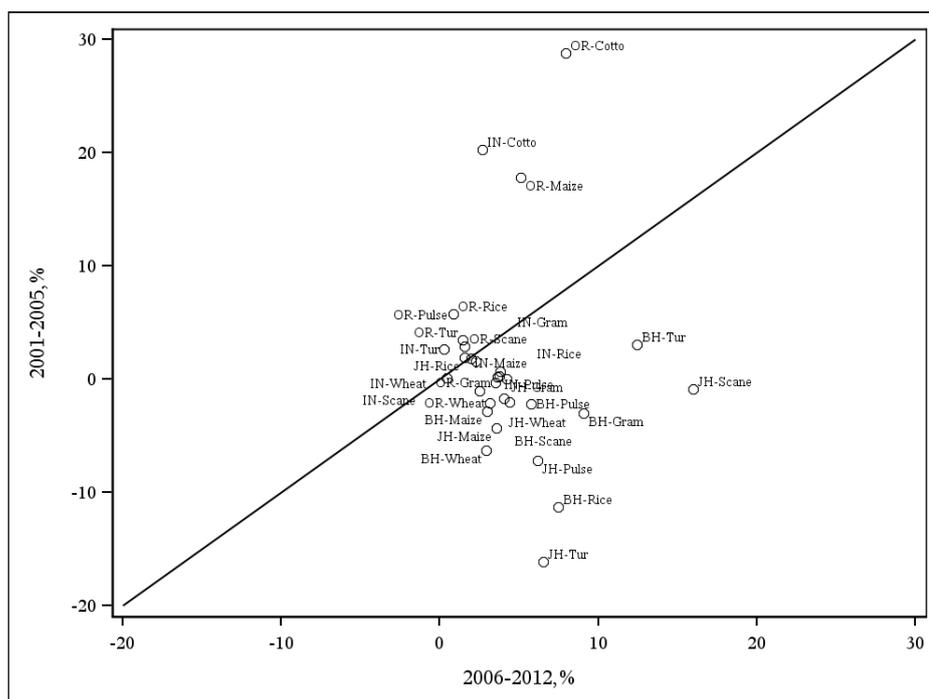
BIHAR-2010								
Crops	DHARBANGA				PATNA			
	LB	SM	MD	LA	LB	SM	MD	LA
KHARIF								
Paddy	100	94	98	93	100	97	95	97
Vegetables		0.25		0.08		0.47	0.31	
Others		5	2	7		2	5	3
RABI								
Wheat	86	79	70	75	100	68	72	79
Maize		3	5	1				
Pulses	9	10	19	19		22	23	16
Vegetables	5	7	6	4		10	2	3

Others		0.18	0.22	0.33			3	3
BIHAR- 2012								
KHARIF	DHARBANGA				PATNA			
Paddy	100	100	100	99	100	98	97	99
RABI								
Wheat	76	80	81	86	100	82	80	86
Pulses	23	11	16	10		9	7	6
Vegetables	1	4	2	3		2	2	1
Others		3	1	1		7	10	7

JHARKHAND- 2010								
Crops	DUMKA				RANCHI			
KHARIF	LB	SM	MD	LA	LB	SM	MD	LA
Paddy	85	78	74	83	88	82	66	90
Maize	11	19	17	13		0.20		1
Pulses	4	3	4	3		10	22	8
Vegetables	0.25	0.26	3	1	12	7	8	1
Others			2				4	0.39
RABI								
Wheat	43	49	23	57		17		
Pulses	29	12				8	24	9
Vegetables	29	38	77	19	100	75	76	91
Others				24				
JHARKHAND- 2012								
KHARIF	DUMKA				RANCHI			
Paddy	87	82	90	82	80	85	84	89
Maize	10	17	7	11			1	
Pulses	3	1	3	6	2	12	13	5
Vegetables	0				18	3	1	1
Others				1			1	5
RABI								
Wheat	13	18		20		29	17	
Pulses	53	34		10	11	37	23	
Vegetables	33	41	100	60	89	34	53	100
Others		7		10			7	
ORISSA-2010								
KHARIF	BOLANGIR				DHENKANAL			
Crops	LB	SM	MD	LA	LB	SM	MD	LA
Paddy	75	10	86	80	100	100	96	97
Pulses	3	5	7	6			3	1
Vegetables	6	3	3					
Others	16	2	4	14			1	
RABI								
Pulses	100	82	82	96	100	22	69	89
Vegetables		18	13			7	4	11
Others			4	4		70	27	
ORISSA-2012								
KHARIF	BOLANGIR				DHENKANAL			

Crops	LB	SM	MD	LA	LB	SM	MD	LA
Paddy	23	92	94	86	97	100	100	100
Pulses	3		3		3			
Cotton	74	8	3	12				
RABI								
Pulses		73	70	64	97	96	98	99
Vegetables	100	11	8	9	3	4	2	1
Others		15	22	27				

Annexure VIII. Annual growth of crop yield of major crops during 2001-2005 and 2006-2012 periods in major states



Annexure IX. Percentage of Education and Occupational Pattern of VDSA Household member in Eastern India: 2010-2012

Education Level	Occupation	Bihar				Jharkhand				Orissa			
		Darbhanga		Patna		Dumka		Ranchi		Bolangir		Dhenkanal	
		2010	2012	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
No formal schooling	Business	36	27	nil	nil	13	20	nil	nil	20	33	6	8
	Farming	35	39	11	12	35	34	33	33	35	25	9	15
	Non-Farm	22	20	44	42	31	38	37	26	12	15	48	28
	Salaried Job	4	8	2	0	25	13	13	17	0	10	nil	nil
Primary level	Business	0	14	nil	nil	nil	nil	nil	nil	nil	nil	6	4
	Farming	6	4	4	3	10	11	13	15	19	19	33	32
	Non-Farm	10	9	13	26	16	12	3	16	18	27	16	16
	Salaried Job	0	4	4	6	nil	nil	20	6	nil	nil	4	4
Secondary level	Business	18	23	nil	nil	25	10	0	20	20	33	24	25
	Farming	10	9	9	15	29	32	18	18	25	29	19	14
	Non-Farm	21	23	25	21	28	20	23	22	29	23	20	32
	Salaried Job	9	8	7	9	13	25	7	11	0	10	8	4
SSC/ Intermediate	Business	45	36	43	63	63	70	100	80	40	33	47	50
	Farming	44	40	50	40	26	23	35	32	20	26	35	36
	Non-Farm	46	48	19	11	25	30	37	34	41	27	12	24
	Salaried Job	61	42	46	40	38	50	33	39	63	70	54	50
Graduate and above	Business	nil	nil	57	38	nil	nil	nil	nil	nil	nil	18	13
	Farming	5	7	26	30	nil	nil	1	1	2	1	4	3
	Non-Farm	nil	nil	nil	nil	nil	nil	0	2	0	8	4	0
	Salaried Job	26	38	41	45	25	13	27	28	38	10	35	42