



International Journal of Economic Research

ISSN : 0972-9380

available at <http://www.serialsjournals.com>

© Serials Publications Pvt. Ltd.

Volume 14 • Number 15 (Part 3) • 2017

Diversification for Sustainable livelihood Outcome in India: A Study in the Macro and Micro Perspectives

Mahua Bhattacharjee¹

¹Associate Professor, Amity School of Economics, Amity University, Sector, 125, Noida

ABSTRACT

Diversification in livelihood includes activities which are undertaken for generating additional income or as a coping strategy to reduce the vulnerability. In this paper effort is made to understand the prospect of diversification in Indian economy. The analysis is made both at micro and macro perspectives. At a macro level it can be understood that there is a major shift of employment towards construction, trade, and manufacturing sector. With the focus on two strategies - migration and crop livestock integration an intricate study is made to get the working of diversification as source of livelihood within the rural and urban areas. Consumer expenditure is found to be the prime use of remittances in India. Remittances are used primarily for the investment purposes only in urban areas to some extent. Increase in demand for livestock products along with good performance indicates opportunities for marginal and small farmer. They can increase livestock production and take benefit from subsidiary income which can work as coping strategy for sustainable livelihood outcome.

Based on the study report at rural and urban Assam attempt is made to understand the play of different strategies like migration and crop livestock integration for sustainable livelihood. Repeated floods, increasing expenditure, increase in wages and input prices and absence of subsidiary source of income are the push factors for out migration. Unique case studies are referred to understand the degree of uncertainty and the coping strategies undertaken by men and women categorically for livelihood. It clearly establishes the need of transformation and adaptation to the changes for diversification and so for the sustainability of livelihood outcome.

1. INTRODUCTION

Livelihood strategies with the utilisation of the capitals (physical, financial, social, human and natural) achieve an output which is termed as livelihood outcome. A livelihood is sustainable when it can maintain or enhance the different elements which determine living of an individual or group of people. Sustainability of the livelihood is based on this livelihood outcome. In addition, livelihood must be also capable to cope and recover from stress and shocks for sustainability. There are certain factors on which the activities are dependent- natural forces and human forces, the market, state and civil society. There may be number of other sources - single or multiple, from which outcomes of livelihood may arise. In the broad area of livelihood activities like participation in a community projects or labour exchange which help the household to entitle in future social claims are also included. Assets, capabilities, activities and the access to these things are the basic elements affecting livelihood. Sustainable livelihood thus encompasses the multiple elements which influences the living. The vulnerability, inversely affects the sustainability which is measured in terms of the livelihood capitals. With the interaction of these components with each other a self defined goal or outcome of livelihood is determined.

Sustainable livelihood requires enhancement of assets and also ability to cope shocks and stresses thus, vulnerability context is integrated within the approach. The definition of livelihoods adopted by Carney (2013), suggests the need to understand the livelihood strategies and vulnerability of the poor as the starting point in a livelihoods analysis. DFID, Chambers and Moser have placed vulnerability in the centre for understanding the condition of the poor. Vulnerable factor influence the external environment in which people live and they have limited or no control on them. According to Devereux (2001), vulnerability context makes the external environment in which people exist and gain importance through direct asset status owned directly by them. DFID gave the importance of the vulnerable factors as they have direct impact upon asset status of people and on the options open to attain beneficial livelihood outcome.

In the present scenario diversification in the livelihood has become the key word for better living and for being more resilient to shocks and stresses. FAO considered that diversification is the most important source of poverty reduction for small famers in South and South – East Asia (FAO, 2001). In simple terms the process by which rural farm households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living is called sustainable livelihood (Ellis, 2000).

The common issues in rural India like repeated failure of crop for unfavourable weather, increasing expenditure structure for rise in wages and inputs prices and absence of subsidiary earning opportunity in the villages are pushing the labour to nearby urban centres for liquid money. In post liberalisation period uncertainty in weather and market condition, competition from substitute/ better/cheap product and increasing expenditure structure has relatively made livelihood tougher. Artisans are mostly found in the most depleting state mainly for the open market, poor organisational support and for limited scope to out migrate. Uncertainty in price and climatic behaviour, Illiteracy and Competition are basic challenges which are leading to population pressure and indebtedness followed by fragmentation. These factors keep the economy bounded by a 'vicious circle' leading to subsistence earning. At this point livelihood strategy of one section gets into poverty trap and another recovers and attains better living. First group follows a static strategy without any diversification and the second constantly diversifies and reinvests. Static strategy leads to insecurity, sickness, and low work participation ultimately leading to poverty trap and unsustainable livelihood. On the other hand with diversification and reinvestment by credit support, higher security and sustainable livelihood is attained both in rural and urban areas. In between, the vulnerable factor by

shocks and stresses also force the less resilient livelihoods to take up coping and adaptive strategies like selling land, livestock, taking loan, migration, weaving in adhi¹, giving livestock and betel nut tree in adhi, mortgaging land etc. These strategies may lead towards unsustainable livelihood if the reinvestment steps are not followed strategically. Coping strategies may be employed systematically in certain periods every year, or special strategies may be employed during periods of severe or unusual crisis.

The objectives of the study are to understand the present status of the livelihood strategies in India and examine some prospective strategies of livelihood for sustainable livelihood outcome. The study reviews the status by the secondary data analysis and for the deeper insight of sustainable livelihood outcome combination of both quantitative and qualitative method is used. Primary data is analysed mainly by the case study method to understand the prospective activities with the limited diverse portfolios. For the primary data analysis the area of the study selected is Assam where the performance in primary sector is gradually showing an improvements. The districts selected are Nagaon and Kamrup from Assam with highest population of urban and rural areas respectively. The villages are purposively selected on the criteria of population distribution by occupation (Agricultural labour, Casual labour and Artisans for Rural and Self-employed, Casual labour and Regular worker for Urban)

1.1. Diversification of livelihood: Macro perspective

The degree of diversification at macro perspective is discussed on the basis of the contribution of different sectors in the economy by GVA and the distribution of persons employed in the sector. These are to be taken separately by which firstly the growth in the sectors during the time period and so the scope of the prospective sectors can be identified.

1.1.1. Sectorial contribution by GVA (Gross Value Added)

Planning Commission (2015) indicates that service sector is the largest sector of India. This sector accounts for 52.97% of total India's Gross Value Added, contribution of the industry sector is 30.02% and agriculture and allied sector share is 17.01%. In 2011-12 Prices the Figure 1 indicates the steady increase in GVA from service sector and the agriculture and industry sector is showing a fall relative to the previous year since 2013-14. To understand the sectorial contribution in detail component wise the distribution of GVA is to be seen.

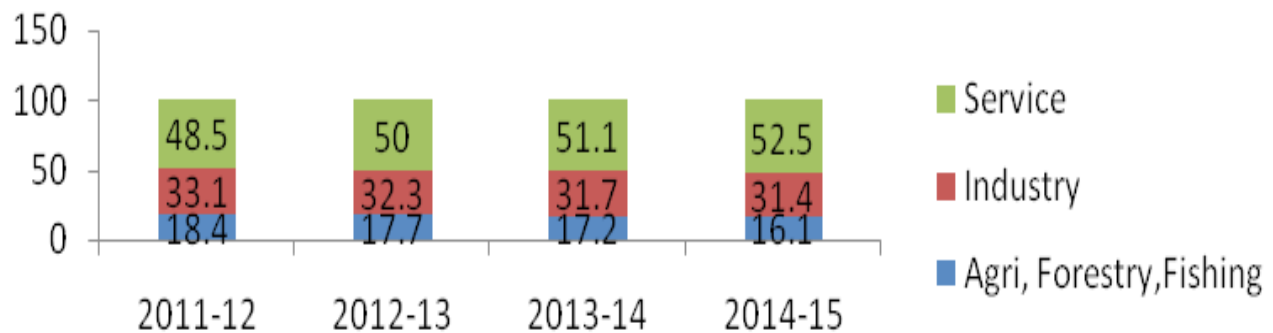


Figure 11.1: Sector wise share in GVA at 2011-12 Prices

CSO, 2015

Presently CSO revised the methodology for calculating national accounts aggregates to make the analysis more applicable at international level. The base year for national accounts has been revised from 2004-05 to 2011-12. By the new series the Gross Value Added (GVA, earlier referred as Gross Domestic Product) at 2011- 12 basic prices for the agriculture and allied sectors grew to Rs. 15.82 lakh crores in 2014-15 from Rs. 15.79 lakh crores in 2013-14, or 0.2 per cent. The GVA growth rate for the agriculture and allied sector during 2013-14 was 3.7 per cent; the sub-sectoral growth in agriculture including livestock was 3.9 per cent, in forestry and logging was 0.3 per cent and in fishing was 5.8 per cent (CSO, 2015).

Table 11.1 displays the growth of GVA sub sector wise where the steady improvement is noted excluding mining and quarrying. In 2013-14 all the items under agriculture, forestry and mining shows a positive growth and a recovery in the sector relative to 2012-13 is clear. With the limitation of data availability for the items within *agriculture and allied sector for the year 2014-15(Provisional estimates)* it can be inferred that in 2013-14 that the sector is recovering comprising crop, livestock, fishing and forestry. In the stated period decline in manufacturing sector is dominant which was followed by improvement in the following year where mining and quarrying shows a steep fall. It can be asserted that in the time period factors like policy implication and world economic slowdown did not give the industry sector a steady growth as of service sector. Within an unfavorable world economy India managed to positively contribute as the sectors balanced each other and domestic economy got strengthened in the time period(GVA at basic prices moved from 4.9 to 7.2).

Table 11.1
Growth of Gross Value Added (GVA) at 2011-12 Prices Sector-wise Growth Rate of GVA 2011-12 Prices

<i>Items</i>	<i>2012-13</i>	<i>2013-14</i>	<i>2014-15(PE)</i>
I. Agriculture, forestry & fishing	1.2	3.7	0.2
Crops	-0.1	3.3	
Livestock	5.1	5.5	
Forestry and logging	-0.7	0.3	
Fishing and aquaculture	5.5	5.8	
II. Industry	2.4	4.5	6.1
Mining & quarrying	-0.2	5.4	2.4
Manufacturing	6.2	5.3	7.1
Electricity, gas, water supply & other utility services	4.0	4.8	7.9
Construction	-4.3	2.5	4.8
III. Services	8.0	9.1	10.2
Gross Value Added at basic prices	4.9	6.6	7.2

CSO 2015PE-Provisional estimates

1.1.2. Distribution of persons employed

In the livelihood study both the contribution on income and employment or the occupational structure is to be examined. With the purpose of knowing the livelihoods scope for sustainable livelihood outcome changes in the time path on persons employed by industry section is done.

In India, a (48.9 per cent) large proportion of workforce is still dependent on agricultural sector. Table 11.2 shows the changes in employment (Usual principal status + usual subsidiary status) by industry sections of rural India. In terms of employment in service sector, in urban areas the share was 58.7 per cent (2011-12), compared to just 16.1 per cent in rural regions. The share of industry, (which consists of both manufacturing and construction), stood at 31.3 per cent of GDP in 2015-16. This has remained more or less stagnant, since 2013-14, due to the manufacturing component, which remains at around 17.3 per cent of GVA in 2013-14 and 2015-16. *In terms of employment, manufacturing has not been a major long-term driver of job creation in India.* After fluctuating around 11 per cent for some time, it increased quite strongly to 12.6 per cent in 2011-12 before declining to 10.7 per cent in 2013-14.

Table 11.2
Percentage distribution of persons employed (Usual principal status + usual subsidiary status) by industry sections, Rural India

<i>Industry section</i>	<i>1972-73</i>	<i>77-78</i>	<i>83-84</i>	<i>87-88</i>	<i>93-94</i>	<i>99-2000</i>	<i>2004-05</i>
Agriculture	86.5	84.4	82.5	79.6	80.2	78.4	74.9
Mining and Quarrying	0.3	0.4	0.5	0.6	0.6	0.5	0.5
Manufacturing	5.2	6.2	6.7	7.2	7	7.5	8.2
Electricity, Gas, Water	0.1	0.1	0.1	0.2	0.2	0.1	0.1
Construction	1.4	1.2	1.5	3.2	2.1	2.8	4.2
Trade	2.3	3	3.2	3.6	3.8	4.4	5.4
Transport	0.5	0.7	0.9	1.1	1.2	1.7	2
Services	3.8	4.2	4.5	4.6	5.2	4.9	4.9

NSS Rounds (27, 32, 38, 43, 50, 55 and 61)

This table intensifies the point that in time period there is a marginal shift of persons employed from agricultural sector since 1972-73 to any other sector in rural India. The ILO report (Sher Verick and Ruchika Chaudhary, 2015) indicated that, in India the shift of labour from agriculture to manufacturing has not yet taken place to the same extent as of other South Asian countries.

In India, a large proportion of workforce is still dependent on the agricultural sector (48.9 per cent employment share in 2011-12). But as discussed above in the same period, its share in gross value added has fallen rapidly, from 18.4 per cent in 2011-12 to 16.1 in 2014-15 and further predicted to fall by 15.4 per cent in 2015-16.

By linking the contribution of sectors in GVA and occupational structure it is understood that agriculture occupies the highest source of employment in Indian economy but its contribution in GVA is relatively declining. For sustainable livelihood outcome the status of the sector is to be examined in depth to understand the gap and the prospect in the near future is to be projected.

1.1.3. Working of the Agriculture, forestry and fishing sector

In very broad way the diversification of livelihood in time period can be understood from the changes in the value of output of 4 important sectors (Agriculture, Livestock, Fisheries and Forestry). Figure 2 indicate that the livestock is the only sector which consistently shows an increasing growth rate. Forestry though has insignificant contribution but with time the value of output is increasing.

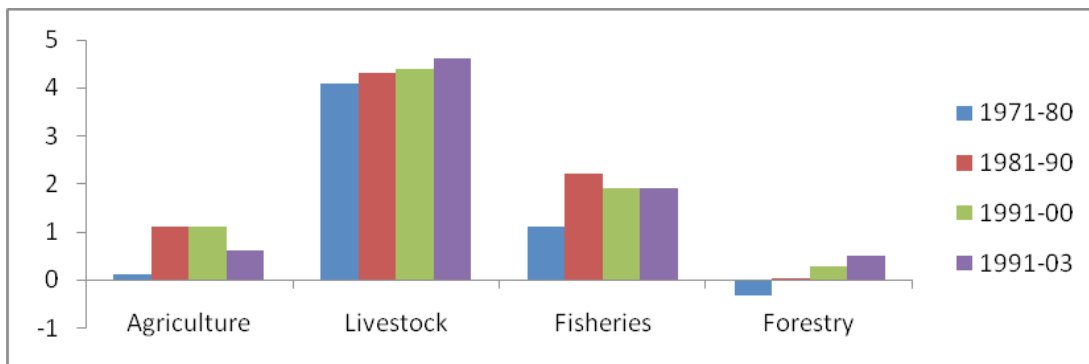


Figure 11.2: Contribution of agriculture and allied sectors

A deeper insight on the working of agricultural sector can indicate the gaps and scope for self-defined sustainable livelihood outcome.

Performance state wise: States like Odisha, Madhya Pradesh, Bihar and Chhattisgarh are the major drivers of agricultural growth. These states including Assam have 20-29% share of agriculture and allied sector in GSDP (Planning Commission, 2015). These states are showing growth momentum, whereas states like Punjab and Haryana for the early green revolution have reached the saturation point leading to limited yield growth.

Challenges in the sector : Volatility in agriculture and allied sector was relatively more than in any other economic activity. Between 2005-06 and 2013-14 the coefficient of variation was only 0.27 in case of overall GDP growth but 0.69 for agricultural GDP. Studies (State of Indian Agriculture, GOI, 2016) indicate that high volatility can be attributed to the continuous dependence on monsoon and increasing dependence of vulnerable section – marginal and small farmers to adverse climatic condition.

Studies indicate(CSO, 2015)that 85 percent of the operational holdings in the country are small and marginal, that is holdings of less than 2 hectares. From 2000-01 to 2010-11, the number of marginal holdings increased by 23 per cent and small holdings increased by 9 per cent. In terms of the proportion of area under different sized holdings, both the small and marginal holdings and semi medium and medium holdings in 2010-11 accounted for almost 45 per cent of the area. Remaining almost 10per cent of the land area is in the large holdings. This is indicative of the significant fragmentation of operational holdings in India. The figure indicates the medium holdings are getting converted frequently into small and marginal holdings. It is estimated that the average size of land holding, which at present is 1.15 hectare, is likely to reduce further by 2020-21 (CSO, 2015).

2. STRATEGIES FOR DIVERSIFICATION OF LIVELIHOOD

Within various problems and challenges in livelihoods, diversifications in strategies are essential for sustainable living. Based on the process of diversification it is classified as Horizontal and Vertical diversification. When farmers diversify their agricultural activities to stabilise or increase their income or both it is called horizontal diversification. Vertical diversification refers to the farmers' access to non farm income which means income generating from non agricultural sources. (Haque T. 1996). The element of diversification for sustainable livelihood outcome in this paper is studied under the two broad strategies - migration and crop- livestock integration.

2.1. Migration - Remittances as livelihood

Migration forms a central component of livelihood diversification. It is found that migration is accepted for providing the much needed resources for investment but empirical evidence contradicts this view point. Presently there are differences of opinion as to the degree to which remittances are used for rural investment.. Effort is made to understand the role played by migration in livelihood of India both in rural and urban areas through secondary data set.

Table 11.3
Migration rates (per 1000 persons) All India (Rural and Urban)

<i>Round (year)</i>	<i>Male</i>	<i>Female</i>	<i>Persons</i>
64 th (July 07-Jun 08)	54(259)	477(456)	261(354)
55 th (July 99-June 2000)	69(257)	426(418)	244(334)
49 th (Jan – June 1993)	65(239)	401(382)	228(307)
43 rd (July 87-June 88)	74(268)	398(396)	232(329)
38 th (Jan –Dec,1983)	72(270)	351(366)	209(316)

NSS Report No.533 Migration in India: July, 2007 – June, 2008

Figure in parenthesis is of urban areas

Table 11.3, indicates that the migration rates increased by 5% from 1983 to 2007-08 in urban areas. This increase in migration rate is observed that it is mainly for increasing female migration. Male rate of migration decreased by 2 percentage points and female migration has increased by 13% points in rural areas whereas in urban areas female migration increased by 9% points and male migration decreased by 1%.

2.1.1. Remittances by MPCE class

It is found that average amount of remittances received, during the last 365 days, from the out-migrants were nearly Rs. 9000 for the rural households in the bottom MPCE class, which increased more than fourfold for the households in the top MPCE class. In urban areas the average amount of remittances received for the bottom MPCE classes was nearly 15,000 which increased to nearly six fold to reach in the top MPCE class. For the referred classes in both rural (95%) and urban (93%) areas the household consumer

expenditure is the prime use of the remittances. Among the consumer expenditure high proportion of households had reported use on food item. And other important areas spent by the households are health care, education, debt repayment in order for rural household but in urban areas it is savings and investment (NSS Reports). Remittances brings benefits most directly to immediate family members. Remittances sent by the out-migrants to their former households play a vital role in livelihood and so considered as a major process of livelihood diversification (The Human Development Report, 2009). Male out- migrants from abroad had sent more remittances. In both rural and urban areas the percentage of households reporting out-migration of its members to abroad, have in general shows an increasing trend with the increase in MPCE. But in rural areas the receipt of remittances did not vary much with the increase in MPCE whereas in urban areas it increases with the increase in MPCE.

2.2. Crop – Livestock integration

Crop livestock integration is another form of strategies to enable the sustainable livelihood. The challenge for rural livelihood is to ensure that small and marginal farmers can increase productivity of traditional farming system with adoption of effective integrated system which conserve natural resources and can be sustainable in long run. Integration of crop and livestock can lead to livelihood diversification which refers to attempt by individuals and households to find new ways to raise incomes and work as coping strategy. This can lead to improve the standard of living. Ellis (1996) defines livelihood diversification as ‘the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standard of living’. Studies indicate that livelihood diversification in conjunction with other strategies of livelihood can lead to sustainable livelihood. Diversified system consists of components such as crops and livestock that co-exist independently from each other. For example piggery, poultry, crops and dairy are independent units. In the case of integration the objective is to recycle the resources efficiently leading to sustainable livelihood.

In India integrated farming has been a way of life and in such a system agriculture and livestock have a complementary relationship. This suggests that livestock alone cannot continue to grow for long without the support of agriculture and vice versa. Through centuries of experience, it is found that in Asia the integration of livestock, fish and crops has proved to be a sustainable livelihood strategy. In an integrated system, a synergy is created with the interaction leads to recycling of resources and allowing maximum use of available resources. The integrated system can help to improve soil organic matter, biological activity and potential disease suppression. This improved soil health will manifest itself quickly and include improved soil nutrient cycling, improved soil structure, better water holding capacity in droughty soils and improved drainage in heavy soils. But this system tends to become more vulnerable to disturbance as internally it is more complex and interdependent. It is essential that in this process of integration small farmers need to have sufficient access to knowledge, assets and inputs so that it can be efficiently managed over the long time.

Livestock and livelihood : To understand the scope of diversification in Indian rural economy through crop livestock integration attempt is made to understand the trend of livestock’s contribution in Indian economy. Livestock always played a significant role to make rural livelihood more resilient to the vulnerabilities. For the sustainability of livelihood it is indispensable that the livelihood is equipped enough to cope the stress and strain imposed by natural, social or other factors.

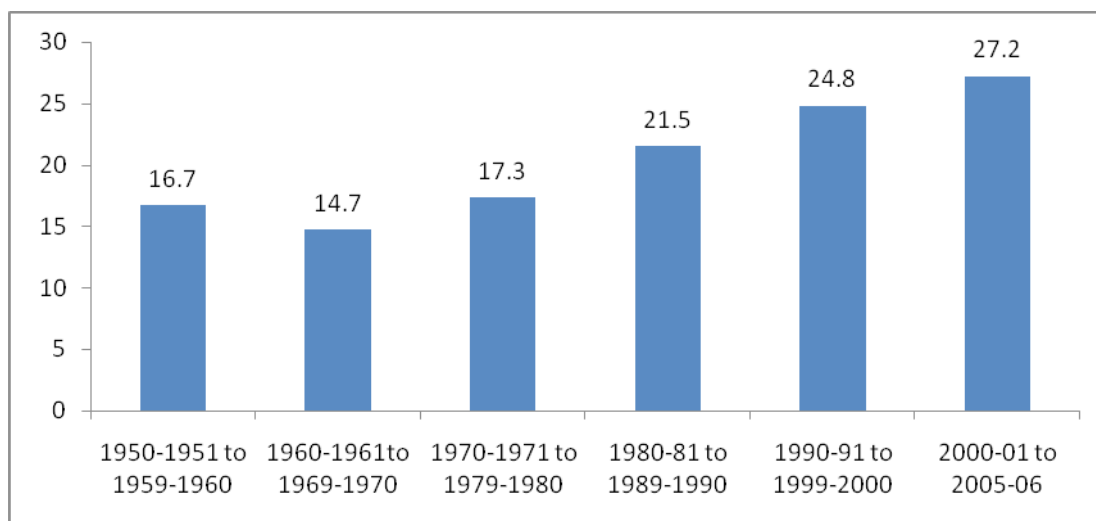


Figure 11.3: Contribution of livestock output in total value of agriculture and allied activities

Ramesh Chand and S.S Raju

In case of the contribution of livestock output in total value of agriculture & allied activities, its share increased almost 11 percent during 2000-01 to 2005-06.

Table 4 Trends in the livestock population (figures in millions)

	1982	1992	2003	2007	2012
Cattle	192.5	204.6	187.4	199.1	190.9
Buffaloes	69.8	84.2	96.6	105.3	108.7
Total Bovines	262.4	289.0	283.1	304.4	300.0
Sheep	48.8	50.8	61.8	71.6	65.1
Goat	95.3	115.3	120.1	140.5	135.2
Pigs	10.1	12.8	13.5	11.1	10.3
Poultry(chicken, ducks, turkey & other birds)	207.7	307.1	489.0	648.8	729.2
Total	419.6	470.9	482.8	529.7	512.1

CSO Annual Series of Income, Department of Animal Husbandry, Dairying & Fisheries (2015)

Table 4 clearly indicates the expansion of livestock population with special emphasis on poultry. Central Statistical Organization presents information related to livestock output separately for milk, meat, egg and wool. It indicates that the share of egg, milk and meat group in total livestock output is steadily increasing (Table 5). Changing food habit, rising income of middle class Indian, presence of private players, rising market demand of Indian poultry produce in export market are some of the contributing factors to the growth of the industry (Ministry of Food processing Industry, 2014).

Table 11.5
All India Production of Milk, Eggs and Wool

<i>Items</i>	<i>1990-91</i>	<i>2000-01</i>	<i>2009-10</i>	<i>2010-11</i>	<i>2011-12</i>	<i>2012-13</i>	<i>2013-14</i>
Milk (Million Tonnes)	53.9	80.6	116.4	121.8	127.9	132.4	137.7
Eggs(Billion Nos.)	21.1	36.6	60.3	63.0	66.5	69.7	74.8
Wool (Million kgs.)	41.2	48.4	43.1	43.0	44.7	46.1	47.9

Source: Department of Animal Husbandry, Dairying & Fisheries.

Increase in demand for livestock products along with good performance indicates opportunities for marginal and small farmer who can increase livestock production and benefit from related income. In term of environmental impact the growing number of livestock and the increase in livestock processing can have a negative impact of natural resources unless actions are taken to identify farming practices that are economically and ecologically sustainable. Crop livestock integration system can guarantee more sustainable livelihood by not only increasing subsidiary income and reducing the risk generated in crop production but also can contribute in maintaining the natural resource base.

As the middle class section of population is increasing and rate of urbanization is also picking up people are showing more preference for non-vegetarian food items. All over India poultry sector has undergone shifting from backyard activity to major commercial operation. The organized sector of poultry industry is contributing nearly 70% of total output and rest 30% from unorganized sector(www.assamagribusiness.net.in). The broiler industry is well dominated in southern states in our country with 60-70% of total output coming from these states. The relative importance of poultry in Assam is found highest as compared to other states of India. The average stock of poultry is 720 per 1000 households in Assam. (NSS Report No. 493, 59th Round). Share of household in marginal land holding categories in total poultry stock is growing from 55%in 91-92 to 63% in 2002-03 in India. It indicates the marginal farmers have started adopting the transformation and with time it can be encouraged further. Presently 100% FDI is permitted in food processing sector. Poultry farming in India has transformed from a mere tool of supplementary income and nutritious food for the family to the major commercial activity generating the required revenue.

Market chain of pig is becoming more and more extensive and making the business of supplying disease free safe meat is increasingly hard for small producers. Lack of quality knowledge is stopping expansion on a rapidly changing industry that could benefit the most vulnerable members of society- women and children. With the increasing price of grain based feeds and transport imported white pig are becoming expensive. As the native animals can be fed mostly in low cost feed crops and crop wastes they are an ideal solution to fill the new pork and piglet supply gap. The traditional pig keepers and new entrants with different educational background have a huge scope in the pig sector (ILRI Report). Increase in demand for livestock products along with good performance indicates opportunities for marginal and small farmer who can increase livestock production and benefit from related income. Crop livestock integration system can guarantee more sustainable livelihood by not only increasing subsidiary income and reducing the risk generated in crop production but also can contribute in maintaining the natural resource base.

Fishing and Livelihood : Low income rural households take up aquaculture as a livelihood system which can cater to the family nutrition and income. Hatch and Engle (1987) analyzed the integrated agro aquaculture system in Panama. The World Fish Centre Penang of Malaysia and the Network of Aquaculture Centres in Asia Pacific of Bangkok have fostered the expansion of aquaculture as a source of nutrition and cash supplement for low income households the world over. Framing system is essentially cyclic where organic resources – livestock, land and crops integrate for sustainable livelihood outcome. Decisions in one component can affect the others and to root out poverty the correct management strategy should understand the rationality of the integration.

The next alternative livelihood option for integrated system is aquaculture which is relatively a new subject matter compared to agricultural and husbandry economics. Low income rural households take up aquaculture as a livelihood system which can cater to the family nutrition and income. Hatch and Engle (1987) analyzed the integrated agro aquaculture system in Panama. The World Fish Center Penang of Malaysia and the Network of Aquaculture Centers in Asia Pacific of Bangkok have fostered the expansion of aquaculture as a source of nutrition and cash supplement for low income households the world over. The fishing sector has registered an annual average growth of 6.4% during 11th plan in terms of fish production. Demand of fish is over 300 million kg on the basis of minimum nutritional requirement of 11kg per capita. The gap is significantly evident. Though the state is yet to reach self sufficiency in production of fish with regional to economic as well as minimum nutritional requirement but it is experiencing a positive trend in productivity during recent past.

Table 11.6
Fish Production in India (000' Tonnes)

<i>Items</i>	<i>Marine</i>	<i>Inland</i>	<i>Total</i>
1950-51	534	218	752
1980-81	1555	887	2442
1990-91	2300	1536	3836
2000-01	2811	2845	5656
2009-10	3104	4894	7998
2010-11	3250	4981	8231
2011-12	3372	5294	8666
2012-13	3321	5720	9040
2013-14 (P)	3444	6132	9576
2014-15 (P)	3502	6929	10431

Source: Department of Animal Husbandry, Dairying & Fisheries.

Gradual increase in the production of fishes specially inland indicates the prospect of crop livestock integration strategy in India.

Horticulture and Livelihood

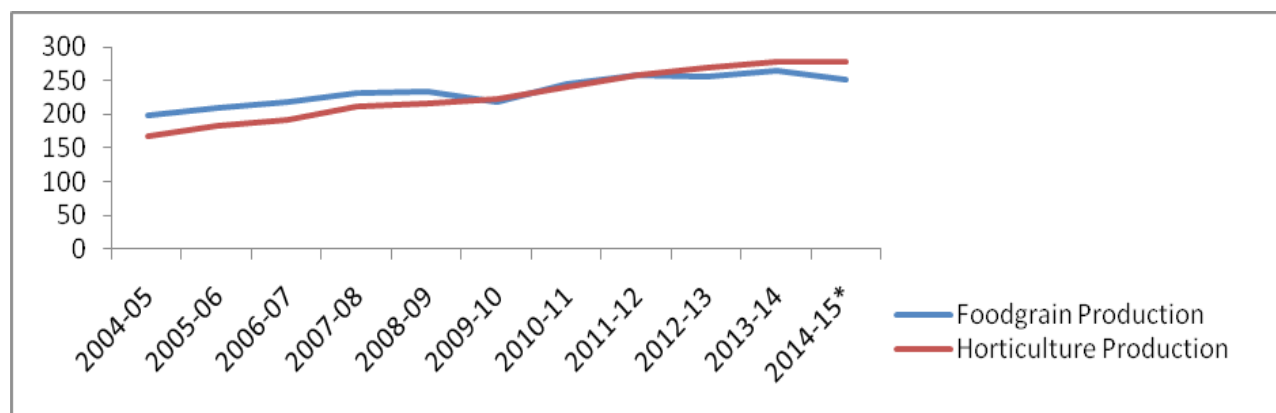


Figure 11.4: Trend of foodgrain and horticulture production

Department of Agriculture, Cooperation & Farmers Welfare. * 4th Advance Estimate for Food grain production and 3rd Advance Estimate for Horticulture Production.

Gradual improvement in the performance of the horticulture products also indicates the prospective scope for alternative utilisation of land. The percentage share of output from horticulture to total agricultural output also correspondingly showing a steady improvement from 29.7 during 2004-05 to 33.5 thousand crore (CSO, 2015). In the referred time period the other items which are showing improvements are spices (132 to 432 thousand crore) and floriculture (from 50 to 191 thousand crore). These products also occupy a major share of imports as percentage share of agriculture import in national import increased from 3.22 to 4.22 from 2013-14 to 2014-15. A jump of 25-27% of import in above stated item is measured (Ministry of Commerce) and highest increase in import is found in fruits and vegetable seeds (37%).

Table 11.7
Projected Demand from the agriculture and allied sector (million tonnes)

<i>Items</i>	<i>2016-17</i>	<i>2020-21</i>	<i>Items</i>	<i>2016-17</i>	<i>2020-21</i>
Food	257	277	Milk	141	173
Vegetable	161	189	Meat other than poultry	3.7	5.0
Fruit	97	124	Poultry	3.3	4.3

Ministry of Commerce, GOI

The table 7 on projected demand on various items under agricultural and allied activities explain the prospective area to be emphasised in the time period. It clearly establishes the point that for sustainable livelihood outcome crop livestock integration strategy has a massive scope in Indian economy. Above discussion on the performance in the time period taken individually by livestock, fisheries and horticulture also directs the economy to move in the same line.

Government Initiatives : There are many schemes implemented by Livestock Development Board and Animal Husbandry Departments but the percentage of farmers having insurance for the livestock is insignificant. In the discussion on ‘micro finance and livelihood support to small and marginal farmers’ members agreed that while designing the insurance products for the poor farmers, it is important that the focus is kept on covering areas like access to technical support, preventive health care, cheaper vaccination, drugs and other dairy inputs. The most important is to have a functional linkage with veterinary institutions. This will ensure not only the productivity of the animal, reducing the risk of loss of life and eventually in the lowering the rates of the insurance products.

Chambers (1997) has argued that poor people to survive in a risk-prone and uncertain world livelihood needs to be diversified. This has led many of them to build up a wide portfolio of activities. It may also satisfy the additional need to acquire some cash income to meet the need of essential goods and services, school fees- tuition fees, medical costs and government taxes.

The Intergovernmental Panel on Climate Change’s (IPCC) Fifth Assessment Report (AR5) 2014 suggested to build up with technological intervention some varieties of crop which will be resilient to climatic changes and have shorter The innovation need to be supplemented with information on farm practices and cropping patterns for achieving sustainable agricultural growth. Incentivizing farmer for mitigating the risks and thus improving the profitability of agriculture should be the priority in the present situation.

3. REPORT ON LIVELIHOOD DIVERSIFICATION OF RURAL AND URBAN ASSAM: MICRO PERSPECTIVES:

A study (Bhattacharjee Mahua, 2013) was carried out in Assam for tracking the seasonal ‘coping’ strategies of rural and urban Assam in 6 villages and 2 cities to reveal the variety of strategies employed for livelihood Cultivation and income from livestock from output like local liquor, pork, egg, silkworm, chicken always ensured stability in the livelihood. In urban centres- pulling rickshaw, casual worker in construction site or in mand is work, as alternative source of livelihood. The income generated from these sources are used to invest in farming, renovating dwelling structure, purchasing consumer goods like mobile, sound system and as such which helps to fill up the gap of liquid money.

Women coping strategy dominate many of the non -farm activities such as tailoring, weaving, trading these goods in the market, basket making, mat making, pottery etc. The peculiarity of the participation of women in rural Assam in livelihood activity is that livestock maintenance, local liquor preparing and selling, activity related to weaving like bringing thread, preparing design, marketing etc. women takes active role and they have the control over the utilisation of money so earned. In the villages of Assam, women play a key role on generating sustainable livelihood outcome.

Factors like repeated failure of crop for unfavourable weather, increasing expenditure structure for rise in wages and inputs prices and absence of subsidiary earning opportunity in the villages are pushing the labour to nearby urban centres for liquid money. Migrant labours working in urban areas though earns higher but their poor living condition, health hazards and absence of security in work keeps their livelihood in static state. In post liberalisation period uncertainty in weather and market condition, competition from substitute/ better/cheap product and increasing expenditure structure has relatively made livelihood tougher. Artisans are found in the most depleting state mainly for the open market, poor organisational support and for limited scope to out migrate. Uncertainty in price and climatic behaviour, Illiteracy and

Competition are basic challenges which are leading to population pressure and indebtedness followed by fragmentation. These factors keep the economy bounded by a 'vicious circle' leading to subsistence earning. At this point livelihood strategy of one section gets into poverty trap and another recovers and attains better living. First group follows a static strategy without any diversification and the second constantly diversifies and reinvests. Static strategy leads to insecurity, sickness, and low work participation ultimately leading to poverty trap and unsustainable livelihood. On the other hand with diversification and reinvestment by credit support, higher security and sustainable livelihood is attained both in rural and urban areas. In between, the vulnerable factor by shocks and stresses also force the less resilient livelihoods to take up coping and adaptive strategies like selling land, livestock, taking loan, migration, weaving in adhi, giving livestock and betel nut tree in adhi, mortgaging land etc. These strategies make the base of livelihood weaker and lead towards unsustainable livelihood. Diversification in the livelihood in the present scenario has become the key word in Assam for better living and for being more resilient to shocks and stresses.

Maina Kalita(24) of Chakori Gaon in Rupahi circle is mother of two children carries out diverse kind of work in whole time period. Whole day she has to run and finish her daily work. She weaves cloth and sometime on getting call for 'ruoni' she runs for it. In between she runs into home to cook and give food to children and mother in law. Evening she goes to collect some fire wood and sometime goes to field if necessary. If call from field does not come till evening she weaves cloth. Maina does not run alone in such a way but it is common among all the women of the village. She states 'Whole day we are only running for living'

On comparing the average remittances sent by the different household type in month we find self employed sends highest amount (Rs3000) which is followed by regular worker (Rs.2200) and casual labour (1728.57). Among the three categories highest percentage (70%) of casual labour sends remittances followed by regular worker (62%) and self-employed (15%).

The factory of Sikni¹ runs almost completely by migrant worker of both sexes. The factory is in the village from last ten year and every year workers come from nearby villages. There are 150 numbers of households who are settled here temporarily in 1.5 bigha of land. They stay in this place from November to May (approx 8 months). They are all illiterate and the work is divided among the men and women in following manner. Work which requires more physical labour is obviously done by male members like giving the betel nut in sun to dry, pulling from one place to another, packaging, Mixing color(Khoir) Giving beat, Giving in gas chamber etc. The female member cleans and cuts the betel nut.

For cleaning women earn Rs.25/ bag and male members earn 1500/ month. There is no fix time for women to do the cleaning work. The more she can do the more she earns. Many of them work overnight as the earning is only limited for few months. So they want to earn more and more during the season. Within the work she also manages cooking and her children Male members work from 7am to 7pm. Almost all of them do not have homestead land few have half kata or less than that. Female earns from the cover which they take out from betel nut in off season at Rs.15/ bag or by stitching cloth (katha).The chemicals used in the factory are disposed carelessly. Exploitation of environment was found common in the village. Stomach disorder and fever is common among the worker. Physically the wives are assaulted regularly and they take it very easily as part of life. 'Daurain dain' which means husband chases her to beat and she runs is common among them.

On the study of living condition it is found that they do not have electricity, have one tubewell and a kachaa toilet. They consider these facilities are more than their original house. With time they are finding themselves in better condition as now they can own livestock like goat, poultry etc which help them to sustain during the period when they have no work. They do not have PDS card and buy goods at market price. They do not need to buy fuel as they can use the cover of betel nut which they get during the season period.

Women also find less opportunity in villages for limited option of diversification. While men migrate as well as take up new employment opportunities women in rural areas find them at disadvantage position. Agricultural labour remains as easy option before them. Therefore agricultural labour in the female workforce is very high. 72.8% in 2004-05 is the percentage of female agricultural labour in India while for male it is much lower at 48.9% (Arjun Sengupta, 2007). With time in urban more women are stepping out for adding their limited household income and to meet the educational and other extra expenditure of children. They generally considered that there is an improvement in their condition. They are trying to get into the changed strategy of living by adopting diversification and facing regular corrupt practices.

Anjal Debi is 36 years old woman who work in press at Gumbati and earn Rs.35 daily (not regularly but when there are orders in press). From morning she starts her day in uncertainty as she is not sure whether there will be any work or not. Her husband had a shop in Bamunimaidan which got burnt down in fire in last year. He has problem of high blood pressure and so cannot work at any other place. Somehow she has helped him to start a shop near the railway gate. Her daughter is studying Higher Secondary in college and she wants her to finish her college study. She says 'I know my daughter will not get job with her education but with education she will be able to live and will come out of any problem in near future.' Every day all the family members of her are struggling to live and someday they all have to survive with only rice and salt.

Afia is 20 years old girl from Agricultural labour dominated village Pachim Salapar of Rupahi circle who has taken certificate course on tailoring by staying at her uncles' place in Nagaon town during 2004. They are nine brothers and sisters and father earns from farming, fishery and livestock. Father had sewing machine from 1988 and wanted his daughter to be self dependent and thus initiated to take the course on tailoring. During Idd or such other festival period she earns within Rs.500 which helps her to cover her expenditure on cosmetics. She has freedom to spend it for herself. Her cousin sister Aktara learnt embroidery from Bortol(10km from Pachim Salpara) and earns 100-200 rupees per month. People do not give much significance to the embroidery so she gets less order. In spite of having certificate Afia till now could not qualify for loan as she and her parents lack contact with political power and other middle man (Dalal) who manages the loan. Two girls from village got loan for machine who does not know to stitch. Her machine is old which needs constant repairing and lots of time is required in the work. She wants to work more and earn for herself in near future.

Injam Ali(42) is a father of four children. He owns 10bigha of land on which summer paddy was his most preferred source of earning. But with increasing trend of expenditure from last two years he is trying various alternatives. Two years back he made money by selling jute at higher price. With minimum capital of Rs.20,000 he purchased 90 mon of jute at Rs.220/mon and after two months he sold at Rs.440/mon. From the money he reinvested in poultry which did not give satisfactory return due to the sickness of chicken. He then carried out some business on betel nut and recovered the loss. Recently he has found the business of banana is running fine so now he decided only to cultivate banana on his land. He states, 'the moment business of particular thing is started - jute, betel nut etc. profit starts to flow but it continues for very short time as number following the same business increases and profit margin declines. Constant vigilance in the market and continuous change in alternative product for business is essential for living in this area'. The living condition of Ali is better than other villagers. He owns a pucca house with good water facility and electricity. Thus Injam has turned unfavourable situation in his favour by keeping himself open to the change and constantly diversifying his source of income.

4. CONCLUSION

Macro and micro discussion on the livelihood strategy portrays a fact that in Indian economy due to the changing economic behaviour the scope of agriculture and allied sector is increasing. The crop livestock integration strategy is to be adopted by the households initiated by the Government policy and coordinated by the Self Help Groups and Non-Government Organisation. Uncertainty in price and climatic behaviour,

illiteracy and competition are basic challenges which are leading to population pressure and indebtedness followed by fragmentation. These factors keep the economy bounded by a 'vicious circle' leading to subsistence earning. Integration with the support of economy through remittances can push the economy towards sustainable livelihood outcome. At this point livelihood strategy of one section gets into poverty trap and another recovers and attains better living. First group follows a static strategy without any diversification and the second constantly diversifies and reinvests. Static strategy leads to insecurity, sickness, and low work participation ultimately leading to poverty trap and unsustainable livelihood. On the other hand with diversification and reinvestment by credit support, higher security and sustainable livelihood is attained both in rural and urban areas. In between, the vulnerable factor by shocks and stresses also force the less resilient livelihoods to take up coping and adaptive strategies like selling land, livestock, taking loan, migration, weaving in adhi, giving livestock and betel nut tree in adhi, mortgaging land etc. These strategies make the base of livelihood weaker and lead towards unsustainable livelihood. Diversification in the livelihood in the present scenario has become the key word for better living and for being more resilient to shocks and stresses.

Considering the problems and challenges in livelihoods, diversification in strategies is essential for sustainable living. As far as coping strategy and more resilient to the stress and shocks is concerned diversification reduces dependence on one source of livelihood and so can push the livelihood towards sustainability. The area of livelihood for the rural and urban poor households in the process can be thus enhanced with stability. But it is to be noted at this point that, with limited time and resources, activities for optimal outcome, the prospective livelihoods in the area are to be ranked on the basis of backgrounds.

References

- Berry, S., 1989a, *Coping with Confusion: African Farmers' Responses to Economic Instability in the 1970s and 1980s*, Boston: African Studies Centre, Boston University.
- Bhattacharjee Mahua, (2013) *Sustainable Livelihood of rural and urban Assam: Gender perspective*, *Journal of Politics and Governance*, Vol2, No. ¾ July December, Pp92-107
- Carney D, (2013) *Sustainable Livelihood Approaches: Progress and Possibilities for change*, DFID.
- Census of India 1971, 1981, 1991 & 2001, *Primary Census Abstract*, GOI.
- Chand Ramesh and S.S. Raju (2008) 'Livestock sector composition and factors affecting its growth', *Indian Journal of Agricultural Economics*, Vol. 63. No.2, April- June
- Chambers, R., A. Pacey and L. Thrupp (1989) *Farmer First: farmer innovation and agricultural research*, London: Intermediate Technology Publications.
- Chambers, R., 1997, *Whose Reality Counts: Putting the First Last*, London: Intermediate
- Chambers, R. and Conway, G.R. (1992) *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*, IDS Discussion Paper No. 296, Brighton, U.K.
- Chand Ramesh., and S.S. Raju, (2008), 'Livestock Sector Composition and Factors Affecting Its Growth', *Indian Journal of Agricultural Economics*, Vol. 63. No.2, April-June.
- Chen, M., 1989, 'Women and household livelihood systems' *ARDA*, 15 (2-3).

- Chen, M. 1991, *Coping with Seasonality and Drought*, New Delhi: Sage Publications.
- Devereux, S. (2001) 'Livelihood Insecurity and Social Protection: A Re-emerging Issue in Rural Development', *Development Policy Review*, 19(4): pp. 507-519.
- De Haan, A. (2002) 'Migration and Livelihoods in Historical Perspective: A Case Study of Bihar, India', *Journal of Development Studies*, 38(5): pp.115-142.
- De Haan, A. (2000) 'Migrants, Livelihoods, and Rights: The relevance of migration in development policies', SDD Social Development Working Paper (4). London: DFID. [online] Available: www.odi.org.uk [accessed 14th March 2009].
- DFID (2000) Sustainable Livelihoods Guidance Sheet. Department for International Development, Retrieved from: www.livelihood.org/info/info_guidancesheets.htm
- DFID (2003) 'Rural-urban transformations and the links between urban and rural development. Environment and Urbanization', Retrieved from: www.odi.org.uk/resources/download/2305.pdf.
- Ellis, F., 1996, 'Policy implications of rural livelihood diversification', mimeo, Overseas Development Group, University of East Anglia, Norwich.
- Ellis, F. (1998) Survey article: Household strategies and rural livelihood diversification. *Journal of Development Studies*, 35(1): 1-38.
- Ellis, F. (2000) *Rural Livelihoods and Diversity in Developing Countries*, Oxford University Press, Oxford, U.K.
- FAO and World Bank (2001), *Farming Systems and Poverty– Improving Farmer's Livelihoods in a Changing World*. Rome and Washington D.C.
- FAO and WHO, (1994) 'Fats and Oils in Human Nutrition Report of a joint expert consultation', *FAO Food & Nutrition Papers* (57): pp. 1–147. [online] Available: journals.cambridge.org/production/action/cjoGetFulltext?fulltextid=566880 [accessed 3rd March 2007].
- Government of Assam, Directorate of Census operations. *Census Report 2001*
- Government of Assam Directorate of Animal Husbandry & Veterinary Department, Assam., 2010
- Government of Assam Economic Survey Report, Assam 2011-12
- Government of Assam, Directorate of Agriculture. Retrieved from www.assamagribusiness.nic.in/staistical/20Handbook/climate.pdf
- Government of Assam, Directorate of Fisheries, Assam. Retrieved from www.assamagribusiness.nic.in/staistical/20Handbook/fishery.pdf
- Government of India, 'Assam Development Report' 2001, State plan Division, Planning commission. Retrieved from www.planningcommission.gov.in/plans/stateplan/sdr_assam/sdr_assch2.pdf
- Government of Assam Directorate of economics and Statistics, 2011-12, Assam
- Government of Assam State Rural Livelihood Mission society Report, Annual Action Plan 2012-13,
- Government of India, Ministry of Food processing Industry, (2010), Retrieved from, mofpi.nic.in.
- Government of India, National Accounts and Statistics, 2005
- Government of India, Handbook of Agricultural Statistics, 2005-06
- Government of India, State of Indian Agriculture, 2016

- Government of India, Ministry of Statistic and Program implementation, CSO, 2015
- The Human Development Report (2009), 'Overcoming barriers: Human mobility and development'
- Khatun, D and B.C. Roy,(2012) Rural Livelihood Diversification in West Bengal: Determinants and Constraints, Agricultural Economics Research Review, Vol. 25(No.1) January-June 2012 pp 115-124
- Rao, N. Chandrasekhar(2009), 'Enhancing Growth and Productive Employment Linkages in Food Processing Sector', CESS, Hyderabad
- Haque. T., (1996), 'Small Farm Diversification: Problems and Prospects, NCAP, New Delhi.
- Haque. T., Bhattacharya M., and Research Assistant of CS , Constraint and Potentials of Diversified agricultural Development in Eastern India, Project Report, by D. Project sponsored by Planning Commission, GOI
- Hussain Karim and John Nelson, Sustainable Livelihoods and Livelihood diversification, IDS Working Paper, 69.
- International Livestock Research Institute (ILRI)Report ' Pig market opportunities in Assam and Nagaland', retrieved from: www.ilri.org
- National Sample Survey Organisation (NSSO, 1990). Results of the Fourth Quinquennial Survey on Employment and Unemployment (All India), NSS Fortythird Round (July 1987- June 1994), NSS Report no. 409, New Delhi.
- (NSSO, 1997). Employment and Unemployment in India, 1993-94, NSS Fiftieth Round (July 1993- June 1994), NSS Report no. 409, New Delhi.
- (NSSO 2001) Employment and Unemployment Situation in India, 1999-2000, NSS Fiftyfifth Round (July 1999-June 2000), NSS Report no. 458, Key Results, Part-I, Part-II, New Delhi.
- NSSO (1992) – 48 Round Jan-. 'Land and Livestock Holdings Survey' Report No. 407 , Department of Statistics, Government of India: New Delhi.
- NSSO(2002-03)'Livestock ownership across operational land holding classes in India' Report No. 493 (59/18.1/1) , Department of Statistics, Government of India: New Delhi.
- NSSO (1993-1994) Employment and Unemployment in India 1993-1994, Key Results. 50th Round, Report No. 409. Fifth Quinquennial survey. Department of Statistics, Government of India: New Delhi. NSSO (2004-05) Nutritional Intake in India 2004-2005, 61st Round, Report No. 513(61/1.0/6). Department of Statistics, Government of India: New Delhi
- NSSO Report No.533, Migration in India: July 2007- June 2008
- Sengupta. K. A.(2007) 'Report on condition of work and promotion of livelihoods in Unorganised sector', People's right to know, 4(214) [online] Available: www.nceuis.nic.in/condition_of_workers_Sep_2007.pdf. [accessed 12th April 2009].
- Taylor, E. and T. Wyatt (1996) 'The Shadow Value of Migrant Remittances, Income and Inequality in a Household-Farm Economy', Journal of Development Studies, 32(6):899-912.
- UNDP (2000) 'Rural-Urban Linkages: An Emerging Policy Priority', UNDP Bureau for Development Policy. [online] Available:www.undp.org [accessed 2nd Sept 2005].
- Verick Sher and Ruchika Chaudhary (2015) Decent Work Team for South Asia and Country Office for India, ILO.