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Editorial

Make in India vs Make for India

Baidyanath Misra

The 'Make in India' initiative is considered to encourage entrepreneurs to establish new enterprises which would not only improve the economy, but also provide adequate opportunities to create additional jobs for the young generation. The Prime Minister of India has considered this as a vision for resurgent India. In analysing the multi-dimensional contribution of 'Make in India', Deveshwar has suggested that it would (a) increase economic opportunities that can enhance growth, (b) provide livelihood creation for the poor and marginalised by creating additional jobs and (c) add economic activity that can flourish by nurturing the environment rather than plundering it. Considering from this point of view, make in India holds enormous promise to radically transform the Indian economy (ITC Chairman, Y.C. Deveshwar: In Pursuit of the Make in India Vision) (Business Standard in Aug. 2015).

We also remember another version of 'Make in India' during the freedom struggle. Only the name was different, that was called Swadeshi movement. This was started by freedom fighters to counter the colonial policy of economic exploitation of India. The British bought raw materials like cotton, jute and base metals from India, turned commodities into value added items like clothes, cutlery etc. and sold those back to India. Such a policy destroyed Indian manufactured industry. That is why Sashi Tharoor in his Oxford address pointed out, "India's share of the world economy when Britain came to our shores was 23 per cent. By the time the British left, it was down to less than 4 per cent. Why? Simply, due to the fact that India was governed for Britain's benefit. Britain's rise in over two centuries was financed by depredation of India". Certainly Make in India is different. Its purpose is mainly to make India a comparative manufacturing hub. It is claimed that 'Make in India' will transform India from a developing economy mired in poverty to a developed nation that commands global respect.

If 'Make in India' emphasises mass production and production by masses, this will certainly create a manufacturing base for India. If the purpose to encourage import substitution, 'Make in India' may not make much headway. One of the major difficulties in Indian industries is low factor productivity. Prof. Charles Jones of Stanford University's Graduate School of Business in a paper points out that the long-term growth is all about growth in productivity. While analysing the growth of OECD countries and particularly of the USA, he confirms that the dominant contribution in this exponential rise in the USA has come from growth in TFP (Total Factor Productivity) even though the rate of growth of TFP has itself

varied considerably from decade to decade. In the post-war period, for example, 80 per cent of growth in output per hour was attributable to growth in TFP.

Second, we had bitter experience with regard to import substitution during the initial period of planning. At that time, there was every justification to follow a policy of import substitution to protect our infant industries. We have made much progress in recent years. Even during the initial period of planning, such protectionist policies encouraged private monopolies to start such industries to secure high profits. When the government followed a licensing policy to control such monopoly, this resulted in great discrimination along with corruption. Again it must be noted that the nature of world trade has changed in recent years. The days when goods were all made in a single country are gone. Now in order to build a manufacturing base, a country will have to rely on supply chains. If a country followed a sheltered domestic manufacturing sector, it will adversely affect quality and competitiveness. Growth does not happen in isolation. India's economic growth between 2005 and 2007 was attributed to some extent to the global economic boom and liquidity surge. According to some estimates, at least one or two percentage points in India's overall growth were certainly due to the buoyant global economic factors. The argument then was that 'in a high tide all boats in the sea are lifted' (A.K. Bhattacharya),

Once India tries to increase production through Make in India, access to foreign markets becomes priority. Many of the Asian countries like South Korea, China and Japan had been able to develop their economy by increasing exports. But unfortunately India is now facing negative trends in Indian exports. Several key labour-intensive sectors like leather and textiles have witnessed significant reductions in their export volumes. Since China's exports are declining due to rise in wages (it is estimated by one of the World Bank's Chief economist that some 85 million manufacturing jobs were likely to be relocated away from the Chinese eastern sea board as wages rose in China), India may get an opportunity to increase manufacturing exports. But there is now sluggishness in over-all world economy. And new competitors are also challenging India's export initiative. We are facing stiff competition from countries like Bangladesh and Vietnam in leather and textile products. The Reserve Bank of India's Governor Raghuram Rajan, in his Bharat Ram Memorial Lecture delivered in Delhi recently made a pertinent statement which implies "The world as a whole is unlikely to be able to accommodate another export led China". What he emphasises, "India is different and developing at a different time and we should be agnostic what will work. With advanced countries, demand likely to remain muted for the foreseeable future, he concludes that India's primary orientation will have to be to produce efficiently for the internal market". What he actually emphasises a 'Make for India' strategy.

We guess 'Make for India' strategy has a better chance to strengthen the sinews of the domestic economy through sustained focus on physical, social and financial infrastructure, rather than subsidising exporters with cheap inputs and an undervalued exchange rate. There are two areas which need immediate attention for improving the

economy and enhancing the living standard of poor people. One is agriculture and the second is manufacturing industry. The Socio-Economic and Caste Census, 2011 shows how miserable is the rural sector in India. We indicate a few points to show how rural economy needs restructuring for improving the economic and social structure of India.

We find that altogether 73.5 per cent of Indian households live in the country side. The comparable figure for China is only 47 per cent in 2013. Of all these rural households, only 30 per cent are engaged in agriculture. Since there is not much scope for providing additional land for agriculture, we will have to strengthen non-farm occupations to accommodate manual casual labourers. It is estimated that 51 per cent earn their livelihood by doing odd jobs. In agricultural seasons, some of them may be engaged in planting and harvesting. But at other times, many of them migrate to cities. What is most distressing is that a colossal three-fourths of rural Indians earn less than Rs.5000 per month. Of the total households in rural areas, 38.3 per cent do not have any land and majority of these households earn their income from manual casual labour. The economic condition of land holders who have no irrigation facility is no better. Their number is 30 per cent.

The 70th Report on the 'Situation of Agricultural Holds in India' released recently by NSSO reveals that much is wrong with Indian farmers' economic status, despite several programmes being run by the government to raise their incomes. Over half of all farm households are heavily indebted: 26 per cent owe money to money lenders who could be charging interest rates over 20 per cent. According to the study, wage employment and non-farming are the principal sources of income for 56 per cent of land-owning families, while it is livestock for about 23 per cent of them. The only change we find in the Report is that the average monthly income of an Indian farm household has been assessed at Rs.6500 and not Rs.5000.

Further rural youth are, by and large, disillusioned with agriculture. Reasons are not unknown. Low profitability of agriculture, drudgery of farm chores and poor quality of life in rural areas and rapidly shrinking size of landholdings are the major causes. It is estimated that nearly 35 per cent of the country's population falls in the 15-35 age bracket and roughly 75 per cent of them live in rural areas. If all of them become disenchanted with agricultural life and migrate to urban areas, it will be next to impossible to accommodate all of them in urban areas with new jobs. Every year almost 12 million workers come to the market for jobs. The National Commission on Farmers headed by M.S. Swaminathan, in its final Report pointed out, "The Youth can be attracted to and retained in farming only if it becomes economically rewarding and intellectually satisfying". A Number of suggestions have been offered for this. First there is need for providing essential facilities such as power, roads, education and health care, among others, in rural areas. Second, there must be diversification in agriculture by starting a large number of allied activities like dairying,

fisheries, goat rearing, mushroom production along with value-addition through food processing, seed processing and such other activities which can attract the youth. Third, what is most important is that farm income should be increased, particularly for the small and marginal farmers who form the bulk of Indian farm community. Most of the surveys show that they have not gained much from agricultural development. The NSSO through the 70th round of data gathered in 2012-13 also indicate that these farmers remain poor, handicapped in terms of access to technology and institutional credit and are deprived. Farming itself is not sufficient to ensure that small and marginal farmers can earn a decent living. It is therefore imperative that farm incomes be increased through higher productivity (by improving technology), better returns through fair and transport market and by establishing a number of manufacturing industries.

Since non-farm activities provide adequate income to the bulk of the farmers, for small and marginal farmers, who are more than 80 per cent of total farming households and for casual labourers whose number is limitless, we should try to improve non-farm activities by starting a number of manufacturing industries in the rural areas with a view to assisting agriculture, providing additional incomes to farmers and agricultural labourers through productive employment. Many of the micro, small and medium enterprises (MSMEs) are now located in urban areas. We guess there is plenty of scope to establish such enterprises in semi-rural areas which can assist agriculture, prevent pressure on urban areas and provide employment to all those who are living in rural areas without any gainful employment. There are many types of work that can easily be taken up in rural areas like qualified masons, carpenters, electricians, garment manufacturing, textiles, leather goods, furniture making, food and beverages and so on. We have to select the types of work as per requirement of particular area. Second, both physical and social infrastructure should be developed so that such enterprises can be established. Since we are facing tremendous difficulty in starting some mega industries, we have to depend on such small enterprises to provide adequate employment. But the question is, what should be size of enterprises.

In an open letter to Times of India on 18.11.2012, Dr. Arvind Panagaria commented that in India Manufactures are not starting in labour intensive industries. Businessmen are investing in capital intensive industries because investment in manufacturing industries will raise wages. About 85 per cent of Indian apparel workers were employed in tiny firms of seven workers or less in 2004-05 whereas in China only 0.6 per cent apparel workers were employed in tiny industries. Further, 57 per cent of Chinese apparel workers were employed in large firms of 200 workers or more. The corresponding figure in India was 5 per cent. Medium size firms with 50 to 199 workers flourished in China and were entirely absent in India. He therefore pointed out there is no inclusive growth in India, but there is inclusive spending. This implies, we should try to start large scale labour-intensive manufacturing industries because it will provide scope for future employment creation

and securing advantages of scale. Even though we advocate to start a large number of manufacturing industry in rural areas it does not mean, there should not be any manufacturing industries in urban areas. It depends on the criteria of demand and favourable environment.

But one of the major difficulties of our young people is that they back minimal specialisation. We make much of our demographic dividend, but they are deprived of fulfilling their potential due to lack of proper training. The quality of work done even in areas like plumbing and masonry remains very poor. Our educational system does not create any practical bent of mind. We have good theoretical analysis, but lack the skill to apply such knowledge in practical field. In the USA, Germany or Japan, practical skill has made them much superior to handle business practices. Since now large numbers of our young people are coming to the job market, our learning should be oriented to provide necessary skill as required in different kinds of jobs. In India, only 3.5 per cent of the workforces are skilled compared to 46 per cent in China, 74 per cent in Germany and 96 per cent in Korea. A time has come when priority should be given for skill formation which would be capable of adapting to changing economy.

India faces a great challenge. Global forecasts suggest that it is poised to be third largest economy in the world by 2030. But India may also emerge as the world's most populous nation. Consequently the country will possess the world's most working-age population, even surpassing China. As such, the country's socio-economic challenges are daunting. We have to meet the challenge of colossal poverty. Not only try to provide productive employment to 12 million workforces every year, given the fact that the recent rate of employment is barely 2 to 3 million per year. Then there are critical challenges of food, water, energy, education and health security for more than 1.10 billion that might inhabit the country by 2030. Then there is increasing threat of climate change. As students of economics, we have also an important role to play to shape the destiny of India. We mention the role of Economists, because Pandit Jawaharlal Nehru said in 1948, 'What is a young man's ambition today.....They think of becoming economists, because an economist plays a big part in the modern world' (The Idea of India, Sunil Khilnani, P. 61).

Service-LED Growth, Development Indicators and Governance for Inclusive Growth: Evidence and Experience of Odisha¹

Surendra Nath Behera²

Esteemed Chief Guest, Prof. Ram S. Deshpande, Esteemed Prof. Baidyanath Misra, Secretary of the Odisha Economics Association, Dr Rabi Narayan Patra, President of the Centurion University of Technology and Management, Prof. Mukhtikanta Mishra, distinguished invitees, eminent economists, fellow delegates and members of the media.

It is a great honour and privilege for me to stand before you to deliver my address as the President of the 47th Annual Conference of the Orissa Economics Association. I express my deep sense of gratitude to the members of the Orissa Economics Association for electing me as the President and bestowing this honour on me. This conference provides an academic forum for the economists and researchers to contribute their ideas in different innovative dimensions by their participation, deliberation and interaction. It is timely and appropriate that the two topics chosen on “Financial Inclusion in India” and “Rural Infrastructure in Odisha” to be discussed and critically analyzed in the Technical Sessions will obviously throw light on various important issues both on descriptive and prescriptive aspects. Moreover, the illuminating lectures by the learned professors in the Special Sessions will focus on various pertinent issues which provide us with the rare opportunity to share our thoughts relating to some significant and contemporary aspects of the National and State Economy of Odisha.

In my address I have made an attempt to focus on some of the recent aspects of the Odisha economy such as services-led growth, development indicators in terms of human development, gender gap, infrastructure, rural-urban consumption inequalities, regional disparities and initiatives taken in Public Distribution System reforms, food security and good governance to ensure inclusive growth. I would like to present before this august body that due to the time constraint in delivery of this lecture, I have the limitations of covering only some broad dimensions of the above issues. For analyzing these issues I acknowledge the use of NSS data, Economic Survey of Odisha and Statistical Abstract of Odisha given in the Tables in the Appendix.

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1. *Presidential address delivered in the 47th Annual Conference of Orissa Economics Association 21st February, 2015 at Centurion University of Technology and management, Bhubaneswar.*
 2. *Former Professor of Economics and Principal, Khallikote Autonomous College, Berhampur.*

I. The Structural Break and Process of Services-led Growth

Odisha economy has undergone structural changes during the past decades in the post-reforms period. The Industry and Services Sectors have emerged as the main drivers of growth. The dynamic composition of the Odisha economy shows that the sectoral share of Agriculture in GSDP has declined from 23.49% in 2004-05 to 17.01% in 2012-13 and is estimated at 15.58% in 2013-14. The share of the Industry sector, has gone up from 23.7% in 2004-05 to 25.16% in 2012-13 and is estimated at 25.40% in 2013-14. The share of the Services sector in GSDP has registered an increase from 52.80% in 2004-05 to 57.83% in 2012-13 and 59.02% in 2013-14 at 2004-05 prices comparatively dominating in a stable manner. In 9 districts of Odisha namely Khordha, Cuttack, Ganjam, Dhenkanal, Balasore, Puri, Bhadrak, Kendrapada and Nayagarh the services sector contributes more than 50% of the total Gross Domestic product in 2010-11 at 2004-05 prices. As in case of the Indian economy the Service Sector dominates the State economy constituting more than half of the State's GSDP. The dynamics of the broad sectoral decomposition of Odisha's economy reveal that Odisha has witnessed a significant structural change over the years and is becoming less agricultural and more industrial and more service-oriented over time. The changing pattern of the sectoral composition in the State corroborates the transformation of the economy from "agriculture-based" to "industries and services- driven". This trend is projected to go further in the wake of liberalisation.

The performance of the Services Sector in Odisha is measured by relative sectoral contribution of the Services Sector to the GSDP, employment and productivity growth. Though detailed classification of Services Sector is made either by using the United Nations Central Product Classification (UNCPC) or National Industries Classification (NIC), at present the NIC 2008 classification is used for India in defining the Services Sector.

The major components of the service sector as the determinant of the service growth are Trade, Hotels, Transport and Communication, Banking and Insurance, Real Estate and Business Services and Community, Social and Personal services. The rapid expansion of the services sector, has been due to 'structural changes' which occurs with technological progress in the demand side and trade liberalization and reforms in the supply side. The growth process in the post-reforms period has been a Services-led growth process. The share of the services sector increased from 26% during the First Plan (1951-56) to 46% during the 11th Plan (2007-12). During the 11th Plan period Banking and Insurance sub-sectors of Odisha grew significantly with a robust annual average growth rate of 17.77% followed by Communication 13.77%, Registered Manufacturing 12.92%, Transport and other means 11.28%, Trade Hotel and Restaurants 9.44%, Storage 9.21% and Other services 8.40%. The share of banking and insurance communication, transport by other means and trade, Hotel and Restaurant sectors are increasing in the Services broad sector.

A look at the percentage share of the workforce engaged in broad sectoral activities from 1990-91 to 2013-14 in the post-liberalisation period shows that the participation of workers in services has increased substantially from 14% to 41%, industry from 8% to 26%, whereas in agriculture has declined from 77% to 33%. In terms of occupational shift it provides a very useful insight to development in the process of structural transformation in the economic development of Odisha. The employment linked sectoral shift is inevitable and the industry and services sectors are the priority areas of intervention.

The performance of the economy is generally adjudged in terms of rate of growth of GSDP and its variants. The average growth rate of GSDP and percapita NSDP over the Plan periods in Odisha is shown in Table-I in the Appendix. The growth rate of GSDP and percapita NSDP has been fluctuating over the Plan periods. The structural transformation and sectoral shift from agriculture industry and services sector put Odisha in a high growth tranjectory particularly when we look at the average growth rate of GSDP as 8.82% in 2002-07 in the 10th Plan and 7.01% in 2007-12 in the 11th Plan. As per the estimate of the GSDP the real growth rate of Odisha's economy during 2013-14 is 5.60% at 2004-05 prices as against 8.09% achieved during 2012-13. The slowdown in growth rate was of (-)3.25% under agriculture largely due to cyclone & floods while the growth rate in the industry sector is estimated as 6.60% and the services sector as 7.77 percent. In real terms at 2004-05 prices Odisha economy exhibited an average annual growth rate of 8.82% during the 10th plan period against the target of 6.20%. The Agriculture Sector registered real growth of 11.01% during 2012-13 at 2004-05 prices. The Industry sector grew at 9.15% and the services sector at a rate of 6.8% during the year 2012-13. During the last decade the Odisha economy has exhibited the characteristics of diversifying at a faster rate and affected by natural stocks.

The positive spillovers and both the forward and backward linkage effects of the services sector show both agricultural and industrial production as service-intensive. Their inductive linkage effects make it as a catalyst agent of growth. In the post-reforms period the performance of the services sector has been forceful with a tremendous contribution to GSDP. The performance of the services sector in GSDP has been faster than agriculture and industry since 1991-92 when the Services sector overtakes the share of Industry and Agriculture sector. The growth and sustainability of the Services sector can be established by breaking a near stagnant agriculture and decelerating manufacturing sector by linkage effects. With a substantial contribution of the Services sector, to make Services-led growth more widespread and sustainable a coherent integrated services policy in line with agricultural and industrial policies need to be developed. This will go a long way in sustaining the dynamism of Services- led growth by their impressive growth performance in the post-globalisation period.

II. Human Development and Gender Equality

Human development has been conceived as the process that enables people to improve their skills, capabilities and choices for long, healthy and fulfilled life. The process of human development is multi-dimensional and inclusive in character. As a developmental approach the major pillars of human development are equity, empowerment, participation and sustainability. The methodology propagated by the UNDP suggests that levels of literacy, infant mortality rate, life expectancy at birth, access to safe drinking water and income capture the key dimensions of human development. The Human Development parameters are Livelihood, Health, Education, Gender and Development, Environment and Governance. Human development approach is 'people-centred approach' rather than 'goods-centred approach' or income-based benchmark of GNP. It is defined as enlarging people's choices and strengthening human capabilities, enhancement of freedom and fulfilment of human rights. The UNDP methodology takes in to account the health, educational and income index to measure the quality of life. It is a holistic concept which covers all aspects of development. Economic growth as such becomes only a subset of human development paradigm. Reduction of inter-regional and inter-personal disparities is a key concern for human development. When we think of development, various questions on ways of living come in to mind. They are: can the people read and write? Do the poor children get adequately nourishing diets? Are the children properly immunized and provided with other health care services? Do the poor students get proper mid-day meals in schools? Are food stuffs distributed among people in a universal manner? All these encompass a sustained improvement in the quality of life. T. W. Schultz, articulated the improvement in population quality as a decisive factor in development.

The normative framework for human development is reflected in the broad vision set out in the UN Millennium Development Goals Vision, 2020 for Odisha. The first Human Development Report for the State of Odisha focused on several critical issues such as various aspects of growth, income distribution, poverty and food security, education and health and attempted to measure human development at State and District Levels.

The HDI methodology was revised in 2010 in a composite index with three basic dimensions health, knowledge and income. The 'Knowledge dimension' – adult literacy and gross enrolment ratio of the earlier HDI reports, has been modified in 2010 by taking in to account expected years of schooling and mean years of schooling. Further, the income measurement has been changed from PPP-adjusted percapita GDP to PPP adjusted GNI. According to the State Human Development Report 2011, among 23 states Odisha remained in 22nd Rank (HDI value 0.362) with low human development below the all India value 0.519. Kerala secured the 1st rank (0.790), Bihar 21st (0.367) and Chhatisgarh 23rd (0.358) reflecting inter-state disparities. It is pertinent to mention here that Odisha has made notable achievement showing a considerable decline in Infant mortality rate (IMR) from 75 in 2005 to 53 in 2012 as per the SRS Report 2013. Though it stood higher than the national figure 42, the decline in IMR was better than the national average. This could be possible

due to institutional delivery and pre and post-natal care. But there are significant social and regional disparities in assessing public health in Odisha. There is a moderate decline in the Maternal Mortality Rate (MMR) in Odisha from 258 in 2007-09 to 237 in 2011-12 compared to the corresponding figures at all India level from 212 to 178 during the same period. The life expectancy at birth of males stood 62.3 and females 64.8 below the national figure of 65.8 for males and 68.1 for females. The district wise gender gap in literacy in Odisha, 2011 shows wide variations among districts, Khordha 10.5, Kandhamal 26.1, Nuapada 26.3 and Odisha as a whole 18. In 13 districts the gender gap in literacy is more than 20%. The Gross enrolment ratio at the primary level stood 99.69 and upper Primary level was 104.93 in 2011-12.

As regards the Sex ratio in 2011 it was 989 in Rural, 932 in Urban and 979 in the State as a whole. The Child sex ratio between 0-6 years was 995 in Rural 947 in Urban and 992 for the State as a whole. The goal of human development cannot be realized where there is gender bias or gender disparity which has been stated by Amartya Sen as 'missing women'. Human Development Report 2005 categorically asserted that 'Human Development if not engendered is endangered'. Gender equality promotes economic growth, strengthens democracy, improves governance and reduces poverty and insecurity. To capture a broader vision of human development the UNDP in the Human Development Report 2010 introduced Gender Inequality Index (GII) incorporating the indicators such as, Reproductive health, Empowerment and Labour market to address the shortcomings of Gender Development Index (GDI) which are calculated by taking equally distributed life index, life expectancy index and education index for male and female and Gender Empowerment Index (GEI) based upon the dimensions of participatory decision making. Table-2 clearly reveals that Odisha has done reasonably well at the literacy front. Whereas the literacy has increased 2.99 times from 27.32 percent in 1951 to 81.59% in 2011, the female literacy has grown faster which is 14.16 times from a low level of 4.52 percent in 1951 to 64.01 in 2011. Though both male and female literacy are fast approaching the national average, there is still a gender gap of 17.6 percentage points in literacy.

Odisha published the first Human Development Report in 2004-05 and has prepared District Human Development Reports for Ganjam, Kalahandi, Kandhamal, Mayurbhanj and Sundargarh districts. It has revealed wide variations in human development across districts in Odisha. The State has been pursuing the objective of attaining Millennium Development Goals (MDGs) to promote gender equality and empower women to improve maternal health, to achieve universal primary education, to eradicate extreme poverty and hunger to ensure environmental sustainability etc. Avoidance of gender bias in the distribution of education and health has become the key areas of intervention in policy making. The benefits of development are to be made gender sensitive.

A look at the HDI and GII in the Human Development Report 2011 for many countries show

contrasting results. United States with a very high human development with HDI value 0.943 (Rank 4) has the GII value 0.299 (Rank 47) while China with medium Human Development ranks rather very high in terms of GII with value 0.209 (35th) although HDI ranking is not satisfactory with HDI value 0.687 having 101st rank. India in the category of medium human development tells almost the same story having HDI value 0.547 (Rank 134) GII value 0.617 (Rank 117). Hence widening gap between HDI and GII are visible. In the HDI Report 2013 the HDI for India remained 135th rank (0.583) but the GII was 127th rank (0.563).

In the words of Mohammed Yunus “Women needed opportunity, not charity, they want chance, not bleeding hearts”.

III. Infrastructure, Rural-Urban Divides and Regional Disparities

Good infrastructure is a pre-requisite for accelerated development. These services covering both social and physical infrastructure have a wide range from the provision of health services, education, housing, drinking water, transport, communication, power, irrigation etc. Most infrastructure services are non-tradable. Odisha is deficient in infrastructure and there is felt need for substantially improving the extent and quality of infrastructure in the State. The level of disparities in the development status of infrastructure among the districts is fairly high. Also its access across space and people is highly unequal. Not only merely the existence but also the maintenance and supervision of many key social and economic infrastructures in the backward districts of the State are observed to be very poor. Regional disparities in terms of macroeconomic aggregates infrastructural development, agricultural development, industrial development and human development are quite visible. As a result, such provisions have caused regional inequalities and have failed to generate the intended development effects among the poor and vulnerable sections of the population. Significantly, various forms of disparities overlap and mutually reinforce each other. Existence and continuances of regional imbalances create the feeling of neglect, deprivation and of discrimination. Apart from the sense of deprivation in the neglected regions there are also sectoral imbalances among agriculture, industry and services sectors.

However, in the context of regional inequality Kuznet's hypothesis (1955) of inverted U-shaped Curve and Robert Solow's (1956) hypothesis of 'Absolute Convergence' of economies are worth mentioning, stating increase in inequality markedly in the earlier phase of industrialization and decline thereafter. But the 'Absolute Convergence has overshadowed the 'Kuznet effect' where rise in percapita income and increase in equality go together. Myrdal (1958) contends that the 'trickle down' effects are favorable repercussions on backward regions emanating from backward regions called 'Spread effects' which are weaker than 'Backwash effects' causing interregional differences and it to be narrowed by state intervention through regional policies is inevitable.

Nevertheless, it is a good trend to observe that in recent years Odisha has witnessed positive transformation of certain key infrastructures such as development of power and transport and communication networks. Proper maintenance and supervision will make it easier to accelerate the pace of development. Odisha has been a pioneer in power sector reforms and the availability of power in Odisha is better and continues to improve in comparison to many other states. However, the Transmission and Distribution loss is a matter of concern and the State has embarked upon ambitious programmes to improve grid infrastructure and reduce transmission and distribution loss. Over 80 percent of villages in Odisha are now electrified. About 70.4 percent of the power consumers belong to rural areas. Domestic consumers comprise about 88 percent of total consumers. They consume about 31.4 percent of the total power consumption as against 11.16% for commercial uses and 45.36% for industrial uses and the rest which covers 12% for public lighting, irrigation and agriculture (1.20%) Railways (6.86%) public water works and bulk supply and others in 2012-13. The demand for power in Odisha has been rising at a faster rate due to increased emphasis on industrialization and expansion in household electrification. The tele-density as in 2013 is 60.21% which is yet to catch up with the national average which has reached 73.62%. The rural tele density of Odisha is 164 percent in comparison to 147 percent at the national level and the urban tele-density has reached 164 percent in comparison to 147 percent of national level. The Road density in Odisha is better than the national average. The road length per square 100 Sq.km. is 156 as against 101 at the national level. But the state lags in surface road density and it is felt imperative to provide all- weather connectivity to remote habitations. Railway density in the State is 15 km. per thousand square km. of area which is below the national average of 20 kms.

With increased emphasis on human development and attainment of Millennium Development Goals (MDGs) the social sector such as education, health, housing, safe drinking water and sanitation need a priority attention. The overall literacy in Odisha was 72.9 percent at per with the national average 73 percent. The life expectancy at birth in Odisha for male was 64.3 years and for women 67.3 years during 2011-15 and lower than the national average of 67.3 years and 69.6 years for male and women respectively. Infant mortality in the State has come down to 53 during 2012 as compared to the national level which stood at 42. The gap is to be narrowed down by various health measures, with greater focus on the rural areas. The coverage of households having access to safe drinking water was 75.3 percent as per 2011 census. As regards main sources of drinking water the figures are tap water 6.3% well water 5.0% Hand pump / Tube well 79.4% and other sources 9.4%. The largest source of drinking water is Hand pump/ Tube wells which is 67% in rural and 54.1% in urban area. There exists gender disparities in Odisha in several human development indicators. Only 62% of female population are literate in comparison to 82% in male population in Odisha. The recent initiatives taken in Odisha in respect of establishment, implementation, management and operation through Public- Private

Partnership and adopting a 'Cluster approach' to development are encouraging. For this purpose integrated interventions covering technology upgradation, quality improvement, market promotion and skill development etc. are being designed and implemented. An investigation in to the socio-economic parameters like agriculture, infrastructure development, literacy education, backwardness and state intervention with a structural approach to poverty alleviation through group approach, family approach and cluster approach is the need of the hour to address the existing regional disparities in the development of the state and to halt this trend in the development process.

A look at Table-3 shows that the literacy rate in both rural and urban area have been steadily increasing over the Census years. In rural areas it has increased from 45.5 in 1991 to 70.2 in 2011. During the same period the urban literacy rate has gone up from 72 to 85.7 and the total literacy from 49% to 72.9. It is notable in the Table-3 that there is a narrowing down of rural-urban literacy gap from 26.5 in 1991 to 15.5 in 2011 which is more pronounced as a positive indicator of development.

Percapita income is an important indicator of standard of living. Table-4 reflects that there has been a rising trend of per capita real Net State Domestic Product (NSDP) of Odisha from 2004-05 to 2013-14 at 2004-05 prices. It rose from Rs. 17150 in 2004-05 to Rs. 25891 between 2004-05 to 2013-14. The percapita income of Odisha during 2013-14 is estimated at Rs. 25891 which accounted for a growth rate of 1.87% over 2012-13 when the per capita income was Rs. 25415. The per capita income of India went up from Rs. 24143 in 2004-05 to Rs. 39961 in 2013-14. Despite the measures taken by continuously striving to bridge the gap in real per capita income, the gap has been wider rising from Rs. 6493 in 2004-05 to Rs. 14070 in 2013-14 which is an area of concern.

As regards poverty there has been a falling trend in the poverty ratio in Odisha. The poverty head count ratio i.e. percentage of below poverty line has declined by 24.61% from 57.20% in 2004-05 in 61st NSS round to 32.59% in 2011-12, in 68th NSS round. But it remained higher than the national level which declined from 37.2% in 2004-05 to 21.92% in 2011-12. The reduction of poverty by 25.11% points was higher in rural Odisha than that of 20.31% points in Urban Odisha. Poverty estimates showed that Odisha recorded the highest reduction in poverty among all major states between 2004-05 and 2011-12 which is an impressive achievement. But that cannot bring much solace as Odisha remained only above Bihar (poverty ratio 33.34) from the bottom among 14 major states of India. Hence, despite the marked decline in poverty the magnitude of the incidence of poverty is a matter of concern.

The standard of living can be gauged from the patterns of consumer expenditure. As households get richer and there is an increase in expenditure, the share of food expenditure such as raw materials or staple foods like rice and wheat falls and that of processed foods meat and other items increases. In this context, there are two concepts that are often used

to shed the light on the standard of living. (1) Monthly Per Capita Expenditure (MPCE) (2) The Engel's Ratio. It is found from Table-5 that the Monthly Per Capita Expenditure over the different Rounds has been steadily increasing in both rural and urban area. The latest NSS Reports of different Rounds show that in the pattern of consumption though there is increase in the proportion of non-food expenditure and decline in proportion of food expenditure in both rural and urban areas indicating improvement in the standard of living but these rural-urban gap remains. In the latest 68th NSS Round the MPCE in urban area is Rs. 1830.35 as against Rs. 904.79 in rural area The proportion of MPCE on food in rural area (51.97) is higher than urban (39.26) area and on non-food items is (48.02) which is lower than urban (60.74) area. The rural-urban per capita expenditure ratio is much more pronounced as 0.49 for Odisha as compared to 0.52 at all India level. The MPCE (Rural) and MPCE (Urban) lagged much behind the MPCE rural at the national level which is Rs. 1287.17 and urban Rs. 2477.03. Further the monthly per capita expenditure of Odisha as percentage to all India Average is 70.29 in rural and 73.89 in urban area.

Engel's Ratio which is the share of food expenditure to total expenditure has been widely used as an indicator of the standard of living. It is evident from a look at Table-6 as per the NSS Reports in different rounds that in both rural and urban areas the Engel's ratio has been declining reflecting an improvement in the standard of living. Further rural-urban differential of the Engel's ratio indicates that it is higher in rural areas than urban areas. In the 68th Round it is 51.98 in rural area which remained higher than 39.26 in the urban area indicating a lower standard of living in rural area than in urban area. Per capita expenditure on cereals and cereal substitutes is not much more different for rural and urban households in Odisha. But for other items such as house rent, education and consumer services the per capita urban consumption is much more than rural consumption. The typical nature of rural-urban disparities which may be called as 'rural-urban poverty bind' may be attributed to spillover of rural poverty in to urban areas and higher consumption inequalities in urban areas.

IV. Initiatives in Public Distribution System (PDS) Reforms and Food Security

Public Distribution System has been considered as the most important food based safety net introduced by the Government of India. The basic objectives of the PDS are to provide essential consumer goods at cheap and subsidised prices to the consumers so as to insulate them from the impact of rising prices and maintain nutritional status of the population. In order to ensure the minimum quantity of food grains to the BPL families the Government of India launched the Targeted Public Distribution System (TPDS) in 1997. To make the TPDs more focused and targeted towards the poorest section of the population the 'Antyodaya Anna Yojana' (AAY) was launched in December 2000. The TPDS promises to ensure inclusiveness and long term food security. An important issue related to food

security is that poor persons should have enough purchasing power to have an access to sufficient food grains at affordable price. Thus, mere availability of grains does not ensure food security for the poor. Food security is a broader concept than food availability.

To meet the objectives of TPDS procurement of paddy, storage of rice and essential commodities to bonafide beneficiaries are the real challenges to ensure food security. To meet these challenges a number of initiatives have been taken by end-to-end computerisation for a holistic transformation of TPDS in Odisha. The Government of Odisha in partnership with the World Food Programme (WFP) has implemented a Pilot Project for identification of beneficiaries under National Food Security Act (NFSA) 2013 in Bhubaneswar Municipal Corporation and in Bhubaneswar Block with well defined exclusion criteria to make PDS universal. It is a pathway to end poverty induced hunger. A Task Force constituting 6 members appointed by the Government of Odisha in 2013 defined the exclusion / auto inclusion criteria for exclusion of ineligible and inclusion of eligible beneficiaries. On the recommendation of the Task Force 8 exclusion criteria such as possession of 3 or 4 wheelers heavy vehicles, mechanised agricultural and fishing engineering equipment, Income Tax or Professional tax payers, a family member having a registered enterprise for construction or service, no regular employees of the Government or Corporations, any family member not earning more than Rs. 15000/- in urban area and Rs. 10000/- in rural area, a family taking more than 2 kw connection or consuming more than 300 units electricity per month and any family members getting more than Rs. 15000/- pension in urban and Rs. 10000/- in rural area were used. Similarly the 5 inclusion criteria are houseless poor, beggars, all PVTGs, widow pension holders of Central and State Govt. and any member who is more than 40% physically challenged. Taking a Pilot project in Bolangir District it was found that there are 30% Exclusion errors while there are 10% Inclusion errors. As per the strategy the activities for the identification of beneficiaries in roll out phase are divided in to two parts (i) at the Registration Centres where there would be interface with the public and (ii) at the Central Digitization Centres where all backend work would be done. The State Government will roll out the ambitious National Food Security Act from September, 2015 which will benefit 3,26,41,800 people in the State. As per the Centre's guidelines under this Scheme 78% of the population of the State and covering 82% of the rural population will be the beneficiaries with date base of 2011 Census. It will be implemented in place of APL and BPL with priority under AAY. Digitised Ration Card Scheme is rolled out in the Pilot Project from Bhubaneswar under National Food Security Scheme to ensure transparency and to provide benefits to the poorest of the poor from the lower strata. Beneficiaries would get rice and wheat at subsidised price. For the convenience of the people registration centres will be opened in rural areas and Ward or Corporater level in the urban areas dividing the blocks or urban areas of each district in to 4 parts and completing the surveys in 4 phases. The involvement of the PRI functionaries and approval of selection of the

beneficiaries at the Gram Sabha, Panchayat Samiti and Zilla Parishad level will make the task transparent. The endeavor to maintain transparency will provide good governance to the people. However, to make it effective, proper and timely it requires adequate orientation and training to the grassroot functionaries including Anganbadi workers. PDS helps both the producers and consumers by linking procurement with support price. It strengthens and augments the distribution mechanism to make foodgrains available at affordable prices and will establish entitlement to adequate amount of food.

Another initiative in PDS reforms in Odisha is Door step delivery of food grains to Fair Price Shops (FPSs) through Departmental Storage System (DSS) abolishing private storage system from the State which was pilot tested from 1st November 2011 in 35 blocks of 10 districts and all blocks and Urban Local Bodies (ULBs) of four districts as Nuapada, Sonapur, Boudh and Deogarh. The middle agencies are removed in reaching commodities to the door steps at the GP levels. The Orissa State Civil Supply Corporation (OSCSC) is made more accountable for lifting. It helps in reducing the delay in diversion of PDS commodities from their own godowns to Fair Price Shops (FPSs). The practice of door step delivery enhances the economic viability of FPSs to a greater extent. Computerised Supply Chain Management System (DSC Automation) has been started as a Pilot Project in Sonapur District in from January 2012 and subsequently extended to other districts. The FCI, OSWC, RRC-cum-DSC and FPPs work in the supply chain management. The process of Decentralized System of paddy procurement has been carried out through the State agencies like OSCSC and MARKFED. After successful implementation of Paddy Procurement Automation System (PPAS) in 10 high procuring blocks of 6 districts Bargarh, Bhadrak, Kalahandi, Koraput, Sambalpur and Subarnapur, steps are being taken to replicate PPAS in 50 more blocks covering 24 districts. It is necessary to mention here that there are 28953 Fair Price Shops out of which 84.38% are in rural area and operated by Private Agencies, Cooperatives, Maitri, NACs, GPs and SHGs as in 2011. There are 8421846 APL, BPL and AAY Ratio Cards and 64800 AY Ration Cards and 28953 PDS Retail outlets in Odisha as in 2011.

The recent initiatives in PDS reforms will overcome the problems faced in implementation of TPDS which is plagued by inclusion and exclusion errors in identification of bonafide beneficiaries, prevalence of ghost cards and unidentified households, leakages and diversion of food grains to open market because of prevalence of widespread corrupt practices, irregular arrival of food grains at fair price shops and huge mismatch in Supply and Demand in PDS items. It will provide practical solution to the problems at both conceptual and operational level to ensure food security and maintain nutritional status to the vulnerable sections of the society. The National Advisory Council (NAC) recommended the shifting from household entitlements to individual entitlements. Hence, it is felt the dismantling of the entire structure and giving cash transfer to the poor in an electronic account every month to a Unique Identification or Aadhaar number linked Smart

Card.

V. Good Governance

Good governance is a critical factor in the process of development. It determines how to percolate the decision making in different layers of administration so that the benefit of development reaches the needy, living in each and every corner of the country. Definitions of governance vary from broad and all-inclusive ones like “rules, enforcement, mechanisms and organisations” to manage society’s problems and affairs (The Word Bank 2002). The Worldwide Governance Indicators (WGI) Project of the World Bank defines it as the traditions by which authority of a country is exercised which includes the capacity of the Government to effectively formulate and implement sound policies. The key dimensions of governance are voice and accountability Government effectiveness, proper functioning and efficiency of the government effectiveness, and their acceptance by the Public is legitimacy. The Second Administrative Reforms Commission (SARC) 2009 emphasised on a proactive, responsive, accountable, sustainable and efficient administration, for citizen’s welfare. The core elements or the attributes of good governance are transparency, participations, consensus oriented, accountable, responsive, equitable and inclusive, effective and efficient, free from corruption, and follows the rule of law. Good governance functions as the trustee of the governed. But in view of the all prevailing influence of the prevailing social structure on decision making various issues of governance has to be shaped in the context of ongoing social change through the functioning of our economic system. Experience has amply demonstrated that participatory or ‘Inclusive Governance’ is indispensable for achieving inclusive growth, keeping with the local needs and circumstances at the grass root level in the process of decentralized planning. It is a naïve to expect a genuinely inclusive governance without empowerment of social groups. This is woefully lacking at the grass root level. The concerted action from civil society and civic consciousness among the people can lead the country towards the goal of good governance outcomes and rid the country of the problems that plague us. Good governance is a critical input to ensure sustainable human development.

Governance primarily involves the interaction between the formal institutions and those in the civil society. Government is one of the main actors in governance. In the local level the actors include associations, the civil groups, the social activities organization and the media at the national level. The actors, the institutions and the delivery mechanism are some of the elements of good governance. Good governance safeguards the human rights by participation, openness, transparency and accountability by their performance in terms of responsiveness, effectiveness and efficiency to ensure fairness.

Odisha continues to face the problems like poverty, inequality, regional disparities, unemployment and moderate rate of growth, the challenge of quality in education, low

levels of health and nutrition especially of women and children and the problem of ensuring inclusive growth despite the economy achieving high levels of growth in the last three decades. This raises questions regarding 'governance' or the processes and mechanisms involved in the policy making and implementation and in ensuring a fair distribution of the benefits from these among people. Involvement of the PRI institutions and NGOs at the grass root level in education, health, PDS reforms, tribal development social security measures and creation of greater awareness will ensure good governance for the socially and economically excluded groups. It is heartening to note some dynamic dimensions of good governance in Odisha and development of grass root organisations such as Palli Sabha, Gram Sabha, Anganwadi Workers etc. in education health and proper identification of beneficiaries of different beneficiary oriented Government programmes.

VI. Inclusive Growth

The concept of inclusive growth was introduced during the Eleventh Plan. Inclusive growth is a strategy that aims at creating physical assets, human capital, capabilities and opportunities for productive employment of the excluded sections for their access and security for a sustainable livelihood. The biggest challenge of inclusive growth is human development focusing on the components of human development such as education, health and a decent standard of living. It is a broad and multidimensional concept and the concept of inclusiveness goes beyond the objective of poverty reduction. High economic growth in the post-reform period failed to percolate the benefits of the growth among the poor. Rather it has increased regional, social and economic inequalities. Inclusive growth is a pro-poor strategy to ensure equity and is viewed as an 'add on' to a dominantly growth strategy. It triggers the growth pattern by a participatory approach to provide a safety net to the poor. The Twelfth Plan extended the idea with focus on more infrastructural investment with the aim of fostering a faster, sustainable and more equitable growth. The growth process is perceived as inclusive for the SCs, STs, women, children weaker sections, marginalized groups, backward classes, minorities and differently abled, without deprivation. The objectives of inclusive growth are lower incidence of poverty, broad based and significant improvement in health outcomes, universal access for children to school, increase access to higher education, skill development, wage employment and livelihood improvement in provision of basic amenities like water, electricity, sanitation, roads and housing and over all improvements in standard of living. It includes 'Social Inclusion' along with 'Financial Inclusion'. The objective of inclusiveness is reflected in adoption of the monitoring targets such as income and poverty, education, health, women and children, infrastructure and environment. The key feature of inclusive growth is that GDP should not be treated as an end in itself but only as a means to an end. The dimensions of inclusiveness are equality of opportunity, reducing gender disparities and addressing the issues of regional balance. Inclusiveness as empowerment and participation brings

the issues of governance and accountability.

One of the aspects of inclusive growth is Financial Inclusion. The objective of financial inclusion is to extend the activities of the organized and formal financial system within its ambit like delivery of credit and other financial services like saving, insurance and payments etc. at an affordable cost to the disadvantaged sections and lower income groups those who are excluded. The strategy of financial inclusion is the penetration of micro finance and access to timely and adequate credit to the weaker sections and marginalised groups. The recent implementation of Pradhanmantri. Jan Dhan Yojana (PMJDY) is no doubt an innovative dimension of financial inclusion from 'Class Banking to Mass Banking'. The average population serviced by a bank branch in the State is about 12000 which is better than many other states in the country. About 80% of all bank branches are located in rural and semi urban areas. A positive look of the services sector is that the growth rate of total bank deposits is rising and from 2005-06 to 2012-13 the achievement of the priority sector advance is 78.35% and percentage of priority sector advance to total advance is 59.57% in 2012. The percapita bank deposit of Commercial banks in Odisha in 2012-13 is Rs. 34232 below the national average of Rs. 56380.

Looking at the Odisha experience there has been a marked improvement in literacy and decline in rural-urban gap at 15.53 points in 2011 census. The dropout rates at the primary level has been reduced from 33.6 to 0.43. Improvements in health care by decline in infant and maternal mortality and poverty reduction and social inclusion has been accomplished as discussed in the earlier sections. In Odisha with 22.85% of tribal population and 17.13% of SC population various welfare oriented programmes are being operated. Odisha has the third largest concentration of the tribal population in the country comprising 9.20% of the total tribal population followed by Madhya Pradesh and Maharashtra (17.7%). There are 13 Particularly Vulnerable Tribal Groups, (PVTGs). Various programmes are implemented for their economic, educational and social development. There are 17 Micro projects those have been implemented in the State for the all round development of 13 PVTGs. Implementation of Income Generating Schemes (IGSs) by group model through community oriented programmers by the cluster approach have put them in the process of transition to bring them in the mainstream of development.

VII. Concluding Observations

A Glance at the Odisha's growth performance over the last two decades has been impressive in the development of physical and social infrastructure. Focus on education and rural health care has made notable changes. The accomplished growth, poverty reduction and social inclusion have made notable achievements. The rate of growth has taken an accelerating trend and decline in poverty ratio has corroborated a rise in standard of living. PDS reforms for the improvement of the standard of living is an innovative dimension. The

structural transformation / break of the economy and process of services- led growth have led to strategic interventions in the process of development. Despite that rural-urban disparities and regional disparities are widely prevalent those are to be addressed with an 'inward looking approach' from 'top-town' to a 'bottom up' approach at the grass root level by implementing the participatory approach to development and adhering to the issues of good governance to ensure inclusive growth so as to realise the plan goals of equity and sustainability. There is an imperative need for larger resource transfer to the State and more allocation to the social sector development. Standards and policies need to be realistic and consistent. Strengthening infrastructural facilities, social protection of women, children and socially excluded groups, enhanced budget support to agriculture and allied sectors for increasing productivity and diversification are the key areas of intervention. To address the issues of concern such as poverty inequality, unemployment and regional disparities what is needed is the effective implementation and monitoring of macroeconomic policies and sectoral policies. To achieve higher standards of human development a multi-pronged approach is necessary. This approach must comprise higher growth rate, faster development of the social sectors, development of appropriate institutions at the grass root level to promote community participation and monitoring. The focus and special attention in looking forward in the development approach need special attention to the depressed regions and marginalized class to substantially reduce regional, social and gender disparities to promote substantially their human development indicators. Infrastructure in both rural and urban areas need to be adequately augmented and improved. Enhancing and promoting a 'convergence approach' among different programmes at the district level will lead to achieve the MDGs. Improved monitoring of the key human development indicators participatory approach to development and attitudinal changes will no doubt be growth inducive. Let me conclude with a Chinese saying "If you give a poor man a fish, his immediate problem of hunger may be satisfied, but if you teach him fishing he will be a micro entrepreneur and get out of poverty permanently.

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APPENDIX

Table - 1: Plan-wise Average Growth rate of GSDP and Per capita NSDP of Odisha at 2004-05 Prices

Plan Period	GSDP	Per capita NSDP
1st Plan (1951-56)	3.74	2.69
2nd Plan (1956-61)	2.55	1.12
3rd Plan (1961-66)	4.44	2.31
Three Annual Plans (1966-69)	6.41	3.56
4th Plan (1969-74)	1.52	0.26
5th Plan (1974-79)	4.09	2.50
Annual Plan (1979-80)	-12.09	-14.87
6th Plan (1980-85)	4.45	3.01
7th Plan (1985-90)	7.06	5.52
Two Annual Plan (1990-92)	-2.29	-4.46
8th Plan (1992-97)	2.00	0.07
9th Plan (1997-2002)	5.58	5.63
10th Plan (2002-07)	8.82	6.69
11th Plan (2007-12)	7.01	3.69
1st Two years of 12th Plan (2012-14)	6.84	3.55

Source : *Economic Survey of Odisha - 2013-14*

Table - 2 : Gender Gap in Literacy Rate in Odisha (1951-2011) (in percent)

Census Years	Literacy Rate (Male)	Literacy Rate (Female)	Total Literacy	Gender Gap in Literacy
1951	27.32	4.52	15.80	22.80
1961	34.68	8.65	21.66	26.03
1971	38.29	13.92	26.18	24.37
1981	46.39	20.60	33.62	25.79
1991	63.09	34.68	49.09	28.41
2001	75.35	50.51	63.10	24.84
2011	81.60	64.01	73.05	17.58

Source : *Economic Survey of Odisha 2013-14*.

Table - 3: Literacy rate- Rural-Urban differential in Odisha

Census	Literacy Rate (Rural)	Literacy Rate (Urban)	Literacy Rate Total	Rural Urban Literacy Gap
1991	45.5	72	49.1	26.5
2001	59.8	80.8	63.1	21.0
2011	70.2	85.7	72.9	15.5

Source : *Economic Survey of Odisha 2013-14.*

Table - 4: Comparison between Per capita Real Income of India (NNI) and Per capita Real Income of Odisha (NSDP) at 2004-05 prices (in Rs.)

Year	Per capita Income of India NNI	Per capita Income of Odisha NSDP	Per capita Income Gap
2004-05	24143	17650	6493
2005-06	26015	18184	7821
2006-07	28067	20194	8413
2007-08	30332	21640	8692
2008-09	31754	22963	8791
2009-10	33901	22846	11055
2010-11	36202	23968	12234
2011-12	38048	24151	13897
2012-13	38856	25415	13441
2013-14	39961	25891	14070

Source : *Economic Survey of Odisha 2013-14.*

NSS Round	Rural (in Rs.)			Urban (in Rs.)			Rural - Urban Monthly Per Capita Exp. Ratio
	Food	Non-Food	Total	Food	Non-Food	Total	
55th Round July'99-June 2000	239.25	133.92	337.17	352.23	266.25	618.48	0.60
60th Round Jan- June 2004	241.98	172.11	414.09	415.53	456.56	872.09	0.47
61st Round July-2004 - June -2005	245.58	153.31	398.89	378.13	379.18	757.31	0.53
62nd Round July 2005 to June 2006	260.45	199.87	460.32	402.57	497.63	900.20	0.51
63rd Round July 2006-June 2007	265.30	193.27	458.56	451.85	620.29	1072.13	0.43
64th Round July 2007-June 2008	325.42	233.53	558.95	607.99	830.36	1438.35	0.39
66th Round July 2009 - June 2010	402.22	311.37	715.59	607.96	860.88	1468.84	0.49
68th Round July 2011- June 2012	470.30	434.49	904.79	718.75	1117.70	1830.35	0.49

Source : 1. Directorate of Economics and Statistics, Odisha.
 2. Statistical Abstract of Odisha - 2012.
 3. NSSO, Government of India

Table - 5: Engel's Ratio for Odisha in different NSS Rounds

NSS Rounds	Rural	Urban
55th Round	64.11	56.95
60th Round	58.44	47.65
63rd Round	57.86	42.15
64th Round	58.22	42.27
66th Round	56.48	41.39
68th Round	51.98	39.26

Source : 1. NSSO, Government of India
 2. Economic Survey of Odisha 2013-14

Rural Livelihoods and Migration: Prospects for Odisha*

Shovan Ray¹

We compare the growth trajectory in per capita net income in Odisha in the last few decades with the national average at 2004-05 prices presented in Table 1 and Figure 1. Both move in similar fashion till about mid-1980, then begin to diverge markedly. The national average always remains higher than the state average. From about that time the national per capita income moves at a significantly higher rate than the state income; we notice a significant wedge between the two series, which gets widened with time. At the beginning the state per capita income was about 90 percent of the national income, but today the state income is only about 65 percent of the national level; while the growth rates for both national and state incomes have accelerated in the last two decades, we are far from catching up. In terms of 'convergence analysis' we can visually see that we are diverging markedly even when we are getting more prosperous.² This point will remain in the back of discussion in what I intend to put forward.

We next consider the broad sector-wise shares of GDP and compare them with Odisha's shares. These are presented in Table 2 and Figures 2 and 3. I take the longer perspective for Odisha from 1950-51 on the components of GSDP and compare their end-points with national levels, though the two patterns are similar. There is a secular decline of the agriculture sector in Odisha from about two-thirds of the total in 1950-51 to less than 16% in 2013-14. The industry sector has increased its share over the same period from roughly 6 percent to a quarter of the total now; but the overwhelming growth of the service sector from about 29 percent to 59 percent is unmistakable. The same pattern has unfolded for India as well. This pattern of movements away from the primary to the industry sector and then the service sector is of course not new and is part of the classic growth and development scenarios associated with the traditions of research by Simon Kuznets, and his seminal presidential address at the American Economic Association in 1954 (Kuznets, 1955). There is however a major twist to that original speculation by Kuznets then, in the pattern of the leapfrogged growth of the service sector in countries such as India ahead of

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- 1. Professor, IGIDR, Mumbai. I am grateful to Priya Rampal, Ph.D. candidate at IGIDR, for research assistance. While preparing this paper I have benefited from my association with the IDFC-IRMA-IGIDR-CESR Rural Development Network which prepared the India Rural Development Report 2012-13 and its 1913-14 edition under preparation. The paper draws some material presented in a related paper which provides a larger perspective for changes underway in rural India – see Ray, 2015. The views expressed are my own.*
- 2. There is a formal literature on 'convergence analysis', and interested readers may like to follow that up.*

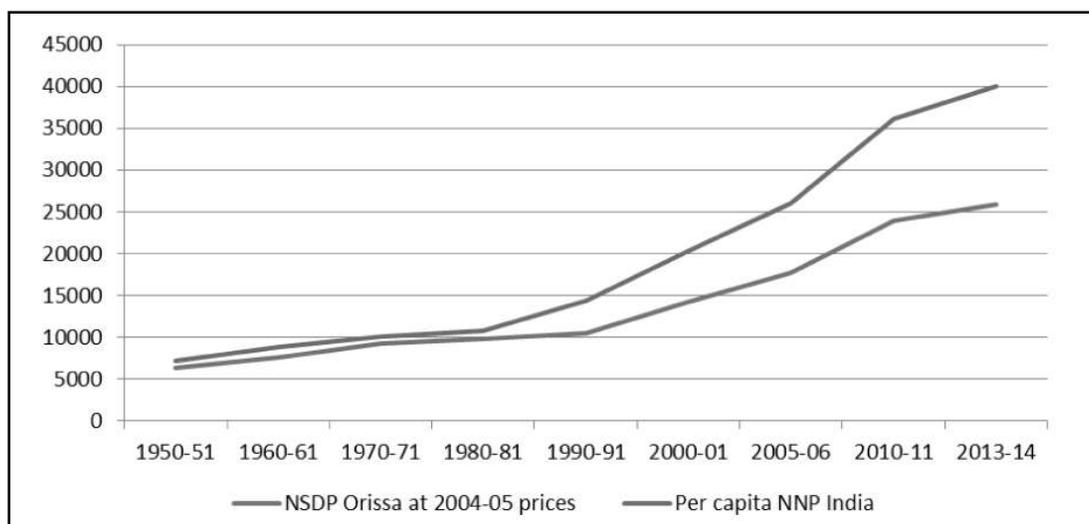
their industrial transition. In this respect there is considerable similarity in growth patterns of broad sectors between Odisha and India. We will also observe more similar patterns as we delve deeper into sub-sectors, not just between broad national sectors and those in Odisha. A moot point however crops up: if these patterns are similar, why is Odisha's per capita income falling increasingly behind the national average? Clearly the factor incomes earned in Odisha are losing out in the process of growth.

Odisha remains one of the poorer states of India with widespread poverty, malnutrition, hunger and many other forms of economic and social backwardness. I wish to discuss mostly on those factors that may turn the divergence into the path of convergence at least, if not diverge positively. We are aware that the state is endowed with enormous natural resources, and I would not waste my labour in trying to showcase that argument. I prefer to underline the human agency instead, and how its potentials can be harnessed for the economic uplift of the state. The focus of this paper would be on rural livelihoods of Odisha and its prospects, but I need to dwell on urban vocations and professions due to important links between the two through migration and trade, both to urban centres and across states of India.

Migration takes place in various forms and there are male and female migrations from the place of last residence or birth, and there are various Census of India classified reasons such as marriage, employment, business, education, and others. There are also rural-urban sources and destinations of migrants, and whether they move alone. In the last couple of decades considerable migration out of Odisha has taken place in pursuit of work and employment. How are these patterns similar to different regions of India? These are important issues and determine factor incomes of workers and migrants of odisha.

Table 1: Per Capita Real NSDP of Odisha as compared to National Average

Year	NSDP Orissa at 2004-05 prices	Per capita NNP India
1950-51	6395	7,114
1960-61	7564	8889
1970-71	9239	10016
1980-81	9745	10712
1990-91	10452	14330
2000-01	14263	20362
2005-06	17650	26015
2010-11	23968	36,202
2013-14	25891	39961



It is not just that people from Odisha are migrating to towns and cities and to other states and regions of India under the pressure of economic deprivations, which are indeed significant, especially in rural Odisha more than they were earlier. They are also driven by changes of other sorts. There are important changes in aspirations levels due to considerable changes in information and communications. Another important contributing development is the development of infrastructure both in rural areas and also among districts and towns through a network of roads and highways, railways, etc. There are new markets and growth engines away from Odisha, which are pulling workers for employment. All these are in no small measure aided by major changes in education and human resources that have seen considerable changes. I would highlight some deficiencies also. However, central to my endeavours would be rural life in Odisha and its livelihoods, including agriculture and allied activities. Before we consider the changes in rural Odisha, it is useful to note the dramatic changes that have occurred in the relative shares of major segments of the national economy, and benchmark that for the state.

As Figure 2 for Odisha and Figure 3 for India show, the share of the primary sector has shrunk, in particular that of agriculture, while services now claim nearly 60 percent in India; the story is similar for Odisha. There are two issues here. First, there are conceptual problems in the measurement of services.³ Secondly, there are several segments within the service sector; some in organised 'modern' sectors and others in unorganised 'informal' sectors; it is believed that segments like financial or personal services grow with

³ Its valuation of output is assumed to be largely what its agents earn. For instance, how do we correctly measure output by agents, be they in government service or managers and accountants in corporate sectors? It would also exclude unpaid services (rendered in the household) as those are beyond national accounts. Furthermore, the issue of natural resources accounting outside the GDP measure is being debated.

general prosperity, while a large group of services evolve through households' coping mechanism, discussed below. All that notwithstanding, the change is unmistakable as measured; it is conspicuous for Odisha as in India.

Table2 : Gross State Domestic Product by Broad Sectors with 2004-05 Base (As per RBI Classification) % share in Odisha

	Agriculture	Industry	Services
1950-51	64.65	6.32	29.04
1960-61	50.54	8.96	40.5
1970-71	55.93	11.05	33.02
1980-81	50.35	11.85	37.8
1990-91	34.1	15.86	50.05
2000-01	26	18.39	55.61
2005-06	22.97	23.03	54
2010-11	17.99	24.18	57.83
2013-14	15.58	25.4	59.02

Note:

(i) Agriculture Sector includes Agriculture & AH, Fishery and Forestry

(ii) Industry Sector includes Mining & Quarrying, Manufacturing and Electricity, Gas and Water supply

(iii) Services Sector includes rest of the Sub-sectors

(AE: Advanced Estimate, 1st R: 1st Revised, 2nd R: 2nd Revised, 3rd R: 3rd Revised)

Source: Directorate of Economics and Statistics

Figure 2 : Odisha Gross State Domestic Product by Broad Sectors with 2004-05 Base

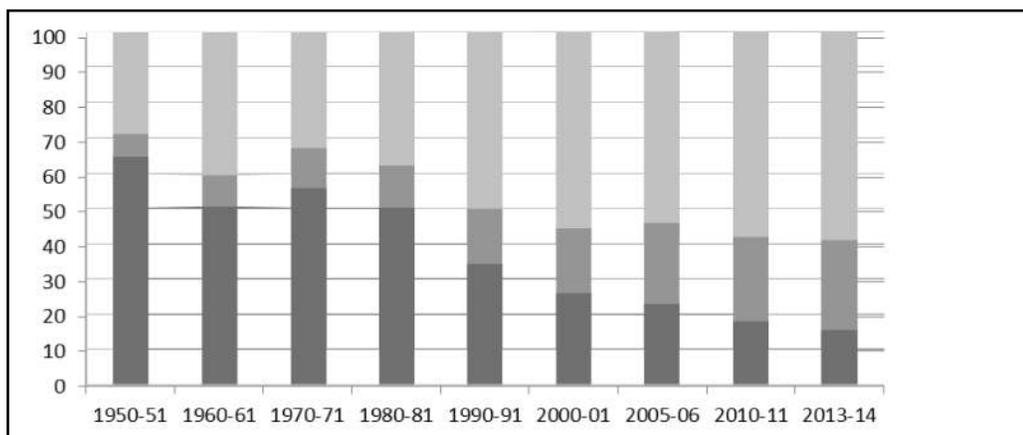
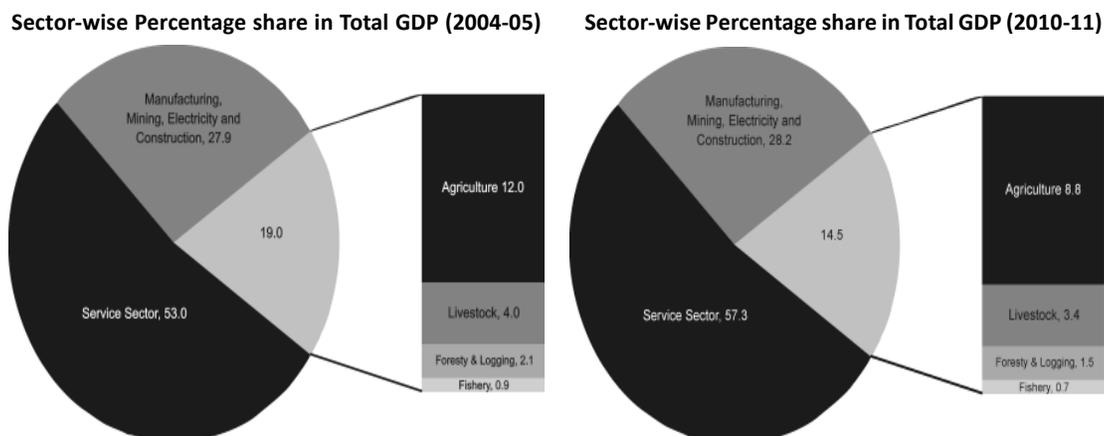


Figure 3: Sector wise percentage share in Total GDP (2004-05 and 2010-11)

Source: *Statewise Estimates Of Value Of Output From Agriculture And Allied Activities 2013, CSO, GOI*

Rural employment as distinct from output is a different matter altogether and most Indians still depend on that as they live there, and agriculture in particular still accounts for the greatest share of employment. It is clear that productivity in agriculture and allied activities is pitifully low. This duality has been the source of much research and the basis for classical predictions of economic transition. At this stage we need to introduce certain agro-ecological concepts which are important to underline and would help in grasping some issues of the political economy of agrarian growth that is discussed later.

Irrigated, Coastal and Rainfed Farming Systems

Agriculture remains the dominant activity and source of livelihoods in rural life. It is therefore useful to note certain concepts and classifications which are useful in the context. Crop and non-crop agriculture use a variety of natural resources, including land, water, air, and other elements. Consequently all agricultural activities cannot be supported equally efficiently everywhere. Certain broad features are identified to define concepts like 'farming systems', agro-climatic or agro-ecosystem (AES) by their soils, climate, physiography, and natural vegetation. There are various approaches to this classification, though we would refer to AES classification for classifying India into five broad systems.⁴ These are Arid, Coastal, 'Hill & Mountain', Irrigated and Rainfed. A sub-classification of fourteen 'production systems' has been made based on the most important crops identified in each region. The identification of AES and production systems is an important exercise in the study of cropping patterns, efficacy of policy interventions and diagnosis of environmental effects.

⁴ For an outline on this vast literature, see Ray (2007), especially chapters 1 and 3.

An AES zone is not synonymous with state boundaries and may thus cover several states or parts thereof. For instance, West Bengal may share characteristics of irrigated, rainfed, coastal, and hill & mountain zones in different parts of the state. In general, the 'rainfed' system falls over the states of Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. These areas largely depend on rains of different intensity, especially the southwest monsoon. The 'irrigated' system covers most of the Indo-Gangetic plain, and covers states like Punjab, Haryana, UP, and parts of Bihar and W. Bengal. These areas have more assured and controlled water supply. The 'Hill and Mountain' areas are mostly the eastern and western Himalayas while the 'arid' area covers most of Rajasthan and some parts of Gujarat. The 'coastal system' covers the coastal districts of the Indian peninsula. Among the five systems, the 'rainfed' and the 'irrigated' are the most important in terms of geographic area and population in them, covering nearly 80 percent of the country's population and about 70 percent of the land area. Together with the coastal districts they cover most of India's population and agricultural activities, though the arid and 'hill and mountain' areas have important special characters and contributions. The irrigated system, together with the coastal region, contributes substantially to total food production and the mainstay of 'green revolution' with its focus on rice and wheat.

It is useful to note that the term 'irrigated system' does not mean a complete contrast with 'rainfed' areas; rather it is the intensity of irrigation provided in the region that underlines the distinction, with about two-thirds in the irrigated system and about a quarter in the 'rainfed' areas. The indo-Gangetic plain, mainly its upper reaches in the north-west of India, is where much of agricultural prosperity has taken place, though the coastal districts of the Indian peninsula have also benefited significantly. Thus while the Punjab-Haryana farmer is prosperous in the first region, its counterpart in coastal Andhra Pradesh is also prosperous in the second. Most terrains of Odisha may be classified as 'rainfed', being dependent on the SW monsoon. Though its coastal districts have more water through rainfall precipitations and river systems, they also face the hazards of floods and cyclone that the region has been prone to. Though the 'production system' of the Odisha coastline share many features of the eastern coastal AES, these districts (namely Balasore, Bhadrak, Kendrapada, Jagatsinghpur, Puri, Ganjam and Gajapati) have only marginally benefited from fisheries and certain plantations and crop-agriculture; prosperity has mostly eluded them for a variety of reasons.

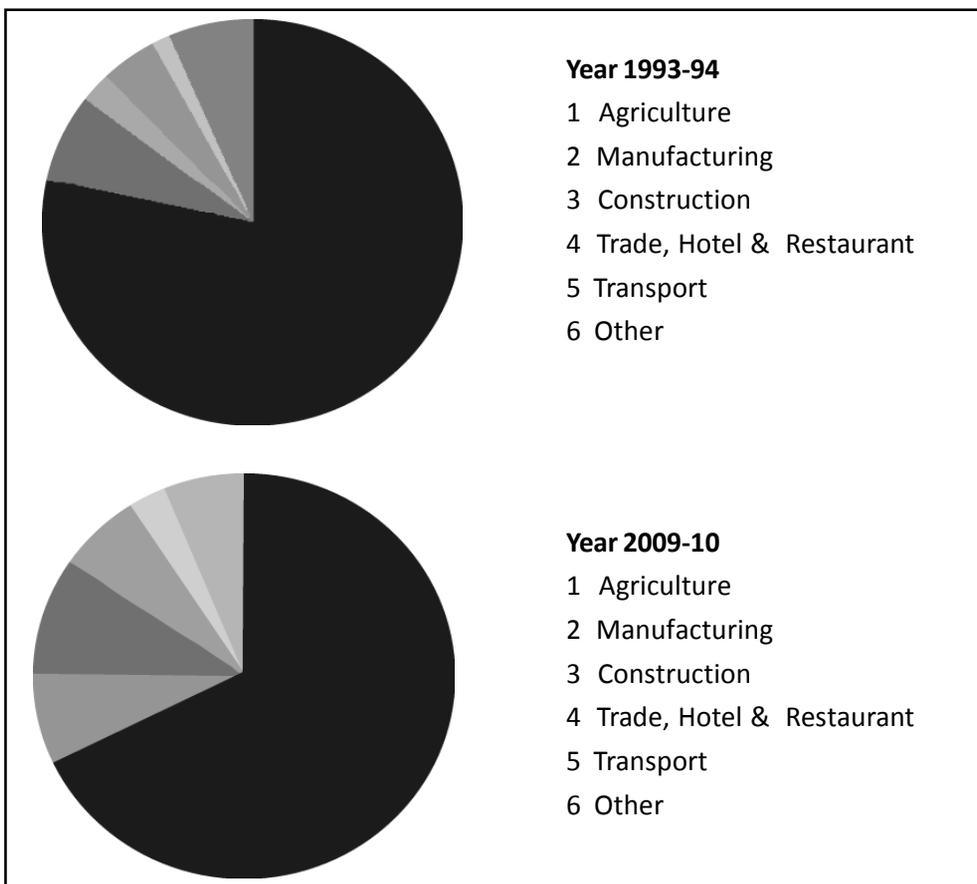
Working patterns across sectors and States

Agriculture still constitutes the greatest share of activity in rural India. Agriculture absorbed 78.4 percent in Principal Status (PS) and Subsidiary Status (SS) taken together in 1993-94 but declined to 67.9 percent in 2009-10. There are considerable variations across states; in Kerala it was 56.4 percent in 1993-94 and declined over 20 percentage points to 35.7 percent

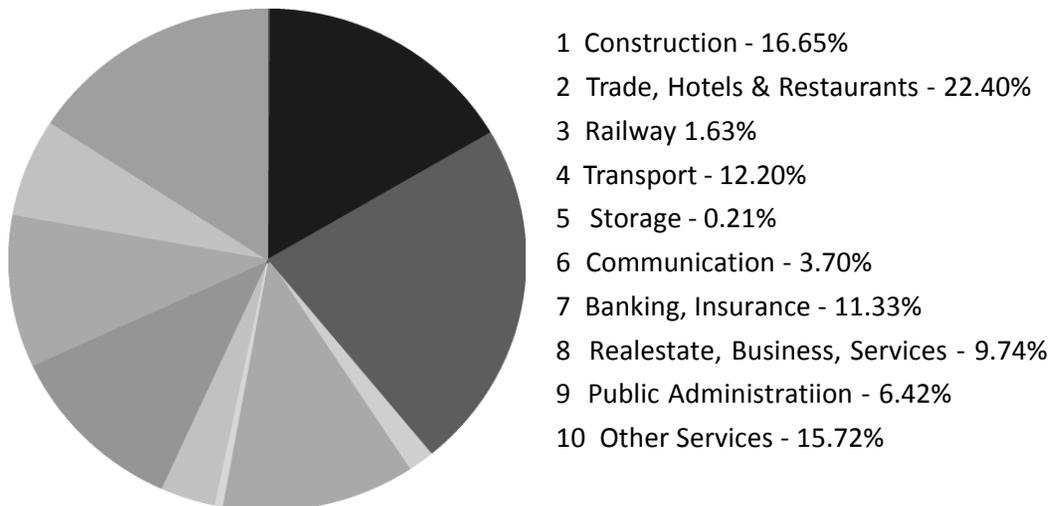
in 2009-10; in West Bengal, the corresponding figures were 63.3 and 56.3 percent. On the other hand, in states like Bihar, HP, Karnataka, MP, Maharashtra, Odisha, Rajasthan, and UP, the figures were about 80 percent or more in 1993-94 and declined to around two-thirds of the total by 2009-10.

Two sectors of rural activity registered the highest increases in most states: 'construction' increased labour absorption from 2.4 to 9.4 percent; and 'trade, hotels and restaurants' increased from 4.3 to 6.4 percent during the same period. The transport sector has increased its share by more than doubling, a very important development indicator for trade and other economic activity. These sectors have also done well in Odisha, construction accounting for 10 percent of GSDP (16.65 percent of services) and 'trade, hotels and restaurants' about 13 percent of GSDP (22.4 percent of services), and transport 12.2 percent of services.

Figure 4: All India Proportion of Usually Working Persons in the Principal Status (PS) and Subsidiary Status (SS) Taken Together by Broad Industry Division (Rural)



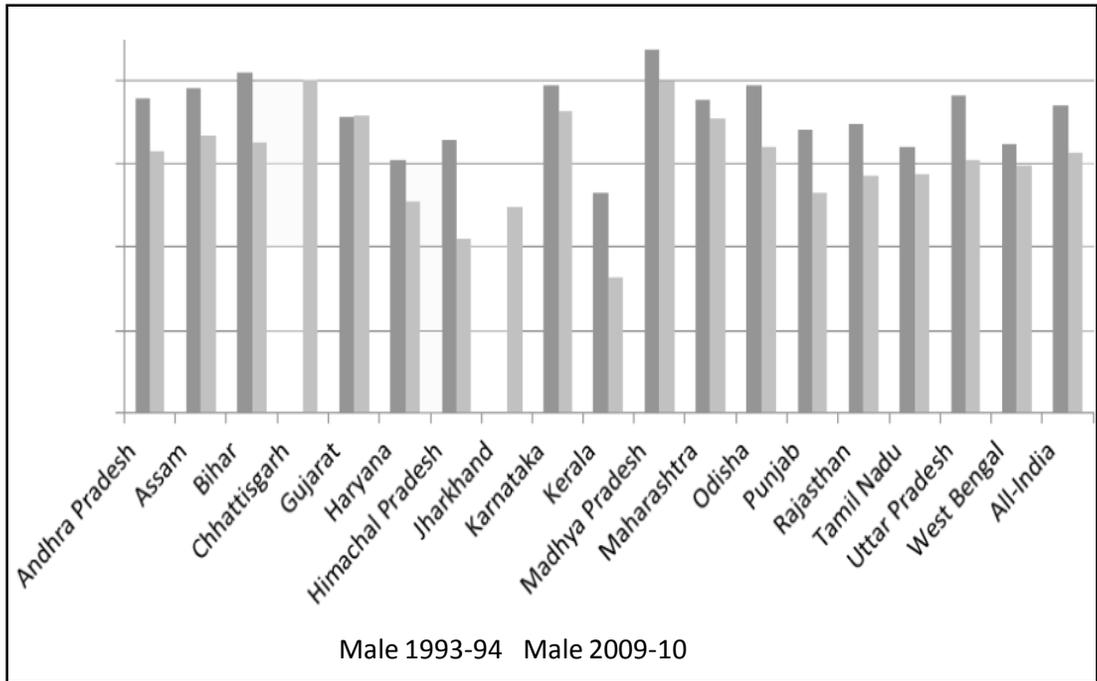
Sources: NSS: *Employment and Unemployment Situation in India*, Report Nos. 409 (50th Round, 1993-94), 458 (55th Round, 1999-2000), 515 (61st Round, 2004-05) and 537 (66th Round, 2009-10)



Source: Odisha Economic Survey 2013-14

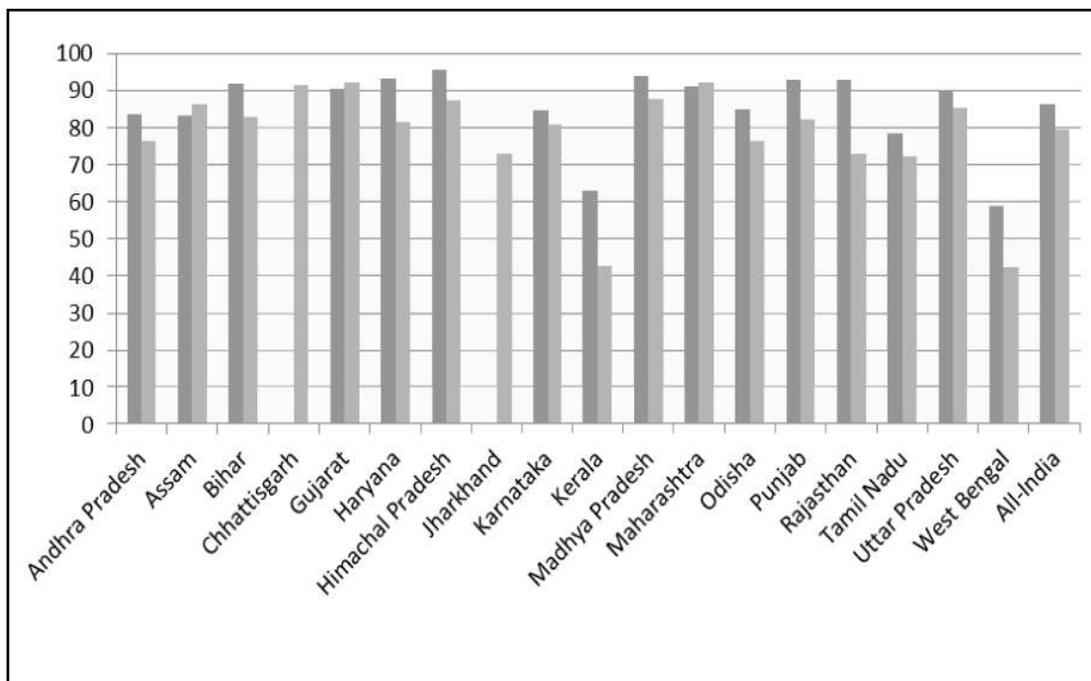
Work participation rates (WPR) in rural areas vary significantly by gender with about 52-53 percent males and 30 percent females in labour force out of their total population. This is distributed across sectors at different rates, with males engaged in several sectors but females largely in agriculture. There is an interesting pattern of male and female participation in agriculture, together with changes in recent decades. In 1993-94 the share of agriculture in employment for males was 74.1 percent whereas for females it was 86.2. In 2009-10, the share of agriculture in employment declined sharply to 62.8 percent for males but less dramatically for females to 79.4. Clearly, there has been substitution of female labour force for males in agriculture. It is pertinent to note that female labour may prefer to work in family farms as extensions of their domestic duty and work in nearby sites rather than work in remote locations and in factories and services considered more disjointed and impersonal. This situation has considerable diversity across states. It has certain regional patterns among states which are also influenced by their agro-ecological traits.

In Bihar males engaged in agriculture were 82 percent in 1993-94 and females almost 92 percent, but by 2009-10 males declined sharply to 65 percent and females to 83 percent (Figures 6 and 7). It has been a state with high agricultural participation in the absence of labour absorption in other rural activities; however, considerable diversion of male labour has taken place in the latter reference period, though somewhat less of female labour force; but both of them still remain high compared with many other states. In Madhya Pradesh, the decline for males was from 87 to 80 percent and for females 94 to 88 percent. In case of Odisha, male labour in agriculture declined from 79 to 64 percent whereas female labour declined from 85 to 76 percent.

Figure 6: Share of Agriculture in Rural Employment: Males 1993-94 & 2009-10

Sources: NSS: Employment and Unemployment Situation in India, Report Nos. 409 (50th Round, 1993–94), 458 (55th Round, 1999–2000), 515 (61st Round, 2004–05) and 537 (66th Round, 2009–10)

Contrast this picture with the northwestern prosperous states of Haryana and Punjab, where male labour were 61 and 68 percent, respectively, and declined to roughly 51 and 53 percent in 2009-10. For female labour the levels were about 93 percent and declined to roughly 82 percent in the second period for both the states. In Kerala, the decline for males during that period was from 53 percent to 33 percent, and a similar drop of 20 percentage points for females from 63 to 43 percent. By contrast the two western states of Maharashtra and Gujarat have considerable agricultural activity in a variety of subsectors, with relatively stable shares for both male and female – more than 70 percent for males and consistently more than 90 percent for females, which in fact increased over the time period considered. Clearly there are regional patterns of activity in rural areas, which should be woven into the storyline.

Figure 7: Share of Agriculture in Rural Employment: Females 1993-94 & 2009-10

Sources: NSS: *Employment and Unemployment Situation in India*, Report Nos. 409 (50th Round, 1993–94), 458 (55th Round, 1999–2000), 515 (61st Round, 2004–05) and 537 (66th Round, 2009–10)

Agriculture thus continues to absorb the greatest part of male rural labour though they have moved from that vocation increasingly, except in a handful of states. For female labour in paid employment, agriculture is predominant despite some decline. A variety of factors are at work. First, there is diversification into other forms of activity in rural areas, including rural industry and services, especially construction of various descriptions, which include central and state sponsored programmes. A part of this is through deliberate interventions for employment creation, rural infrastructure, and poverty alleviation such as MGNREGA, Golden Quadrilateral, Bharat Nirman, PMGSY, Indira Awas Yojana, etc. Secondly, within agriculture changes are taking place in various subsectors and labour absorption may reduce with input coefficients. For instance, some are moving into burgeoning non-crop agriculture such as diary, poultry, fisheries, etc. even within this declining trend. It is also the result of productivity changes in agriculture. Third, workers are moving out of agriculture and the rural economy altogether. Some of them may be permanent migrants and would not count any longer, but many move out temporarily and return, and it is believed that a considerable proportion also commute to nearby places of semi- and peri-urban settlements to work while they reside in their rural habitats. In their place, substantial proportions of female labour have taken over for a variety of activities.

Some look after the farm now, some to supplement, and others into different forms of labour that are more efficiently done by female labour consequent on changes in cropping patterns. Plenty more women have also entered allied activities to replace their male counterparts, such as in marketing, transportation, etc. It is indeed correct to assert that there is considerable 'feminisation' of agricultural activities in general with desertion of male labour.

There are of course regional diversities. In western states of Maharashtra and Gujarat, labour absorption in agriculture has not declined, and in some cases increased. In Kerala, there have been precipitous declines in farm labour of both genders. In the relatively backward states, large scale male labour desertion has occurred for migration (such as from Bihar, Odisha, parts of Uttar Pradesh, Himachal Pradesh, etc.), and female labour has taken over some slack in the employment structure. In more prosperous regions of Punjab-Haryana and Kerala a different type of male desertion of farmlands has occurred.

Agricultural growth and rural prosperity

The Green Revolution (GR) ushered in around mid-1960 was water intensive, and it was focused on the two principal cereal crops most consumed in India, rice and wheat. GR was first adopted in the Indo-Gangetic plains of the 'irrigated' system and spread to the coastal peninsula. While this programme was successful in raising crop productivity considerably over the decades upto 1980s, it was mainly confined to 'irrigated' and 'coastal' regions of India defined earlier. I have held the view in an unpublished lecture delivered in 2005 that this was indeed the line of 'least resistance' to reach the goal quickly for India at the time it was embarked upon. It was possible in these regions to draw copious water required for that technology and farmers there had the wherewithal to support the adoption. It was another matter that these regions had benefited from the legacy of British rule by way of irrigation canals, dams and other infrastructure for better prosperity to the neglect of other regions.⁵

While prosperous farmers of the northwest Indo-Gangetic plains and coastal regions largely of the southern peninsular India benefited from greater farm prosperity, with considerable largesse from the state apparatus through various subsidies, large sections of Indian farmers have remained outside this process. While rice and wheat (and maize and sugarcane and others) farmers may have benefited, especially medium and large farmers, from this strategy of enhanced food supply, large sections of farmers in other agro-ecosystem have remained outside this pale. All rural workers in these regions, as well as small and non-surplus cultivating households would not benefit from this dividend. Unfortunately for Odisha, it was outside these regions of prosperity which marginally touched some irrigated tracts of the state. This is the first legacy of rural deprivation that the state endured. This

has remained a major factor in the cumulative causation of prosperity-deprivation across regions of India which needed to be overcome through other means. Indeed Odisha has suffered from this deficiency over the decades.

Rural Livelihoods: Smallholder farm as norm

With this background we examine rural livelihoods. At the core of rural life and livelihoods is the smallholder agriculture both by ownership and operational holdings. This is true for most parts of India and also of Odisha. Over the decades the modal farm size remained 'marginal' and declined further to a lower value. The typical rural household now holds a 'marginal' plot⁶ and much smaller than it did a few decades back, although the minimum viable plot size (for labour-based farming) may be about 0.4 hectare, or 1 acre. The reasons for smallness of size and fragmentation over time are several, though demographic pressures and lack of suitable alternative livelihoods have contributed to this outcome significantly. Data show that for India as a whole the 'marginal' farms constituted 51 percent of the total and the 'small' 18.9 percent in 1970-71, together about 70 percent of all farms. In 2010-11 the combined figure stood at about 85 percent with marginal farms accounting for 67 and small 17.9 percent, respectively. In Odisha, marginal farmers constituted more than 72 percent of the total in 2010-11 and the number of small farmers about 19.68, the two together accounting for about 92 percent of the total. The semi-medium (2-4 ha) farmers are about 6.7 percent only and others negligible.

For India, in a span of four decades the farm size declined considerably - the average farm size has halved to 1.2 hectares with 16 percentage points more in the ranks of marginal farmers. As seen from Table 3 the total number has nearly doubled from about 71 million farms from 1970-71 to 2010-11 while the total area has slightly shrunk (from 162 million to 159 million hectares). For Odisha the average farm size for all farmers was about 1.4 hectares in 1970-71, and shrunk to 1.04 in 2010-11. In fact disaggregated data for the state show that while the average size for all social groups stood at 1.04 hectares, those held by SC households (not presented) were on an average about 0.8 hectare for all their size classes put together. In that year the marginal farmers in Odisha which together constituted 72 percent of the total had the average farm size of about 0.57 hectare, with the modal farm size much smaller, that being a highly skewed distribution as seen from the data. One can easily surmise from these discussions that the typical rural household's farm size is deplorably small and often unviable, forcing it to explore multiple livelihoods options and also splitting the household for migration. These are clearly major developments in the rural landscape and an important driver for changes underway (see also Figure 8 on trends in average plot size for India and Figure 9 where Odisha's trend is compared with India). Both pictures show continuing decline, with Odisha at a lower level. Notice from Table 3

⁶ Defined as below 1 hectare in size. For most farmers the actual size is much smaller in this smallest class.

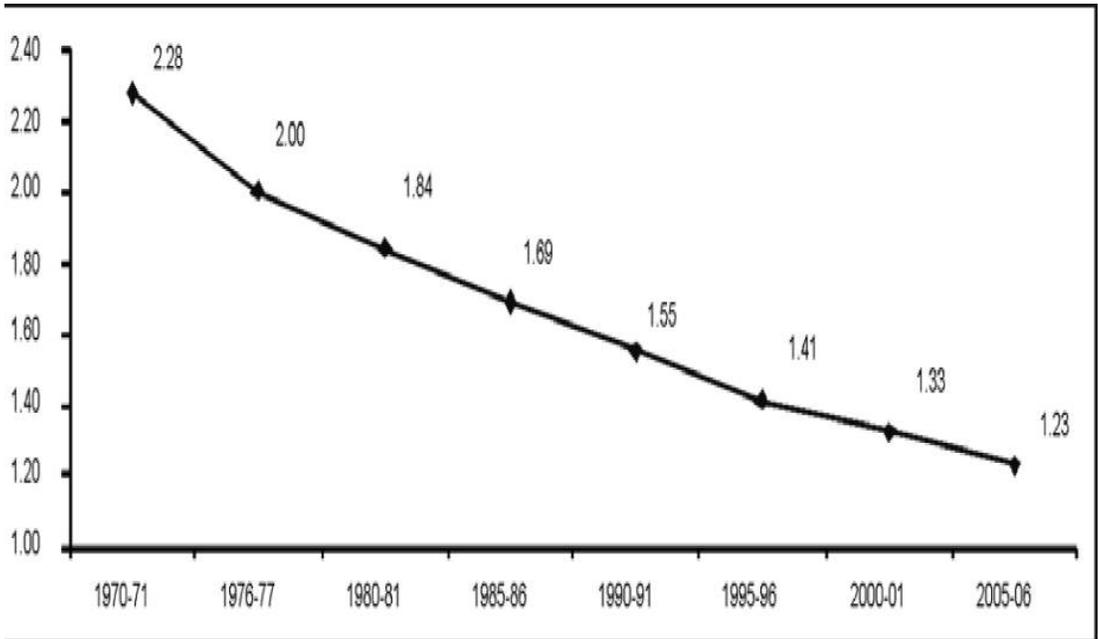
(India) and Table 5 (Odisha) that all size classes except the marginal, i.e., large, medium, semi-medium and small, have lost their proportion of the total, underscoring the continuing slide, with the modal farm size being much smaller than the average size of marginal farmers – 0.57 hectare for Odisha.

Table 3: All-India Distribution of Operational Holdings (Rural)

Year	Total		Avg size	Distribution of holdings (%)				
	No. of holdings ('000)	Area ('000 ha)		Marginal	Small	Semi-medium	Medium	Large
1970–71	71,011	162,178	2.3	51.0	18.9	15.0	11.2	3.9
1980–81	88,883	163,797	1.8	56.4	18.1	14.0	9.1	2.4
1990–91	106,638	165,507	1.6	59.4	18.8	13.1	7.1	1.6
2000–01	119,931	159,435	1.3	62.9	18.9	11.7	5.5	1.0
2005–06	129,222	158,323	1.2	64.8	18.5	10.9	4.9	0.8
2010–11	137,757	159,181	1.2	67.0	17.9	10.0	4.3	0.7

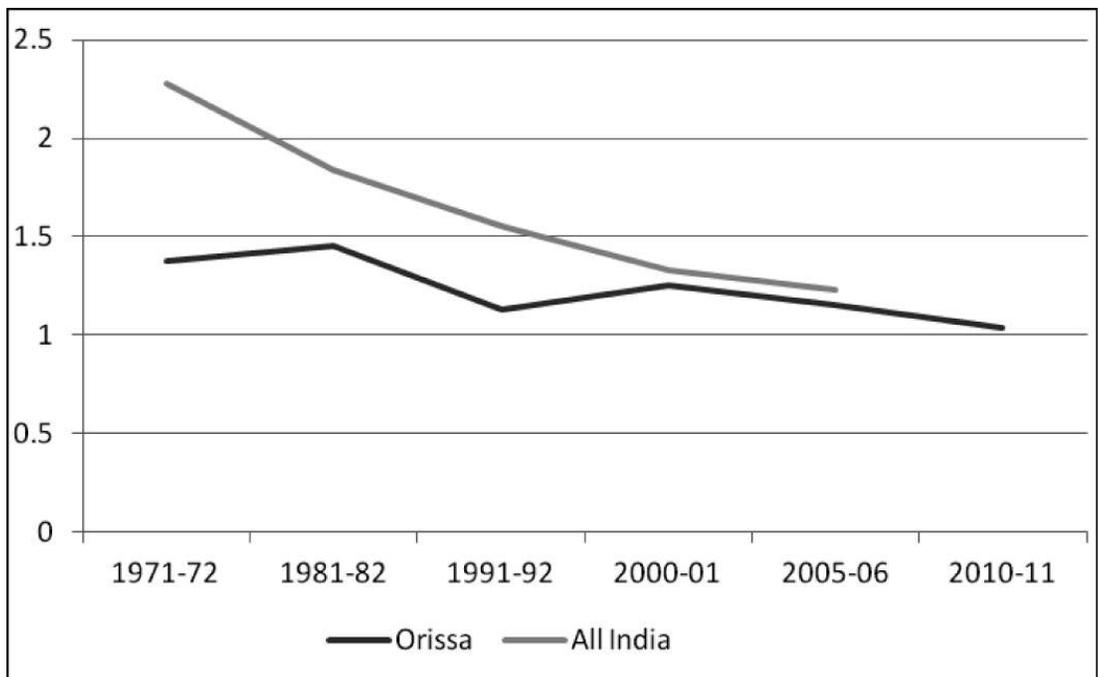
Source: All India Report on Number and Area of Operational Holdings, Agriculture Census, 2010-11, Ministry of Agriculture, 2012, website (<http://agricoop.nic.in>)

Thus over time the typical farm household was under immense pressure to meet its consumption expenditure through farming on the family farm and odd jobs around. This is the case in India in general and more acutely so in states like Odisha with large concentration of the poor and limited viable alternatives. However, development aspirations have changed in rural society in recent decades, and opportunities have improved with considerable changes in information, communications and transportation infrastructure. These three driving forces in rural life (low and reduced farm size, aspirational changes and opportunities through infrastructure development) have together changed much that we observe. Changes in educational attainments have played an important part in these as we see later.



Source: Department of Agriculture and Cooperation, Agricultural Census Division, Ministry of Agriculture.

Figure 9: Average land holding size (in ha) by year in India and Orissa



Source: Source: Department of Agriculture and Cooperation, Agricultural Census Division, Ministry of Agriculture and Odisha Economic Survey 2013-14

As we found for Odisha, the 'rainfed' agro-ecological conditions are relatively unfavourable in most regions, and occasionally hostile in areas of the coast where soil fertility and opportunities may be otherwise better. Households have thus taken resort to various ways of coping by resorting to many forms of diversification as survival strategies as well as striving to meet their greater aspirations. One obvious way has been to have a portfolio of occupations (discussed later as part of rural alternative occupations) for main earning members of the family, and sometimes for children and elderly persons too, both male and female - they work both on-farm and off-farm. Some of them lease-out non-viable farms and work elsewhere; and others divide the same routine for various members of the family. Others migrate to non-farm rural occupations, and semi-urban and urban centres for supplementing family income. These response patterns are different for different regions and social segments even within the state; they have also been influenced by educational and training opportunities accessed by new generations as we see later. These have dramatically changed the output composition of agriculture in India in recent decades. Migrants have also acted variously among different segments. Lack of gainful opportunities in most rural areas remains a paramount issue, although economic growth and interventions by government schemes to reach out to the poor and other measures have eased the pressures somewhat. A host of changes have occurred and are discussed below.

Table 4: Distribution of the Number of Operational Holdings in Odisha (Area in Ha)

Size class (Area in ha)							
Year		Marginal	Small	Semi Medium	Medium	Large	All Classes
All Social Groups							
2000-01	No.	2294520	1113599	500531	145110	13375	4067135
	Area	1155145	1543709	1344201	817591	220387	5081033
	Area/no	0.503436	1.386234	2.68555	5.634284	16.47753	1.24929
2005-06	No.	2597164	1156162	472129	119529	11408	4356392
	Area	1341668	1587713	1250650	658208	181237	5019476
	Area/no.	0.51659	1.373262	2.648958	5.50668	15.88683	1.152209
2010-11	No	3368296	918647	311261	63688	5579	4667471
	Area	1921842	1497752	918947	381272	142019	4861832
	Area/no.	0.570568	1.630389	2.952336	5.986559	25.456	1.041642

Source: Odisha Economic Survey 2013-14

Livestock and horticulture in diversification of agriculture

A significant change that took place over the last quarter century or so is the diversification of product composition of agriculture and allied sectors. The old routine of cereals as the mainstay of agriculture has given way to other products. In the two decades from 1990-91 to 2009-10, the share of cereals in Indian agriculture has declined from 23 to 18 percent, and the decline is equal to the gain by livestock (Figure 10). The other significant increase has been in horticulture (fruits, vegetables and others), which increased from 16 to 20 percent. Similarly for fisheries (marine and inland), whose share increased from 3 to 5 percent. These three segments (livestock, horticulture and fisheries) together constituted 50 percent of total agricultural output in India in the triennium ending 2009-10, up from about 39 percent in 1990-91. In product terms these refer to milk, poultry, meat (of various descriptions), eggs, fish (of different groups), fruits and vegetables.

Table 5: Distribution of proportion of Operational Holdings for all Social Groups in Odisha (Area in Ha)

Year		Proportion of total				Large
		Marginal	Small	Semi Medium	Medium	
2000-01	No.	0.564161	0.273804	0.123067	0.035679	0.003289
	Area	0.227345	0.303818	0.264553	0.16091	0.043374
2005-06	No.	0.596173	0.265394	0.108376	0.027438	0.002619
	Area	0.267292	0.316311	0.249159	0.131131	0.036107
2010-11	No.	0.721653	0.196819	0.066687	0.013645	0.001195
	Area	0.395292	0.308063	0.189012	0.078421	0.029211

Source: Odisha Economic Survey 2013-14

A similar change has also taken place in Odisha, clearly seen from recent data, presented in Figure 11 for the years 2004-05 and 2010-11, both at 2004-05 prices. In the latter year it was about 31.5 percent for horticulture, far exceeding the value of all cereals together, which were 18.5 percent. In that year livestock accounted for 18.3 percent, comparable in value with all cereals, and fisheries at 5.7 percent. Note from the pie chart presented that the three groups together (horticulture, livestock and fisheries) accounted for 55.55 percent. Rice cultivation still dominates production of crop agriculture in Odisha as the main staple cereal. In terms of area devoted to cropping in Odisha in the year 2012-13, Rice accounted for 72.7 percent and together with other cereals constituted 76 percent of the total crop agriculture. Pulses were 15 percent and these together accounted for 91 percent of all crops. Oilseeds, fibres and others constituted the rest. But the ascendance of the new products of the agricultural and allied sectors is a matter of considerable importance

and account for a major change in Odisha as they do in India.

There are several reasons for this robust growth in these products due both to demand and supply factors.⁷ An important factor on the demand side is the general prosperity of the average Indian with per capita income increasing; the diet diversification has occurred with that. This has happened to virtually all classes, segments and regions across the country. Households are now partaking of relatively protein- and micronutrients-rich diets in the form of milk, eggs and poultry, meat, and other forms of non-cereal food like fruits and vegetables; their compositions though vary across income classes and regions. There is also a lifestyle change of sorts with greater awareness, information dissemination and education across the country. Studies also note that calorie requirement of the average worker has declined with the change in energy expenditure and intensity of work.⁸ In addition sources of calorie other than cereals have invaded the Indian diet as substitutes, such as from beverages like sugar-rich soft drinks and alcoholic beverages, partly due to lifestyle changes and their greater affordability with general prosperity. There is evidence that while poverty has declined, and with that the lowest two quintile groups of income classes (bottom 40 percent) have seen increased income, the middle decile groups have emerged with considerable purchasing power.⁹ Diet is the first claim on the consumption expenditure as a universal law of demand and it leaves unmistakable imprint on the composition of the agricultural basket. The typical Indian diet has been calorie-rich cereals; it is now more nuanced. There is significant increase in urbanization also, with much concomitant demand for horticulture and livestock products. A similar process with different magnitudes is underway in Odisha.

There is however an equally compelling supply side to this change that has occurred in tandem in rural India, and I wish to underline that theme in this paper. Traditionally the Odiya farmer (like his counterparts elsewhere in India) grew cereals, mostly rice, because that remains the major portion of the household diet and the balance was sold in rural and other not-too-distant markets. This was typically the case for self-consumption by the cultivator with the objectives of self-sufficiency and food security at the household-level. Oils, spices and condiments which were essential, but mostly not grown on the farm, were bought off the market. Non-vegetarian protein diets such as fish were procured from village commons such as ponds and tanks, and rivers and sea depending on the terrain. Milk and milk products were mostly for children or for festivities for the common folks. Other protein forms such as eggs, poultry and meats were rare and infrequent. The vegetable markets were there but rural households accessed them only as supplements; in urban areas they were dependent on them on routine basis. With the growth of

⁷ Selected references are: Birthal, et. al. (2008, 2012), Chand et. al. (2008), Kumar (1998), Rao, et. al. (2006)

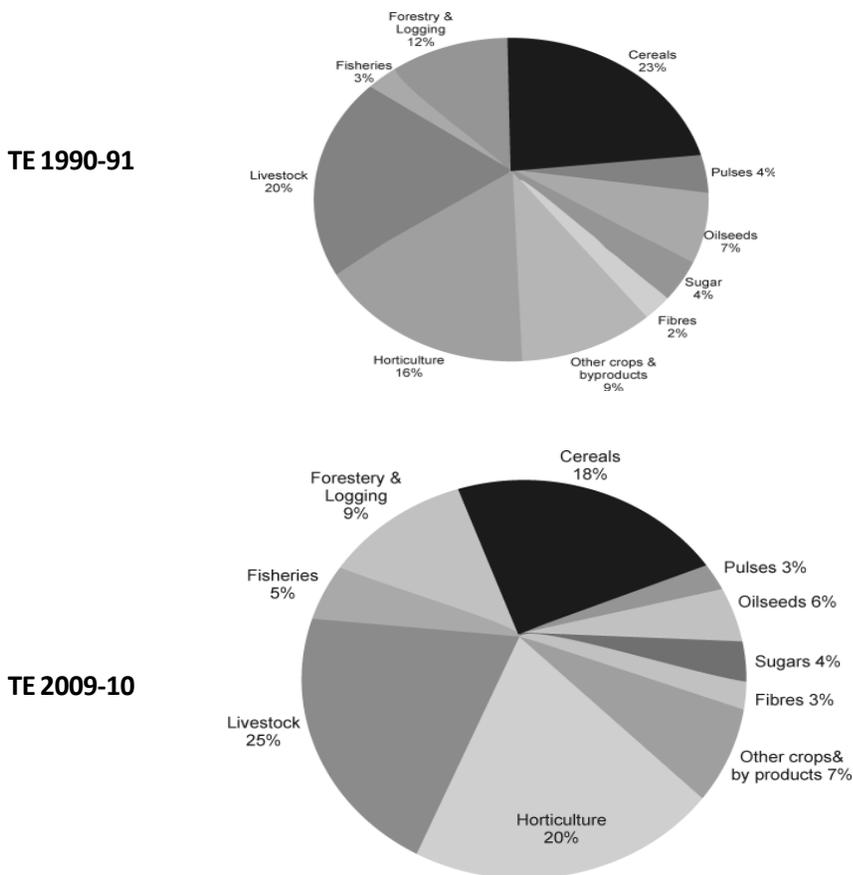
⁸ Hanumantha Rao (2000); also Deaton and Dreze, (2002) reviewing the poverty-inequality issues in the nineties in India and declining cereals consumption in this context.

⁹ See my essay on inequality and the Kuznets process in India in Ray, 2014.

urbanization and income levels, the market for these products developed in concert with infrastructure support, discussed later.

There are two other groups; a) those who grow cash crops on their farms such as edible oils, spices and condiments, sugarcane, jute, and other non-edible cash crops; and b) various forms of tenant farmers like share croppers and cash tenants. For the second group the typical strategy was also very similar to the owner-cultivator – get into contracts to grow crops that they needed for own consumption with a small share perhaps for buying essential items from the market. Frequently, this component was also met by other forms of cash income. The first group met their livelihoods through production and market exchange, but were vulnerable in periods of food crisis. A third group of landless agricultural labour mostly worked as farm labour and received wages in kind and also in cash.

Figure 10: Details of Agriculture sub sectors in TE 1990-91 and TE 2009-10

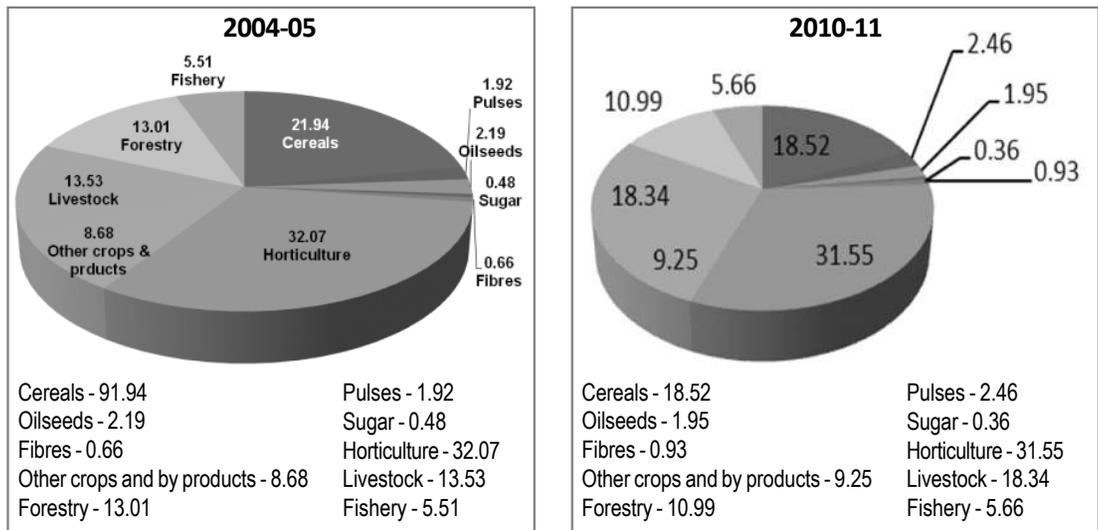


Source: CSO accessed at <http://agricoop.nic.in/sia111213312.pdf> (TE 1990-91 and TE 2009-10)

There was another compelling reason for the growth of horticulture and livestock. Fruits and vegetables are generally speaking labour-intensive processes but lucrative when sold. Vegetables in particular can be grown in small plots with little capital and short gestation periods; with a growing demand in urban areas in particular, they have been a favourite of the small farmer. These farmers, in nimble steps, switched into these products and surely gained with increased marketing channels. Most of them combined these with cereals for self-consumption to avoid market risks. Fruits are somewhat different, as orchards tend to be relatively capital intensive and require more than just copious labour. They are also long gestation crops, unlike vegetables; and entail greater marketing risks. Thus small and marginal farmers were not so much into fruits as in vegetables.

Larger farmers grew fruits in specific regions which were more suited to them. Farmers in "Hill and Mountain" AEZ such as Himachal Pradesh and parts of J&K, and Uttarakhand, switched acreage to orchards. The use of micro-irrigation, such as drip irrigation, allowed farmers in dryland areas of 'Rainfed' AEZ to devote farmlands to orchards, as in parts of Maharashtra, Andhra Pradesh, etc. Note that in all cash crops the development of transportation and marketing infrastructure played a critical role.

Figure 11: Agriculture sub-sectors in Odisha 2004-05 and 2010-11



In Assam, Bihar, Haryana, Odisha, Punjab, UP and West Bengal, i.e., most of the Indo-Gangetic Plains and parts of rainfed AES with copious water precipitations, and where vegetables form a major part of peoples' diet, more than half horticultural land were under vegetable crops in 2009-10. States like Tamil Nadu, Karnataka, Kerala, Madhya Pradesh, and Rajasthan joined their league in boosting horticulture in a major way. While government support by way of infrastructure development (roads, transportation, markets,

information, etc.) has spurred growth, technological extensions and educational support have not done their bits to improve total factor productivity. It may be noted that yields can improve through total factor productivity as well as increased inputs, such as greater application of labour which the marginal and small farmer is believed to have applied, especially for vegetable crops in the major AEZ (Irrigated, Coastal and Rainfed). Further discussions may be found in my essay, Ray (2015) and the references therein.

Non-crop protein sources such as poultry, meats, eggs, fish, etc. have all gained through the diversification process of both large and small farmers. They have all multiplied as part of diversified income sources like cottage industries throughout the country quite apart from viable firms in the organised sector of the industry. Inland fisheries have also grown in coastal and interior districts in a major way; marine fishery is not entirely a cottage industry, though hordes of small boats have been launched for supporting livelihoods.

Consider per capita availability of milk, meats and eggs in Odisha, from 1999-00 to 2012-13 reproduced for select years in Table 16. During this short period of a dozen years, per capita milk availability increased by 80 percent, that of meats by 285 percent and of eggs by more than 200 percent. This is by no means small change in terms of availability of protein-rich diet in Odisha. This is the combined result of various factors like livelihoods diversification by small and marginal farmers, made feasible by major changes in infrastructure such as roads, supporting storage and marketing channels, urbanization on a significant scale and awareness and affordability of the new generation of consumers in both rural and urban settings. Odisha and its small and marginal farmers have benefited from this change but there remains much to be achieved on this score. I have subsumed the discussion on the major upsurge in the availability of fruits and vegetables and fisheries without getting into further details for the state.

Table 6: Year-wise Production and Per Capita Availability of Milk, Meat & Eggs in Odisha

year	Per capita availability of milk (gms./day)	Per capita availability of meat (kg./annum)	Per capita availability of eggs (no./annum)
1999-00	65	1.029	18
2004-05	94	1.358	33
2009-10	109	3.17	57
2012-13	117	3.38	55

Source: Directorate of Animal Husbandry and Veterinary Services, Odisha.

Rise in rural non-farm activities

We noted that the share of agriculture in national as well as state domestic products has been declining; this is also the case with respect to rural employment in agriculture, though the latter (employment in agriculture) is still the most dominant by far. It is seen, correspondingly, that the shares of other rural activities are increasing, in particular that of construction, 'trade hotels and restaurant', transport, and other services. At the national level, manufactures' employment share remained constant at around 7 percent; the share of all rural services (i.e., including construction) increased from 14.6 to 24.9 with the entire gain equalling the loss to agricultural employment. We have observed that there is diversification away from farming to activities like livestock, fisheries and horticulture. Without getting into the details we see a similar pattern of change in rural activities in Odisha. This is the result of two tendencies generally speaking – one is a dynamic factor that spawns (pulls) other businesses as the economy expands and households have more disposable incomes to spend on comforts, luxuries, entertainment, etc.; the other is the coping strategy (push) that spurs households to target income levels to meet essential expenditures. While not strictly necessary, these tendencies usually occur in separate geographic regions. My assertion is that for Odisha the expansion in the service sector is for the most part the result of coping mechanism. While prosperity spawned growth of services is not entirely ruled out, especially in urban centres and in certain activities such as financial services, communications and transport, this would not account for a great proportion of the total, though I unable to give any estimates whatsoever. It is not suggested, for instance, that beauty parlours and other products and services of modern lifestyles are unavailable in rural Odisha today, as indeed they are, but these are fewer and far between compared with other regions of India with greater economic prosperity. This is a conjecture that is best refuted by estimates.

An early literature on this dichotomous expansion of the service sector has been there and is based on the following observations. Many poor households undertake multiple activities to support livelihoods. Other households diversify activities to optimise their assets' use and capabilities.¹⁰ Diversification of livelihoods has two main aspects: one is the number of different income-earning activities which a household undertakes; the other is the proportion of income gained from each activity (see Table 6.2 in Ray, 2015). A household may have a number of occupations but few may be significant contributors to income. There is increasing trend among households engaged in multiple activities; at least two but that can increase to four or more. Frequently the poorest are engaged in one or two occupations, constrained as they are by lack of capital assets (land, livestock, credit-worthiness) to diversify, but diversify into multiple occupations as they move up the income ladder. The well off on the other hand may diversify for optimising assets use.

¹⁰ *There is debate on these issues; see Bhalla, 1990; Harris, 1991; Chadha, 1994; Viadyanathan, 1986; Ellis, 1998; Walker and Ryan, 1990; among others.*

Opportunities for multiple rural livelihoods depend on geographic regions. If we keep aside migration (discussed below), these options depend on the scope of rural non-farm sector (RNFS) in the area.¹¹ Naturally, that depends considerably on whether the region is prosperous or not. In prosperous regions RNFS would increase with prosperity in the farm sector, though the autonomous role of remittances in spurring non-farm sectors has become important in many parts (Kerala, for instance). This second route (the Kerala-type) to spurring RNFS may work in the contrary fashion and contract the farm sector while diverting labour to migrate or move to RNFS for better opportunities. In less developed areas on the other hand the tendencies may be different. In fact in these areas RNFS activities may increase when there is crisis of some description in the farm economy as households seek coping mechanisms. Thus there may be two clear tendencies at work – the service economy may expand in Punjab-Haryana or Gujarat, or coastal peninsular villages with thriving beauty parlours, banking and insurance businesses, travel agencies and access to stock markets, as well as agro-processing and other manufacturing RNFS. By contrast, in Odisha, Bihar and other parts of rainfed AES – exacerbated by a crisis like drought or flood – pressure on family budget (including from the shrinking plot size seen earlier) may spur small-time owner-occupied shops with child labour. The case of remittances induced RNFS growth is a third tendency, and this may partly contribute to spurring rural trade and services in Odisha. Some of these are of course closely connected with migration and remittances, and technology driven due to newer communications channels, such as internet and mobiles, but many are through lifestyle changes and aspirations driven entirely possible through increased disposable income.

Of course the whole scenario may change in hitherto poorer terrains when substantial infrastructure development takes place, such as roads and marketing channels. These may cause huge backward and forward linkages. They open up channels to diversify into cash crops in farms and invest in non-farm products for distant markets – as for instance the entire spectrum of products of livestock and horticulture discussed earlier. This would of course depend on capital endowments (including land) and other attributes of corresponding households. Government induced policy support, besides infrastructure development, have also contributed significantly in these.

There is a major segment of rural industry by way of micro, small and medium enterprises (MSME) clusters which could make considerable contribution to livelihoods in rural Odisha as they do in other parts of India. Most of the micro and small enterprises employ labour-intensive methods and thus support livelihoods significantly. I reproduce from Odisha Economic Survey 2013-14, Table 7 on their numbers, investment and employment. An assessment of their activities in the handloom and handicrafts industries in Odisha and potentials for poverty alleviation are analysed in my paper, Ray (2008) and other papers by Foundation for MSME Clusters, New Delhi. Important though they are this is not explored here.

¹¹ See Mellor, 1976 for an early contribution.

Table 7: Sector-wise MSME Units in Odisha: end-2012-13

Category	No.	Investment (in crore)	Employment (in person)
Food & allied	26498	1349.94	142016
Chemical & allied	2969	231.6	22776
Electrical & Electronics	1179	68.86	7502
Engineering & metal based	13353	96.79	98267
Forest	7281	87.62	45418
Glass	8831	593.93	139801
Livestock	457	7.66	2576
Paper	3072	126.88	16906
Rubber	1818	209.96	11234
Textiles	8874	160.84	52060
Misc. Mfg	6701	205.29	32363
Repairing & Services	42259	966.23	135423
Total	123292	4969.59	706342

Source: Odisha Economic Survey 2013-14

Migrations and their trails

Migration has taken centre stage in rural life of Odisha with diminished livelihoods options in rural economy and opportunities elsewhere; and this has taken many forms. Some go for agricultural and other non-farm employment; these are in nearby rural areas and towns or distant hubs of activity. Migration by definition is a continuous period of absence from abode and therefore daily or short term and seasonal commuting do not count. Let us keep the profiles of rural to rural migration separately from migration to urban areas. Typically the first group would migrate to better paying jobs with significantly higher real wages. When they move into occupations in other rural areas, these are in lieu of their own or nearby farms, but increasingly in construction jobs which are frequently government sponsored programmes. When they move to other states in rural areas, they go to prosperous agriculture zones such as Indo-Gangetic plains of northwest India. For instance, the rural labour from Odisha and Bihar migrate to agricultural fields of Punjab-Haryana where, due to agricultural prosperity, real wage rates are higher. There are now going increasingly as farm labour in prosperous southern and western states to alleviate their labour scarcity. The second group of migration to urban centres is more widespread; the trails and vocations of these migrants are varied and change dynamically over time.

Consider migrants from low-wage rural areas first; from rural Odisha to small towns and

large cities. These migrations have taken place in various hues, depending on the skill and educational backgrounds of migrants, with a variety of outcomes. In my studies based on extensive visits to coastal Odisha as origins of migrants and to their destinations in large metros of Kolkata, Delhi and Mumbai I observed three principal trails of employment related migrations.¹² The migrants are mostly young and male members of rural households. The first trail is of low educated menial labour. This trail is more than half a century old, but in recent decades their volumes have increased hugely and destinations have changed. In the early days there were scarcely any education and training opportunities in rural areas, so those migrating had no more than home-spun talent and trickled to nearby urban centres and industrial hubs. The scale of this flow is huge now and in several low-wage vocations; they migrate to all major cities where linguistic communication is not a barrier – that means all major cities barring the south; and increasingly to the south also. An important segment of this second trail of migrants are those who are plumbers from coastal Odisha.¹³ In major construction hubs and cities they have now crossed over to other forms of semi-technical jobs increasingly. They are also seen in industrial and service clusters in Gujarat and Maharashtra, U.P., and Punjab, apart from Kolkata where they traditionally migrated.

The second trail is of somewhat more educated youths (elementary to secondary schools) who go to urban centres for various semi-skilled jobs which they learn through apprenticeships on the job. This has been helped by the string of new schools set up in various locations close to their places of residence now.¹⁴ Data presented in Table 8 show that there are now very low dropout rates for all categories of children, both boys and girls, upto about elementary level, but dropout rates increase significantly at the high school stage. Sometimes, they are also trained technicians (ITI-type skills) or artisans who find appropriate jobs in various types of clusters, both in Odisha but more so outside the state. They are also typically single male migrants.¹⁵ The main dividing line between single and family migration is the principal migrant's income class – whether that is enough to ensure family subsistence in the destination township.

It is observed in rural Odisha that when single migrants are married and have children, the

¹² *There are of course other forms of migrants from both rural and urban areas and very significantly for females after their marriage. There are also large education related migrants now, but I do not consider those categories in this paper.*

¹³ *I have written about the migrant hordes of plumbers from Pattamundai in my essay in the Handbook of Agriculture in India - chapter 6 of Ray (2007).*

¹⁴ *All-India data show that in 1995-96, 44 percent males and 32 percent females were attending middle schools in rural India; these increased to 55 and 56 percent, respectively, in 2009-10. By that year 48 percent males and 39 percent females were pursuing secondary education in rural India.*

¹⁵ *See Ray, 2007, chapter 6 for accounts of rural migrants in different destinations. Also see Ray and Sarkar, 2008 on handloom and handicrafts artisan clusters, including those in Odisha.*

women and children are left behind in the village home, where it is more affordable with the resources they command. Children are nurtured by mothers and family elders, and their education is done in rural schools which are now generally accessible. Their village homes and marginal plots of land are managed by remaining family members, supplemented in high season by the migrants coming home temporarily. The single male migrants are mostly these two categories of relatively low-educated and low-earning young odia men, who generally cannot afford to move their entire family. In recent years slums in urban agglomerations have become homes to many such migrant households but that is still a fraction of the rural migrants to these agglomerations.

Table 8: Dropout Rates in Primary, Upper Primary and High Schools in Odisha 2012-13

2012-13	Boys	Girls	Total
Primary schools	0.73	0.22	0.37
Upper Primary Schools	2.45	2.38	2.36
High Schools	21.14	16.21	18.72

Sources: Director, Elementary Education and Director, OPEPA

They have now fanned out to all destinations in India and have also spilled over to other related artisan callings as they learn on their jobs as they move to their destinations. This second trail also includes large hordes of middle and high school graduates, and sometimes college educated boys, who migrate to larger towns and cities, including Mumbai, Delhi, Kolkata, Bangalore, and other large towns across the country, and work in service sector jobs such as in hotels, restaurants and similar occupations. Their added education and learning capabilities help them adapt to their new occupations. Of course the role of 'chain migrations' or 'friends and relatives' links in securing and learning on their jobs play important roles – see Ray, 2007 for further elaboration on this link in migration literature.

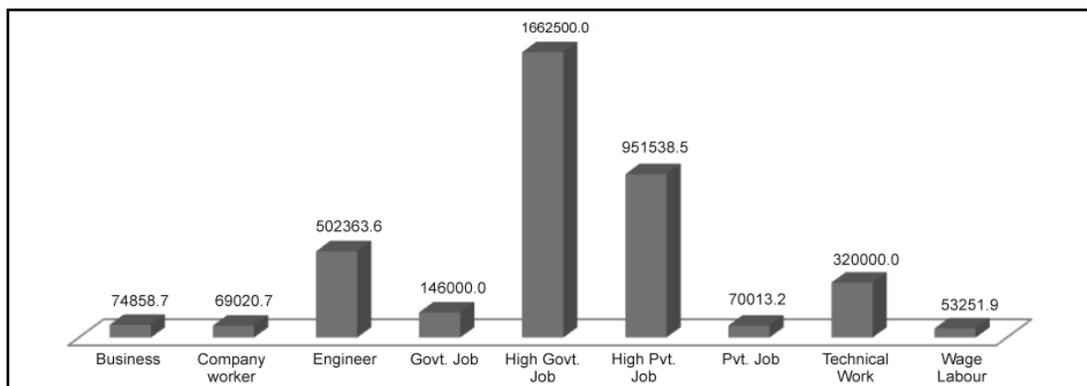
There is the third trail, and although they are male-dominated, that is no longer exclusively so. They are joined increasingly by their female peers into jobs which are better paying and in superior working environment. At the aggregative all-India level for school education the gender gap has been largely closed. We see the same pattern in Odisha except at higher levels. These migrants are college educated youths from district centres and semi-urban areas, and many of them have earned engineering and related degrees. They move to major centres of industrial activity and higher-end urban service related occupations all over the country. The language of communication is no longer the barrier to their movement. This is the modern generation that is spawned by education in district and other towns, though somewhat deficient in quality in many cases. Here the role of government support is paramount, but private educational institutions have mushroomed in many town-centres. There is perhaps class-bias as poor households cannot afford to give expensive private education to their children.

In my sample of migrants from Balasore district collected from over 1100 households, there were 1559 migrants with different levels of education. When classified broadly into four groups as upto primary, secondary, higher education, and technical qualifications we listed their destinations and other profiles. The largest group of migrants in the survey period 2012-13 were with secondary education (1053), constituting 67 percent of the total sample, and they went to all destinations in India. Out of this group of secondary educated (as claimed by them), 55 percent went to various metropolitan cities as destinations, and large groups went to Andhra Pradesh (10.2%), Gujarat (16.4%), and as far as Goa (3.3%), Kerala (3.1%), etc.

About 18 percent had primary education or less, and 13 percent had higher education. These two groups also went to all destinations. Those with technical education were altogether 23 - the sample too small for any significant inference - and they went to select places only. Of those with primary education, most of them (59%) went to metropolitan cities but also went to Gujarat (16%), AP (8%) and Goa (4%). A similar story was revealed for those with higher education with most of them going to metropolitan cities (58%), and others to AP, Gujarat, etc. These reveal distinct opportunities, and we could also identify some other discriminants of their profiles. We found that most of the migrants with low education ended up in menial jobs wherever they went, working mostly in private companies (58%) or as wage labour (37%). Those with secondary and higher education ended up with jobs in similar places but at higher profiles or positions, though some ended up in menial jobs.

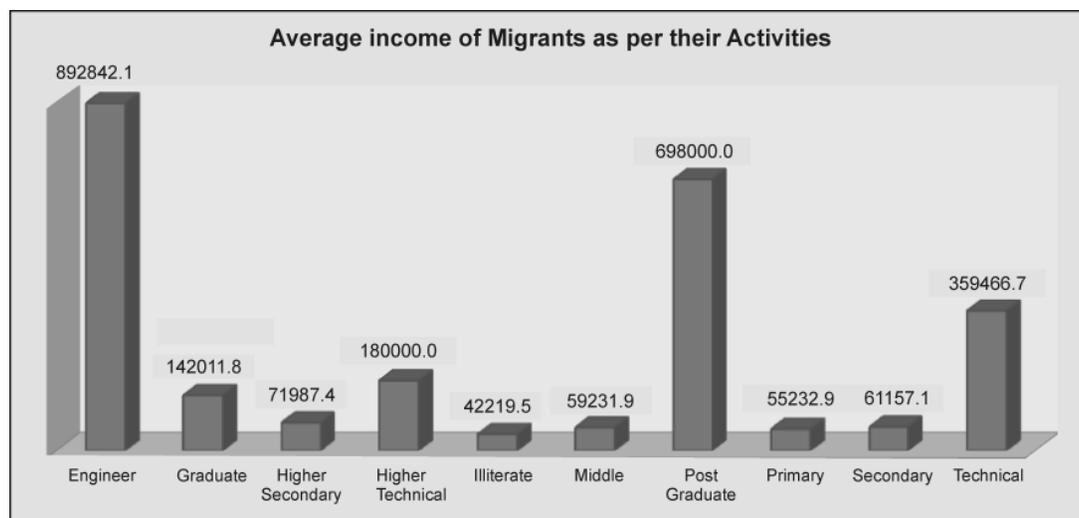
Another important discriminant was the income profiles of migrants at different levels of education; and this reveals a story of education being financially rewarding for most migrants. The results are presented in Figures 12 and 13. Those who are poorly educated typically earned less in whichever occupation they were and those with higher and technical education secured better jobs and earnings.

Figure 12: Balasore migrants: Average income of migrants as per their activities



Note: Based on author's survey of migrants from all blocks of Balasore district in 2012-13. Income figures are in rupees annual as reported by respondents. Some of the 'Technical' job persons work abroad and may exaggerate the rupee income which are unadjusted for their purchasing power parity.

Figure 13: Average income of migrants as per their educational status



Note: Based on author's survey of migrants from all blocks of Balasore district in 2012-13. Income figures are in rupees annual as reported by respondents. Some of the 'Technical' education persons work abroad and may exaggerate the rupee income which are unadjusted for their purchasing power parity.

Demographic Dividend: Odisha's elusive opportunity

Data in Table 9 shows that over the last six decades Odisha kept pace with the average progress of literacy in India in quantitative terms. Literacy growth attained rapid strides and reached a comparatively high level. Though the gender gap remained significant in Odisha, it was the same for India. Though lack of convergence on per capita income terms was visible in Figure 1, in educational terms there is hope of catching up. Studies show that years of schooling result in positive returns¹⁶, and we found the same in our sample of coastal migrants from Odisha. Thus if we could invest workers with education and suitable training, their incomes can improve and help increase prosperity. In that sense human capital may be an important component of growth, and indeed the 'endogenous growth' theory literature provides important clues to that. Much of the East Asian growth experience (in South Korea, China, Taiwan, and select countries in SE Asia too) underlined that. Education was a critical component of that.¹⁷

¹⁶ See Aggarwal (2014), for review of literature and tests with human development survey data.

¹⁷ See my papers Ray (2011, 2012).

There is the contemporary issue of 'demographic dividend' that socio-economic changes brought about through declines in fertility and mortality rates, and India is poised to harness that opportunity through large working age population and reduced dependency ratio. This is because of smaller families until such time that the present working age population (15-59 years) become elders – through overlapping layers of about 45 years from entry to exit in the labour force. It is a window of opportunity compared with developed economies where the ratio of elders is considerable. Odisha is on the cusp of that opportunity, but it may be an elusive one unless the working age population is properly educated and trained. Let us examine this phenomenon for Odisha.

Table 9: Growth of Literacy in Odisha vis-à-vis India

Year	Odisha			India		
	(literacy Male)	(literacy Female)	In % All	(literacy Male)	(literacy Female)	In % All
1951	27.32	4.52	15.8	27.16	8.86	18.33
2011	82.4	64.4	73.05	82.14	65.46	74.04

Sources: Census of India 1951-2011

An exercise on Poorly Educated workers of Odisha

Let us make three standard segments of the working age population: the youths (15-29), the middle (30-44), and the elders (45-59). Table 10 shows that about a third of India's population aged 15-29 in 2011-12 were 'poorly educated' i.e., defined as illiterate or with primary education. Among those aged 30-44 over half, and nearly three-quarters aged 45-59 were in that category. As education reached new generations progressively, less remained poorly educated. Let us make the same assumptions about Odisha in view of their similar progress of education at the average level with India noted in Tables 8 and 9.

Table 10: Total Population and Population with Primary Education or Below, by Broad Age-group in India, NSS 68th Round 2011-2012

Age Group	Primary and below	Total Population (millions)	% Primary and below (millions)
15-29	95.0	292.2	32.5
30-44	128.5	236.5	54.3
45-59	97.6	132.7	73.5
15-59	321.0	661.4	48.5

Source; Table 3 in Krishnamurty, 2014, as computed from the NSS 58th Round, 2011-12

We may make the generous assumption that all children in Odisha in the present cohort 0-14 years will proceed beyond primary school and escape being 'poorly educated', though there are many factors that may inhibit this process. A rough estimate looks at the dynamics of the labour market a decade ahead in 2026. Based on the comparable progress of education in Odisha with the all-India figures, about a third of 15-29 years remain poorly educated in 2012, and 54.3 percent of 30-44 age and 73.5 percent of 45-59 cohort remain poorly educated – presented in Table 11. Thus there are 3.77 million poorly educated working age population of 15-29 age (32.5% of 11.6 million) who will almost certainly remain poorly educated (PE) in 2026. There are another 4.83 million poorly educated in the age-group 30-44 (54.3% of 8.9 million) in 2012 who will be in the 45-59 age-group by 2026. The present age cohort of 45-59 containing 6 million workers would not count in 2026. Together there will be some 8.6 million poorly educated persons of working age in Odisha in 2026, even if we assume that no child of today (0-14 age in 2012) enters the working age group of 15-29 in 2026 in poorly educated condition.

This implies that 8.6 million comprising about 19 percent of the population of Odisha in the working age 15-59 years would remain poorly educated and seeking low paying jobs whether they remain in Odisha or migrate. Given the assumptions, the poorly educated would be aged 30-59 and it would be difficult for them to benefit from training and skill development. Odisha will lose its potentials of harnessing the demographic dividend unless there is urgent action on this front.

What we discussed briefly related to quantitative aspects of education and learning skills of the workforce. The critical aspect of quality of education as contribution to the growth dynamics has not been captured. The potentials of 'endogenous growth' by enriched human capital may be missing on both counts. This is where Odisha may lose out in turning the potentials in its favour. It is a late starter on this front and may still have the opportunity in comparison with some leading states of India, such as those in the South.

Table 11: Age wise Population and proportions in 2012 and 2026: Odisha and India

Year	Odisha				All India			
	2012	2026	2012	2026	2012	2026	2012	2026
Age group	in million		in %		in million		in %	
0-14	10.9	8.6	26.5	19	352.7	307	29.1	21.9
15-29	11.6	12	28.3	26.4	347	384	28.7	27.4
30-44	8.9	10.2	21.6	22.5	246.7	305	20.4	21.8
45-59	6	8.8	14.6	19.4	164.1	238.7	13.6	17
30-59	14.9	19	36.2	42	410.8	543.7	33.9	38.8
60+	3.7	5.7	9	12.6	99.8	165.2	8.2	11.8
15-59	26.5	31	64.5	68.4	757.8	927.7	62.6	66.3
Total	41.1	45.3	100	100	1,210.30	1,399.80	100	100

Source: Adapted from Appendix Table 1 in Krishnamurty, 2014

Conclusions and suggestions

The share of agriculture in GSDP of Odisha has declined significantly and stands at 15 percent now, though its employment share is still overwhelming as elsewhere in India. Thus whereas agricultural yield is low, dependence on agriculture in rural life is paramount. This is the first and most important source of low per capita earnings in Odisha. However, household earnings from agriculture are deficient in meeting family budgets – partly due to shrinkage of the marginal plot-size. This is a major driver of change in rural Odisha. However other avenues have opened up. Alongside decline in agriculture's value share, its compositional change is substantial; farm output comprises of products of livestock and horticulture in a major way, which now account for more than half of total agricultural income (including fisheries), reflecting the changed national and regional food basket. This change has worked well for largely marginal and small farmers of Odisha (together 92%) who did not benefit from the green revolution package. It has also contributed to poverty reduction and prosperity beyond irrigated and coastal zones of India, the principal beneficiaries in the green revolution phase. This was sustained from the 1990s as the steam of green revolution petered out.

Rural poverty reduction and prosperity were fostered by this refocused agricultural growth in parts of India. Furthermore, real wage increases and reduction in prices, especially food prices, issues that we have not covered in this essay, also provided the bulwark against rural poverty, which is still widespread, persistent and concentrated in Odisha, as in many parts of central and eastern India. This has triggered large rural migrations from Odisha.

The diversification of farm produce (to include protein- and micronutrients-rich products) that provided sustainability to small and marginal farms and thitherto less prosperous farming zones was matched by awareness and emergence of the sizeable middle income deciles with substantial purchasing power to bolster this process of change. The major change in aspirations and opportunities for rural upsurge was fostered by infrastructure growth by way of roads, highways, communications and markets around the country. The salutary effects of these developments on spurring the growth of horticulture, livestock and other sectors are underlined in this paper. These were spearheaded by important policy changes to reach out to the villages and connecting them to the national markets by fast modes of transport and communications. Further issues related to credit to marginal and small farmers and their financial inclusion, the paramount role of rural construction programmes which aided in a variety of ways the changes under way, the third tier of governance in Panchayati Raj that has enabled voice and empowerment to take this process forward, etc., are discussed in chapter 6, India Development Report 2015 –Ray, 2015.

The rural non-farm sector (RNFS) has done its bit to absorb labour, but that is more benign in agriculturally prosperous regions rather than Odisha, where coping strategies largely

reflect the expanding service sectors. The major part of 'own account enterprises' comprise much of that in Odisha. There are also several MSME clusters which have added value and employment in critical rural enterprises in Odisha. Rural infrastructures like roads, highways and marketing have opened up high value goods trade to augment rural livelihoods.

The sterling contribution of education and skill development at migration sources should be strongly encouraged, especially through public supported institutions in all parts of Odisha. The improved reach of higher education to the masses by expanding colleges and other technology institutions have spurred high earning migrations from Odisha.

The role of a variety of government sponsored programmes in expanding rural employment and real wage support should not be underestimated. There is a variety of them covering livelihoods, infrastructures, education, health, etc. It is another matter whether they are well governed. These are not discussed here but good accounts are available in India Rural Development Report 2012-13 and the forthcoming Report 2013-14.

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Progress of Rural Financial Inclusion: Will PMJDY meet the Inclusion Gap?

K. K. Tripathy¹

This paper reviews the status of, trends in, and issues relating to financial inclusion with a special reference to agricultural and rural finance and briefly examines the design and approach of a recently launched mission-mode financial inclusion programme – Pradhan Mantri Jan Dhan Yojana (PMJDY). Besides analyzing secondary data to examine the spread and outreach of rural and agricultural finance, it draws upon recent policy outlook on the new financial inclusion drive of the government and explores the suitability of PMJDY towards ensuring smooth and affordable credit to all. This paper also looks at the enormous challenges to universal financial inclusion approach deliberated under PMJDY and attempts to explore the future road map to fulfil the national objective of financial inclusion.

Key Words: Financial Inclusion, Rural Credit, Agriculture, India, PMJDY

I. Introduction & Background

1.1 Financial inclusion has become a central theme of Indian development policy since the post-bank nationalization era (post-1969). Considering borrowers' need for a variety of financial services ranging from business livelihoods to retirement savings, housing loan, insurance, emergency credit, consumption credit, etc. [Government of India (GoI), 2009], the country's credit policies envisaged the flow of affordable financial services to rural households that had largely been ignored by the mainstream formal financial institutions.

1.2 The objective of financial inclusion is to bring in the low income and vulnerable households within the purview of formal banking sector and to protect them from the clutches of usurious interests charged by informal financial intermediaries. To create an enabling environment for agricultural and rural banking and to raise investments in activities with relatively high social returns, the Reserve Bank of India (RBI) formulated strict

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guidelines to ensure smooth and directed flow of bank credit to priority sectors¹. Further, the government introduced multifarious welfare programmes to subsidize and supplement bank credit for marginalized and poor rural borrowers. The government's credit policy targeted the agricultural and rural sector for administering the allocation of credit at concessional interest rates with the objectives of guaranteeing timely and increased flow of credit to the farming sector and gradually reducing and eliminating non-institutional moneylenders from the rural scenario.

1.3 The post nationalization period in the Indian banking yielded significant changes in the operational policies and practices of the formal financial agencies in the rural areas. However, it failed to make a substantial dent in the lukewarm attitude of the rural bankers towards financing the so-called less creditworthy but productive poor rural farmers. This is evident as India's poor, small and marginal farmers, micro-entrepreneurs and low-salaried workers have largely been excluded from the formal financial system (GoI, 2009).

1.4 While the outreach and access to total bank credit improved during post-bank nationalization era, the delivery of agricultural and rural credit remained wrought with weaknesses, negating equitable and efficient distribution, thereby affecting the viability and sustainability of formal financial institutions. The policy directions of the Government and the Central Bank have not been successful in restricting the ominous situation of today's agricultural distress (Satish, 2007).

1.5 The public capital formation in the agricultural sector is on the decline and there is a reported recurring occurrence of credit-related farmers' suicide cases across the country. A recently released National Sample Survey Organisation (NSSO)'s Situation Assessment Survey (SAS) of Agricultural Households² revealed prevalence of high levels of dependence on non-institutional credit off-take in rural areas. Nearly 40 per cent of all loans came from informal sources with 26 per cent advanced by moneylenders. Marginal land holding households suffered the most with only 15 per cent of their credit being sourced from institutional sources such as the government, cooperatives and banks (GoI, 2014).

1.6 With the disappointing outcome of the formal banking system, developing nations have started relying on innovative measures to make an effective financially inclusive system in India. During the 2000s, this system vigorously promoted establishment of (a) innovative model of credit delivery mechanisms which ranged from micro-finance (Self-Help Group-Bank Linkage Programme) to issuance of Kisan Credit Cards (KCC) and General Credit Cards (GCC), (b) expansion of ATM networks and financial access points (c) provision and facilitation of equity and insurance products to suitably formalise the financial flows in rural India [Reserve Bank of India (RBI), 2013]

1.7 In this backdrop, this paper tries to review the trend, status and issues of agricultural and rural finance in India and explores the way ahead in the rural credit flow towards ensuring the national objective of financial inclusion. The paper, while appreciating the time-bound universal financial inclusion programme – Pradhan Mantri Jan Dhan Yojana (PMJDY), deliberates upon the future implementation challenges of the Yojana. This paper also gives policy prescriptions on the possible resolution of such challenges.

1.8 This paper is divided into seven sections. The following section (Section II) explains the objective and methodology in brief. Section III gives a picture on rural credit policies followed so far. While Section IV analyses the trend in the overall rural credit flow, Section V highlights the trend in the flow of agricultural finance in India. Section VI discusses the achievements and challenges under PMJDY. Section VII gives concluding remarks and outlines the way ahead in ensuring universal financial inclusion.

II. Objectives and Methodology

2.1 The broad objectives of this paper are to:

- review agricultural and rural credit policies followed in India and assess the trends and progress in the credit flow and access.
- examine the achievements of PMJDY and explore plausible resolutions to meet the financial inclusion issues and challenges towards achieving the national objective of universal financial inclusion.

2.2 To meet these objectives, secondary data on trends in agro-rural credit outreach collected from RBI, National Bank for Agriculture and Rural Development (NABARD) and various Ministries/Departments of GoI have been analyzed.

III. Rural Credit Policies

3.1 Post-independent India has stressed on progressive institutionalisation of rural and agricultural credit. Considering the significance of hassle-free rural credit flow for development in agriculture and allied sector and to break the growing monopoly and usurious practices of non-institutional moneylenders in rural areas, GoI considered co-operation an essential instrument of social policy (Mehta 1988). The rural cooperative institutions were treated as vital development agents.

3.2 During 1950s, while the central bank took slew of measures to strengthen the co-operative movement for ensuring adequate and timely credit flow to the farmers at village level itself, State Bank of India (SBI) was set up in 1955 by Government to expedite, *inter*

alia, the flow of agricultural and rural credit. The All India Rural Credit Survey Committee (1969) recommended the adoption of a multi-agency approach to finance the agricultural and rural sector. India promoted an institutional structure for agricultural and rural credit where the cooperative sector ensured directed credit to farmers and SBI and its associates were involved in financing these cooperative agencies (Ghosh 2005). For the first time in 1969, the then government accepted that rural credit could not be met by co-operative societies alone and that the commercial banks need to play a leading role. This prompted Gol to nationalize leading banks in 1969 (and in 1980). Following the recommendations of the Working Group on rural banks [constituted by the RBI under the chairmanship of M. Narasimham, (RBI1975)], Regional Rural Banks (RRBs) were set up in 1975.

3.3 The policy initiatives of Gol laid emphasis on enhancing the flow of credit at grassroots level through appropriate credit planning, adoption of region-specific strategies, rationalization of lending policies and procedures and reduction of cost of rural borrowings. The credit policy emphasised on the disbursement of rural credit through a multi-agency network consisting of Commercial Banks, RRBs and credit cooperatives.

3.4 Further, the central bank assigned an important role to the commercial banks for providing a specific portion of their lending to a few sectors covering direct³ or indirect⁴ finance to agriculture, small scale industries, micro credit, education loans, housing loans, export credit etc. The total priority sector lending⁵ for a bank was pegged at 40 per cent of credit equivalent of off-balance sheet exposure.

3.5 NABARD, an apex development bank, was created in 1982 to enable a sustainable rural banking infrastructure and to coordinate and direct rural financial institutions in a professional and specialized manner. NABARD played a central and significant role in extending financial assistance and facilitating institutional development in the area of rural credit.

IV. Trend in the Flow of Rural Credit

4.1 The flow of direct institutional credit to agriculture and allied activities has witnessed rapid increase after the first round of bank nationalization in 1969. Between 1971-72 and 2011-12, agricultural credit witnessed a jump of around 747 times from merely Rs. 883 crore to Rs 4,53,898 crore (Table 1).

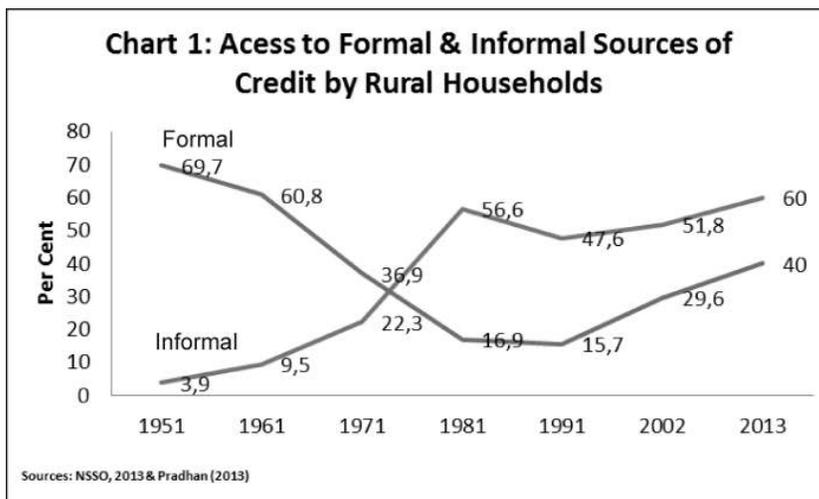
4.2 The growth in the flow of institutional credit in the agriculture and rural sector has considerably helped the cultivators to reduce their dependency on the rural money-lenders for their credit requirements of cash. Chart 1 indicates that the share of institutional credit as a per cent of total debt has increased vis-a-vis that of the informal credit over time during the periods 1951 and 2013.

**Table 1: Direct Institutional Credit to Agriculture and Allied Activities
(Short and Long Term; 1971-2 to 2011-12)**

Year	Share in total credit (per cent)				Total
	Cooperatives	State governments	SCBs	RRBs	(Rs crore)
1971-2	87.1	11.2	1.7	-	883
1981-2	57.7	3.6	34.8	3.9	4296
1991-2	50.2	2.9	41.7	5.2	11,538
2001-2	56.4	0.8	34.4	8.4	54,195
2002-3	52.2	-	38.8	9.0	65,175
2003-4	48.0	-	43.4	8.6	83,427
2004-5	42.7	-	45.9	11.3	1,05,303
2005-6	33.4	-	56.0	10.6	1,44,021
2006-7	28.5	-	60.8	10.7	1,89,513
2007-8	29.6	-	58.2	12.2	1,94,953
2008-9	23.9	-	65.32	10.78	2,45,976
2009-10	22.17	-	65.73	12.10	2,86,39
2010-11	22.65	-	64.60	12.75	3,44,878
2011-12	19.37	-	68.93	11.70	4,53,898
2012-13	16.8	-	73.4	9.8	6,60,351

Sources: RBI (2010) & (2014a)

Notes: SCBs: Scheduled Commercial Banks, RRBs: Regional Rural Banks



4.3 In the past five decades, there has been an overall improvement in the access to formal sources of credit (Chart 1). The decline in the share of moneylenders may be well attributed to the central Government's efforts to register and regulate professional moneylenders and initiation of a plethora of measures strengthening institutional credit flow mechanisms in the agriculture and allied sector. However, the increasing dependency of informal sources of credit by rural households from 1991 onwards is a cause of concern. This increasing trend has posed a real challenge before the government to ensure affordable and adequate formal credit sources in the rural areas.

Table2: Rural Population and Bank Offices (1971-2011)

Year	% of Rural Population to Total Population	Bank Offices		% of Rural Banks to Total Banks
		Rural	Total	
1971	75.1	4,817	13,622	35.4
1981	69.6	17,656	35,707	49.4
1991	65.4	35,206	60,220	58.5
2001	72.2	32,562	65,919	49.4
2003	71.8	32,303	66,535	48.6
2005	71.3	32,082	68,355	46.9
2007	70.9	30,585	72,165	42.4
2009	70.4	31,829	80,514	39.5
2011	68.8	33,795	90,830	37.2

Sources: RBI (2005, 2007 & 2014a)

Census Statistics 1971, 1981, 1991, 2001 & 2011 (provisional)

Government of India (2007, 2008, 2009, 2010 - 2013)

4.4 As regards the spread of rural bank branches in India, there were 4,817 rural bank branches during 1971 catering to 75.1 per cent of total population constituting almost 33 crore rural people (Table 2). The corresponding figures for 2011 were 33,795 and 68.8 per cent (83.3 crore rural people), respectively. While the percentage of rural bank offices to total bank offices was the highest (58.5 per cent) at the end of 1991, it gradually reduced to 37.2 per cent during 2011.

4.5 The area-wise distribution of Scheduled Commercial Banks (SCBs), their advances, loan outstanding and average outstanding per loan account is indicated at Table 3. As in March 2013, 1,05,437 commercial bank branches were operating in India. Out of this, 37 per cent were in rural areas which handled 56 per cent of the total loan accounts (5.99 crore). The remaining 63 per cent of total bank offices consisting of as many as 44 per cent of total loan accounts were in urban, semi-urban and metropolitan areas. This indicates a great rural-urban divide in the spread of bank offices and access to finance from commercial

banks. Data on loan outstanding indicates that on an average, a metropolitan borrower had an outstanding of Rs. 8.94 lakh followed by an urban (Rs. 2.05 lakh), semi-urban (Rs. 1.10 lakh) and rural (Rs. 0.79 lakh) borrower. Out of the total loan outstanding in 2013, Rural branches contributed 39.33 per cent and the remaining was contributed by non-rural bank offices. This indicates that rural areas are relatively more credit worthy than the non-rural area borrowers and opens an avenue for greater credit flow to the rural households.

Table 3: Distribution of Scheduled Commercial Bank Offices, Accounts and Outstanding (As in March 2013)

Area	Offices (Nos.)	Accounts (in Lakh Nos.)	Outstanding (Rs. Cr.)	Loan Outstanding per Account (Rs.)
Rural	39,195 (37.17)	336.43 (56.08)	2,65,964.3 (39.33)	79,156
Semi-Urban	28,165 (26.71)	199.54 (33.26)	2,19,849.5 (32.51)	1,10,178
Urban	19,902 (18.87)	55.30 (9.21)	1,13,744.9 (16.82)	2,05,686
Metropolitan	18,175 (17.23)	8.57 (1.4)	76,617.7 (11.33)	8,94,022
All-India	1,05,437 (100.0)	599.84 (100.0)	6,76,176.4 (100.0)	1,12,726

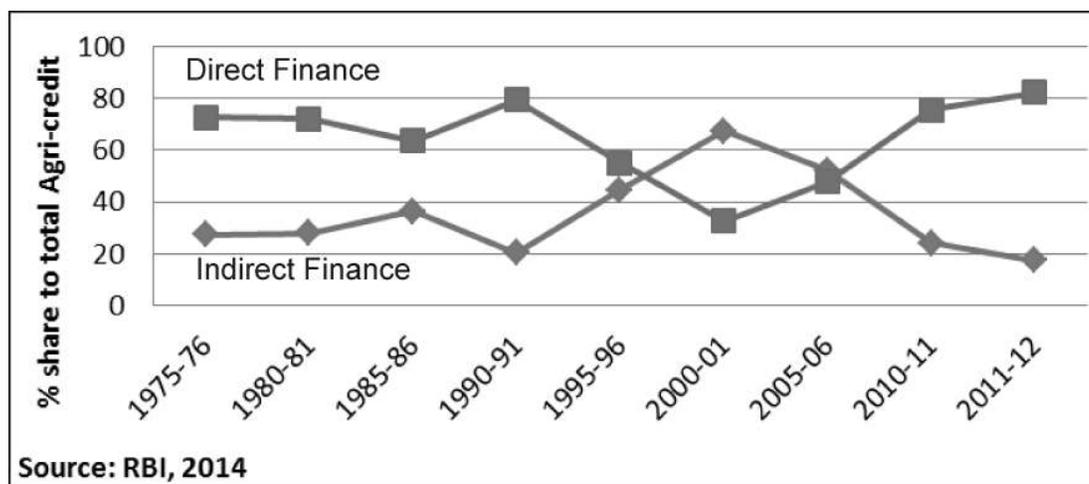
Source: RBI (2014b)

Note: Figures within the parentheses indicate percentage to the column total

V. Flow of Agricultural Finance

5.1 Banks' agricultural credit comprises direct and indirect finances. The direct finance to agriculture is the short and long term credit support which is directly provided to the cultivators. The 'crop loans' are primarily short term direct finance. Apart from the credit support for raising crops, loans of mid-term/long term duration are granted to farmers to boost long term investment in agriculture. The indirect finances to agriculture are those finances which go to support institutions which impact the overall agricultural productivity in rural areas. Some of these types of loans are directed for the agricultural input providers for smoothening input supply to the agriculture. Loans to farmers through PACs/Farmer Service Societies/Large Adivasi Multipurpose Primary Societies, support for distribution of fertilisers, and loans to State Electricity Boards are categorised as indirect finance.

5.2 Between 1975-76 and 2011-12, the share of the overall indirect finance to total agricultural credit has decreased from 27.4 per cent to 17.6 per cent whereas the direct finance to cultivators has marked an increased trend i.e. from 72.6 per cent in 1975-76 to 82.4 per cent in 2011-12 (Chart 2)



5.3 An analysis of the flow of finance through SCBs during the periods 1975-76 and 2011-12 (Table 4) indicates that the indirect finance from SCBs were either nil or negligible during 1975-76 to 1990-91. However, post 1990-91 witnessed an increase in the flow of indirect finance from the SCBs. The indirect finance by SCBs rose from a mere 4.1 per cent in 1990-91 to 18.2 per cent in 2011-12. During the same period, the flow of direct finance from SCBs marked a downward trend i.e. from 95.9 per cent in 1990-91 to 81.8 per cent in 2011-12.

5.4 When social control of banks was introduced in 1967, a rapid expansion of rural bank branches was noticed. RBI's priority sector lending policy i.e. provisioning small value loans to farmers for agriculture and allied activities, micro and small enterprises, poor people for housing, students for education and other low income groups and weaker sections have somewhat encouraged flow of credit to the rural areas. However, the flow of credit has been much below the targeted 40% level (Table 5).

5.5 Chart 3 portrays the analysis of the trend of disbursement of finance and loan accounts by category of farmers. During 1985-86, out of the total loan accounts with commercial banks, 76.3 per cent were Small and Marginal Farmer (SMF) borrowers' accounts. However, the credit disbursement to small and marginal farmers was 53.8 per cent of the total disbursement during that year. The majority of finance has gone to the Large Farmer (LF) borrowers. Chart 3 also indicates that there is a wide gap between the loan accounts and credit disbursal to small and marginal farmers and big farmers during 1985-86 to 2011-12. During 2011-12, 77.8 per cent of loan accounts (SMF) received 63.5 per cent of total disbursed credit whereas 22.2 per cent of loan accounts belonging to the LF obtained 36.5 per cent of total loan amount disbursed. This indicates that the credit expansion initiatives have helped considerably the big farmers.

Table 4: Share of Direct and Indirect Finance in Agricultural Credit from all Banks (1975-76 TO 2011-12 in %)

Year	Percentage Share to Total Agriculture Credit			
	Indirect Finance		Direct Finance	
	All Institutions*	SCBs	All Institutions*	SCBs
1975-76	27,4	0,0	72,6	100,0
1980-81	28,0	0,0	72,0	100,0
1985-86	36,4	0,0	63,6	100,0
1990-91	20,6	4,1	79,4	95,9
1995-96	44,8	10,0	55,2	90,0
2000-01	67,4	19,4	32,6	80,6
2005-06	52,2	25,6	47,8	74,4
2010-11	24,4	28,0	75,6	72,0
2011-12	17,6	18,2	82,4	81,8

* Includes Cooperatives, State Governments, SCBs, RRBs and any other financial institution which finance the farm sector.

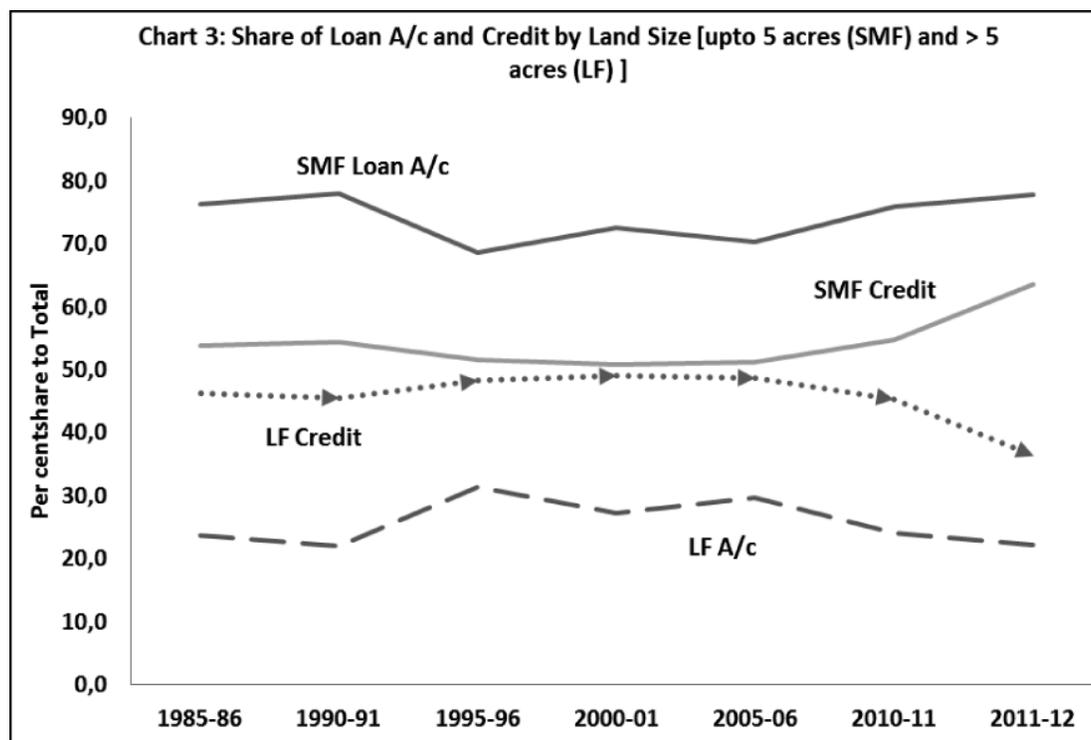
Source: RBI (2014a)

Table 5 : Share of Priority Sector Advances in Total Credit of SCBs 1969-2013

Year	Share (in per cent)
1969	14.0
1972	21.0
1975	25.0
1978	28.6
1981	35.6
1984	38.1
1987	42.9
1990	40.7
1993	34.4
1996	32.8
1999	35.3
2002	34.8
2005	36.7
2008	34.9
2011	33.9
2012	32.3
2013	32.2

Sources: Shah et al. 2007 & RBI 2014a

5.4 The financial needs of the farmers and rural entrepreneurs have increased manifold with the passage of time. To meet these ever-increasing credit needs, availability of formal financial institutions and accessibility to finance access points are the need of the hour. In the field of rural financing, the real challenge is now to cover all the households with the banking/formal financial network and strengthen the formal financial institutions in rendering financial services to these poor but needy rural masses.



5.5 Under these circumstances, to ensure smooth flow of financial services in the rural areas and to improve investment climate in agriculture and rural sector, the present government has taken renewed steps under its modified financial inclusion programme called Pradhan Mantri Jan Dhan Yojana (PMJDY) with effect from August 2014.

VI. PMJDY: Achievements and Challenges

(A) PMJDY: Achievement so far:

6.1 Pradhan Mantri Jan Dhan Yojana (PMJDY) – world's biggest financial inclusion initiative ever implemented by any developing country was announced by the Prime Minister on 15th August 2014. Launched across the country on 28th August 2014, this Yojana envisaged to be implemented in two phases on a mission mode. The activities under this Yojana are:

(a) Opening up of bank accounts for 75 million poor uncovered households

- (b) Providing each bank account with an overdraft facility of Rs. 5,000 accompanied by a RuPay debit card and an accident insurance cover of Rs. 1 lakh
- (c) Seeding Aadhaar numbers with the bank accounts to facilitate direct transfer of government subsidy payments for numerous welfare programmes.

6.2 By end-October 2014, i.e. well before the target date of January 26, 2015, the Govt. achieved its target set for bringing more than 75 million poor & unbanked households into the banking fold by opening their accounts with the formal financial institutions. RuPay debit cards were issued to more than 10 Cr. beneficiaries assuring a benefit of personal accidental insurance of Rs. 1 lakh under the programme. In addition, there existed a life insurance cover each of Rs.30,000/- for each of such eligible account holders. A deposit of Rs. 9,188 Cr. had also been mobilized in the accounts opened under PMJDY (Table 6).

Table 6: Bank-wise Status of Accounts opened under PMJDY as on 17.01.2015

Bank	Account Opened (Cr. Nos)			Balance in A/cs (in Rs. Cr.)	A/c with zero balance (Cr. Nos)	RuPay Debit Card (Cr. Nos)
	Rural	Urban	Total			
Public Sector Bank	4.93	4.18	9.11	7138.81	6.53	8.45
Regional Rural Bank	1.71	0.30	2.01	1451.31	1.50	1.25
Private Banks	0.20	0.18	0.38	597.95	0.24	0.30
Total	6.84	4.66	11.50	9188.07	8.27	10.00

Source: Gol (2015)

6.3 Table 6 indicates that within a period of four months, 11.50 crore accounts have been opened out of which 6.84 crore accounts are rural accounts and 4.66 crore are urban accounts. Out of 11.50 crore accounts, 8.27 crore accounts are zero balance accounts. Thus, remaining 3.23 crore accounts witnessed deposits to the tune of Rs. 9,188 crore. On an average, Rs. 2,844 were deposited in these accounts.

(B) Unshackling PMJDY from Future Challenges

6.4 As per the government data, out of the total 21.05 crore households in India, 20.99 crore (99.74%) have been successfully covered till date (Gol, 2015). Though opening up of bank accounts is the first step of inclusion for direct linkage with banking institutions, the real challenge is, however, to ensure consistent and adequate credit flow to the zero balance account holders. The challenge also lies in offering a single loan product which is not linked to the purpose of loan, the collateral or assets held or income earned by the household but is purely based on cash flows and credit record of the household.

6.5 The next challenge is to ensure availability of adequate credit to the rural households by opening a very large number of banking access points. These access points need to be spread uniformly or proportionately in the country depending on the spread and credit absorption capacity of borrowing households. Considering the presence of bank offices in rural India and the credit flow to the poor and low income households, it would be difficult to ensure universal coverage of unbanked areas in near future under the PMJDY. The banks need to set up a large number of branches in and around the unbanked villages and need to enhance their human resources. Considering the remoteness of the unbanked villages, the banks should, on a mission mode, be required to recruit a large number of rural cadre of banking personnel to man and serve the branches which would come up to cater to the needs of the rural borrowing households.

6.6 The need of the hour is also to make the Business Correspondents (BC) model effective in reaching the poor villagers through the sponsoring banks. The BCs are now servicing low income-customers with low volume transactions in rural areas. The government needs to make this door-step institutional credit delivery a profitable proposition to attract more players in the rural areas. The Government in consultation with the RBI needs to make a strategy so as to ensure optimum usage of these BCs in reaching the remote and poor villagers by adequately incentivising them. Since Primary Agricultural Cooperatives (PACs) have larger presence in rural areas than the commercial bank branches, the banks may use the services of PACs as BCs.

6.7 The government has taken steps to transfer subsidies through the bank accounts. While LPG subsidies have been successfully credited to the consumers, large sum of wage payments under Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) to the worker accounts are being disbursed through Aadhaar enabled consumer/worker accounts. To ensure Aadhaar enabled social welfare payments, banks not only should ensure seeding of all bank/post office/formal accounts with the Aadhaar numbers but also need to strengthen and scale up ATM networks in rural and semi-urban areas where the share of ATMs is weak (Table 7).

Table 7: Population Group-wise Number of ATMs in India

Population Group	March 2013	Percentage Share	March 2014	Percentage Share
Rural	11,564	10.1	23,334	14.6
Semi-urban	27,710	24.3	43,200	27.0
Urban	36,111	31.7	47,641	29.8
Metropolitan	38,629	33.9	45,880	28.7
Total	1,14,014	100.0	1,60,055	100.0

Source: RBI's Report on Trend and Progress of banking in India 2012-13 (adopted from Shetty SL and Deokar BK (2014), Table 1, page 14

6.8 In the present scenario, technology can become the main lever for achieving the goal of universal financial inclusion. Thus, to cater to the credit needs of millions of household in rural areas, the banks need to universalise use of Information Communication Technology (ICT) for banking transactions. Besides hardware and software requirements for digitalisation of banking transactions, banks require 24x7 power supply and broadband/ internet connections. Since the coverage of villages through electricity has remained only about 55%, the complete financial inclusion would be a challenging task for the bankers and the government (Shetty & Deokar, 2014) unless the government takes adequate steps to provide quality power and connectivity in rural areas.

VII. Conclusion & Way Ahead

7.1 The rural sector has witnessed a consistent increase in the flow of institutional credit to agriculture and allied activities after the implementation of bank nationalisation and financial liberalisation policies in India. The commercial banks are now increasingly channelizing a large share of total rural credit through their rural credit outlets. This increased flow of credit in rural areas has, however, not been sufficient as there still exists a vast gap between supply and demand of credit in rural areas.

7.2 There is a great rural-urban divide in the spread of bank offices and access to finance from commercial banks and other formal financial sources. Data analysis has indicated that though the formal credit flow increased and informal credit decreased between 1951 & 1991, there was a rising trend in the flow of informal credit during 1991 and 2013. This increasing trend has posed a real challenge before the government to expand formal credit institutions for meeting the ever-growing financial requirements of millions of farmers and rural entrepreneurs.

7.3 While the cooperative credit institutions are facing difficulties, particularly in mobilising adequate internal resources so as to become self-reliant and economically viable units, the distribution of institutional credit to agriculture by commercial banks has lacked equity. The flow of credit from commercial banks has benefited largely the big farmers in comparison to the small and marginal farmers. This necessitates reviewing the existing policy on flow of agri-credit to ensure adequate, timely and affordable direct credit assistance to the majority of small and marginal farmers in the rural areas.

7.4 The present government has taken an innovative step under the PMJDY to make rural finance accessible and affordable. The Yojana envisages ensuring smooth flow of financial services in the rural areas and improving investment climate in agriculture and rural sector. To achieve universal financial inclusion objective of this Yojana, the available banking infrastructure needs to be reviewed and strengthened. The number of distribution and electronic payment access points need to be expanded in such a way that every person is within 15 minutes walking distance from such an access point. It is estimated that to ensure financial inclusion, India needs 3 million such access points in the country (Viswanathan,

2014) which includes bank branches, bank agents, non-bank financial companies, micro-finance institutions, BCs, ATMs, mobile phones etc. Support of PACs may also be explored for playing a role of BCs in rural areas considering the PAC penetration in remote and rural areas.

7.5 The PMJDY has created a positive environment and has provided a big push to the government's objective of universal financial inclusion. The success of this Yojana will be judged on the basis of (a) expanding formal banking up till the doorsteps of the rural borrowers (b) making the financing in rural areas profitable and viable (c) expanding financial literacy through central and state programmes (d) reviving cooperatives and bringing them under the Yojana to support the financial inclusion drive in remote and unbanked areas.

Notes

1. Priority Sector primarily includes activities of five categories of occupation – (i) Agriculture (ii) Micro and Small Enterprises (iii) Education (iv) Housing, and (v) Export Credit.
2. The Situation Assessment Survey (SAS) of Agricultural Households is a part of NSSO's 70th round of survey with a reference period from 1st January, 2013 to 31st December, 2013. Earlier, NSSO had carried out an SAS of Agricultural Households in the 59th round of survey (January, 2003- December, 2003). The survey aimed at capturing the condition of agricultural households in the country in the context of policies and programmes of Government of India and captured information on several parameters viz. (i) consumer expenditure (ii) income and productive assets (iii) indebtedness (iv) farming practices and preferences (v) resource availability (vi) awareness of technological developments (vii) access to modern technology in the field of agriculture (viii) crop loss, crop insurance (ix) awareness about Minimum Support Price (MSP) etc.
3. Direct Finance for Agricultural includes loans to (i) individual farmers [including Self Help Groups (SHGs) or Joint Liability Groups (JLGs), i.e. groups of individual farmers]; corporates including farmers' producer companies of individual farmers engaged in Agriculture and Allied Activities, viz., dairy, fishery, animal husbandry, poultry, bee-keeping and sericulture, (ii) small and marginal farmers for purchase of land for agricultural purposes, (iii) distressed farmers indebted to non-institutional lenders, (iv) Primary Agricultural Credit Societies (PACS), Farmers' Service Societies (FSS) and Large-sized Adivasi Multi Purpose Societies (LAMPS) etc. [for details please see rbi.org.in].
4. Indirect Finance to Agriculture, inter alia, includes high value loans (more than Rs. 2 crore) for agriculture or allied activities; bank loans to Primary Agricultural Credit Societies (PACS), Farmers' Service Societies (FSS) and Large-sized Adivasi Multi Purpose Societies (LAMPS) etc.
5. Domestic commercial banks/foreign banks with 20 and above branches are required to dedicate 40 per cent of their credit equivalent of off-balance sheet exposure for total priority sector activities out of which 18 per cent and 10 per cent have been reserved for agriculture and advances to weaker sections. [for details please see www.rbi.org.in]

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Crop Insurance for Risk Management in India: An Overview

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Farmers in India are now facing various risks in agricultural production due to climatic aberrations which have increased significantly in the context of climate change. At the same time price variability has increased enormously due to the increased pace of globalisation. In this context there is a need to examine the effectiveness of the existing crop insurance schemes in managing both production and price risk. National Agricultural Insurance Scheme (NAIS) is a multi-peril area based crop yield insurance scheme and it covers not only weather related risk such as drought, flood, storm etc. but also plant diseases and pest attack. Compensation is paid on the basis of actual crop loss in the defined area. The major drawback of this scheme is delay in claim settlement due to time consuming process of collection of yield data. On the other hand, Weather Based Crop Insurance Scheme (WBCIS) covers only weather related risk and the compensation is paid on the basis of deficit or excess in weather parameter, which is considered as a correlate or proxy of crop loss. The indemnity is paid quickly after receiving the weather data from meteorological stations. The paper has examined the operational efficiency of the schemes with the use of time series data on farmers covered, area insured, sum insured, premium collected, claims paid and farmers benefited. The paper concludes that the performance of NAIS is unsatisfactory due to low coverage, poor financial performance and less operational efficiency. NAIS and WBCIS cover only yield risk but now due to commercialization and globalisation, there is a need for crop revenue or farm income insurance to cover joint price and yield risk.

Keywords: Risk, Crop Insurance, India

1. Introduction

There are numerous and varied risks in agriculture. They are specific to a country, climate and local agricultural production systems. Agricultural risks stem from a range of factors including the vagaries of weather, the unpredictable nature of biological processes, the

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pronounced seasonality of production and market cycles, the geographical separation of production and end users and the unique and uncertain political economy of food and agriculture sectors, both domestic and international (Jaffee et al., 2010). Weather risks like drought, flood and storm lead to lower yields, loss of productive assets and income. Biological risks in the form of pests, disease and contamination result in reduced yield and loss of farm income. Price risks which may arise due to low prices and volatility in market supply and demand lead to instability in income. Crop prices are more volatile because of difficulties in storage owing to bulkiness and perishability of the products. As demand for agricultural produce is relatively inelastic with respect to changes in price and income, any supply shock is quickly reflected in price change. But undoubtedly, weather is the most significant among all the risk factors affecting crop production (Miranda and Vedenov, 2001).

Managing risks in agriculture is particularly challenging, as many risks are highly correlated, resulting in whole communities being affected at the same time. There are various strategies to manage agricultural risk (Singh, 2010). Risk can be managed by avoiding, preventing, sharing, transferring and spreading it. Risk in agriculture can be avoided by opting for alternative livelihood opportunities. Some risks can be prevented by taking advance action like preventive pest control. Risks can be shared by giving lease of land to tenants. Risk can be transferred by insuring the crop yield and through forward contract. Risk may be spread through diversified farming and mixed cropping. Governments in developing countries like India have taken many measures to reduce risk and impart greater resilience to agriculture. These include promoting the diversification of cropping patterns, inter-cropping, flood-control, drought-proofing and watershed development for reducing the production risk, and price support through market intervention and futures trading for the purpose of stabilizing prices and hedging risks. However, in spite of the preventive measures in place, when there is crop failure, insurance is considered the most effective mechanism to compensate farmers for their losses.

A major role played by insurance programmes is the indemnification of risk-averse individuals who might be adversely affected by natural probabilistic phenomena. By pooling individual risks, insurance leads to Pareto-preferred states. Insurance, by offering the possibility of shifting risks, enables individuals to engage in risky activities which they would not otherwise undertake (Ahsan, Ali and Kurian, 1982), which is known as moral hazard impact of insurance. Moral hazard is primarily a problem of asymmetric information and hidden action. Also Kling and Oamek (1983) and Skees and Reed (1986) focus on adverse selection. There is adverse selection when the level of risk in the insured population is higher than the average. This means only people with the highest risks will buy insurance. In insurance markets, adverse selection occurs when potential policyholders have proprietary knowledge about their risk exposure that is not available to the insurer

(Rothschild and Stiglitz, 1976). To eradicate the problems of adverse selection and moral hazard, usually area-based crop insurance schemes are implemented in most developing countries.

Farmers in India are now facing various risks in agricultural production due to climatic aberrations which have increased significantly in the context of climate change. India being located in the low latitude region of South Asia is extremely vulnerable to climate change because of its tropical climate, monsoon rain, long coast line, greater dependence on agriculture, high incidence of poverty, low irrigation coverage and inadequate resources and technology to combat climate change. At the same time price variability has increased enormously due to increased pace of globalisation. In this context there is a need to look at the existing crop insurance schemes under implementation in India and their effectiveness in managing both production and price risk. National Agricultural Insurance Scheme (NAIS) which has been implemented since 1999 Rabi season, is a multi-peril area based crop yield insurance scheme and it covers not only weather related risk such as drought, flood, storm etc. but also plant diseases and pest attack. Compensation is paid on the basis of actual crop loss in the defined area. The major drawback of this scheme is delay in claim settlement due to time consuming process of collection of yield data. Weather Based Crop Insurance Scheme (WBCIS), which has been launched since 2007 Kharif season on pilot basis on the other hand, is considered an improvement over NAIS because rainfall as an index, in comparison to crop yield, is easier to measure objectively and, hence, the process of data collection is more transparent and less time-consuming. In turn, the administrative cost is low, thus facilitating quicker payment of indemnity to the buyers of insurance. Moreover, WBCIS eradicates the problems of moral hazard and adverse selection (Hess, 2003). Additionally, WBCIS allows reinsurance by the primary insurer as it is based on standardized/well-defined internationally verifiable data. The major drawback of WBCIS is that it covers only the weather-related risk so that if there is crop loss due to any other reason such as plant disease and pest attack, the insured does not get any compensation. The most challenging disadvantage of WBCIS, however, is the basis risk, which refers to the variability between the value of losses as measured by the weather index and the value of actual losses experienced on the farm (Collier *et al.*, 2009) as the basis risk can result in a mismatch between the actual loss and payout. Furthermore, in WBCIS, the start-up cost is high as time series and historical data on rainfall and yield are required to define the trigger events that necessitate indemnity payment.

In the increased risky environment of climate change, globalisation and commercialisation of agriculture, there is a need to analyse the effectiveness of the above crop insurance schemes and suggest innovative insurance products to cater to the changed needs of the farmers. The principal objective of this paper is to make a comparative assessment of the performance of NAIS and WBCIS that are currently under implementation

in India with respect to their coverage, financial performance, and operational efficiency as risk management tools. The paper has examined the operational efficiency of the schemes with the use of time series data on farmers covered, area insured, sum insured, premium collected, claims paid and farmers benefited collected from the Agricultural Insurance Company of India Limited (AICI).

The rest of the paper is divided as follows. Section 2 describes the salient features of various crop insurance schemes implemented in India. Section 3 discusses coverage of NAIS and farmers benefited from the scheme. Section 4 deals with the financial performance of NAIS. Section 5 discusses coverage of WBCIS and farmers benefited from it and section 6 examines the financial performance of WBCIS. Section 7 brings out a comparison between performance of NAIS and WBCIS in India. Section 8 is the concluding section containing major findings of the study and policy implications based on secondary data analysis.

2. Crop Insurance Schemes in India

Risk in crop production is very high in India due to variability in rainfall, inadequate irrigation facility, frequent occurrence of natural calamities and low resource base of farmers. In such a risky environment, there is a great need for crop insurance, as in the event of crop loss, the insured farmers will receive indemnity to recoup their losses. Crop insurance brings in security and stability in farm income, protects farmers' investment in crop production and thus improves their risk bearing capacity. Affordable agricultural insurance can in effect act as collateral against loans, increasing the creditworthiness of farmers and allowing them the opportunity to invest in appropriate inputs to increase agricultural productivity (Hazell, 1992). Thus, crop insurance facilitates adoption of improved technologies and, encourages higher investment resulting in higher agricultural production. Crop insurance received concerted attention only after independence. During 1950s, several attempts were made at the national level to formulate and operationalise agricultural insurance in India. Realising the need for crop insurance for management of agricultural risk, the Government of India (GoI) has introduced several crop insurance schemes over the past three decades at different points of time and modified as and when required to address operational issues.

2.1 Pilot Crop Insurance Scheme

Following Prof. V. M. Dandekar's suggestion, General Insurance Corporation (GIC) prepared a crop insurance scheme based on the area approach and put it into operation from 1979–80 on pilot basis. Initially, it was introduced as a pilot scheme in three states and was extended to twelve States by 1984–85. During this period it covered 6.27 lakh farmers for total premium of Rs.196.95 lakhs against claims of Rs.157.05 lakhs. It was based on "Area

Approach” for providing insurance cover to farmers taking crop loans from institutional sources of finance against a decline in crop yield below the threshold level. Since the crop insurance was linked to crop loans, many small and marginal farmers could not participate in the crop insurance scheme because a majority of these farms have poor access to institutional credit.

2.2 Comprehensive Crop Insurance Scheme

Comprehensive Crop Insurance Scheme (CCIS) was launched by the Government of India in 1985 and was the first nation-wide scheme. Previous crop insurance schemes had been operated on experimental and pilot basis, on a small scale and in a scattered manner. Operated by GIC in collaboration with the respective State governments, the scheme covered cereals, pulses and oilseeds. Crop insurance was linked to institutional credit; farmers who availed themselves of loans for specified crops were eligible for insurance coverage. State governments were left to decide whether to operate the scheme in the state or not. In this scheme, the indemnification was on area basis with each insured farmer growing a particular crop in the defined area being eligible for indemnity if there was a shortfall in the actual average yield per hectare of the insured crop from the threshold yield. The scheme was a credit-linked insurance scheme and covered only those farmers taking crop loans from institutional agencies such as commercial banks, regional rural banks and cooperatives for the cultivation of food crops and oilseeds. However, critics of the scheme have described it as a loan insurance scheme as the scheme was compulsory for loanee farmers and not available to non-loanee farmers who self-finance their cultivation expenses (Swain, 2008). The financial performance of the scheme was also very poor, as the premium rates were highly subsidised. CCIS was operated for almost one and a half decades, before being replaced by the National Agricultural Insurance Scheme (NAIS) in 1999.

2.3 National Agricultural Insurance Scheme

NAIS was conceptualized to address operational problems experienced during the implementation of CCIS. For improving the scope and content of CCIS, NAIS was introduced in India from the Rabi season of 1999-2000. This is an area-based crop yield insurance scheme which, during 2012-13, covered 15.4 million farmers and a cultivated area of 22 million hectare. Internationally NAIS in India covers the largest area among all the countries. The objectives of NAIS are as follows:

- To provide insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests and diseases.
- To encourage the farmers to adopt progressive farming practices, high value inputs

and higher technology in agriculture.

- To help stabilise farm incomes, particularly in disaster years.

All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for coverage. The scheme covers all food crops (cereals, millets and pulses), cotton, sugarcane and potato in the 1st year and other annual commercial/horticultural crops to be covered within a period of three years from the start of the scheme. This scheme allows non-loanee farmers growing insurable crops too to opt for the scheme, in addition to all loanee farmers who are compulsorily covered. The scheme provides comprehensive risk insurance against yield losses due to natural fire, lightning, storm, hailstorm, cyclone, typhoon, tempest, hurricane, tornado, flood, inundation and landslide, drought, dry spells, pests, diseases, etc. If the actual average yield per hectare of the insured crop for the defined area (on the basis of requisite number of Crop Cutting Experiments) in the insured season, falls short of specified threshold yield, all the insured farmers growing that crop in the defined area are deemed to have suffered shortfall in their yield and the scheme provides coverage against such contingency. Indemnity claims are worked out as per the following formula:

$$\frac{\text{Shortfall in yield}}{\text{Threshold Yield}} \times \text{Sum insured for the farmer}$$

(Shortfall = Threshold Yield – Actual Yield for the Defined Area).

Threshold yield is the moving average based on past three year's average yield in case of rice and wheat and five years average yield in case of other crops. For Kharif crops the farmer premium rate is 3.5% for all oilseed crops and bajra and 2.5% for all other food crops. For Rabi crops the farmer premium rate is 1.5% for wheat and 2% for all other food crops. Premium rates paid by farmers in respect of commercial and horticultural crops are determined at the state level for each crop.

Recognising the need for an exclusive organisation for agricultural insurance, the Government of India established Agricultural Insurance Company of India Limited (AICI) in December 2002. AICI took over the implementation of NAIS from GIC in 2003-04.

Though NAIS is an improvement over CCIS, still it has many shortcomings. Several empirical studies reveal that NAIS has failed to achieve its objectives due to its low coverage, poor financial performance and less effectiveness (Sinha, 2004; Kalavakonda and Mahul, 2005; Vyas and Singh, 2006; Swain, 2013). This scheme has not performed well in India because of the time taken to collect yield data that results in delays in the payment of compensation. The awareness about the scheme is poor, partly due to lack of adequate localized interactions and substantially due to the lack of effective image building and awareness campaigns (Raju and Chand, 2008).

2.4 Farm Income Insurance Scheme

To take care of variability in both the yield and market price, the Government of India introduced a pilot project, viz. Farm Income Insurance Scheme (FIIS) during Rabi 2003-04 season. The Scheme was implemented during 2 seasons only, viz. Rabi 2003-04 season in 18 Districts of 11 States for wheat/rice, and Kharif 2004 season in 19 Districts of 4 States for rice alone. The objectives of the scheme were to protect farm income, ensure sustainable production, enhance food and livelihood security, encourage crop diversification and increase competitiveness. The purpose of the scheme was not only to protect the income of the farmer, but also to reduce the government expenditure on procurement at Minimum Support Price (MSP). In the area under FIIS, procurement of foodgrains with minimum support prices (MSP) was withdrawn with an aim to remedy the problem of excess stock with Food Corporation of India (FCI). But most of the states were not keen to implement the scheme as withdrawal of MSP based procurement was not acceptable to them. Also they argued that the scheme would not be beneficial to the farmers, as yield and price have offsetting behaviour. Since price and yield are negatively correlated, the probability of claim arises only when price and yield both go below the guaranteed level, which may be a rarity. Agriculture Finance Corporation (AFC), which conducted concurrent evaluation of the project during Kharif 2004 season, also stated that the scheme in the present form is neither viable nor attractive. NAIS was suspended for the selected districts/crops where the pilot FIIS was implemented.

The scheme is compulsory for loanee farmers taking seasonal crop loans from institutional sources of finance such as Commercial Banks, Regional Rural Banks and Cooperatives. The non-loanee farmers can also opt for the scheme voluntarily.

The scheme provides Comprehensive Risk Insurance against LOSS IN FARM INCOME (Shortfall in Actual Income [AI] over Guaranteed Income [GI]) in a Notified Area arising out of adverse fluctuations in yield due to occurrence of any one or combination of non-preventable natural perils such as Flood, Inundation, Storm, Cyclone, Hailstorm, Landslide, Drought, Dry spells, large-scale outbreak of Pests/ Diseases; AND, adverse fluctuation of market prices, as measured against MSP.

Though conceptually FIIS is a good scheme, it suffers from several inherent contradictions. The Joint Group (2004) constituted to evaluate the scheme however recommended its withdrawal on several grounds. First, it would be difficult to substitute deep-rooted MSP regime with income insurance, as MSP is available to all farmers while income insurance is available to only the insured farmers. Secondly, MSP is available to farmers at no additional cost while income insurance is available only at a premium. Thirdly, income insurance linked to MSP is not an insurance instrument as MSP is a theoretical price as against

functional market price. The scheme was finally withdrawn after implementation during only two seasons i.e. Rabi 2003-04 and Kharif 2004.

2.5 Weather Based Crop Insurance Scheme (WBCIS)

In order to speed up claim payments, the Weather Based Crop Insurance Scheme (WBCIS), popularly known as rainfall insurance, was introduced in Kharif 2007 season on a pilot basis and is currently executed in 19 states. During 2011-12, this scheme covered 11.7 million farmers and a cultivated area of 15.7 million hectare. WBCIS also operates on the concept of area approach. It is a weather index-based insurance product designed to offer insurance protection against losses to crop resulting from adverse weather conditions.

For loss estimation, a Reference Unit Area (RUA) is deemed to be a homogenous area unit of insurance. Each RUA is linked to a Reference Weather Station (RWS); claims are determined on the basis of weather data recorded by the RWS. Adverse weather events during the season entitle the insured to a pay-out, subject to the weather triggers defined in the "Payout Structure" and the terms and conditions of the scheme. The claim settlement is an automatic process, based on the weather readings at the RWS. In a given RUA, the payout given per unit area is the same for all cultivators under the same RWS. Claims are normally settled within 45 days from the end of the insurance period. Insurance companies declare a per-unit Sum Insured at the beginning of each crop season in consultation with experts. This may vary from crop to crop in each RUA. The sum insured for the loanee farmer is calculated by multiplying per unit area value of inputs with crop specific acreage declared by the farmer in the loan application form submitted to the lending bank. For a non-loanee farmer, the acreage figure is expected area sown/planted under the particular crop as declared in the insurance proposal form.

The Scheme was received with good response due to the fact that claims calculation does not depend on yield results and claims are released within 45 days after the period of insurance. But WBCIS covers only weather related risk and the compensation is paid on the basis of deficit or excess in weather parameter which is considered as a correlate or proxy of crop loss. The most challenging disadvantage of WBCIS, however, is the basis risk, which refers to the variability between the value of losses as measured by the weather index and the value of actual losses experienced on the farm, (Collier *et al.*, 2009) as the basis risk can result in a mismatch between the actual loss and payout. Furthermore, in WBCIS, the start-up cost is high as time series and historical data on rainfall and yield are required to define the trigger events that necessitate indemnity payment.

2.6 Modified National Agricultural Insurance Scheme (MNAIS)

The Government then formulated a new scheme, modified NAIS (MNAIS) to correct the

loopholes in the existing NAIS. It was implemented on a pilot basis in 50 districts from the Rabi season of 2010–11. Unit area of insurance was reduced to village/village panchayat level for major crops. Like NAIS, MNAIS is compulsory for loanee farmers and voluntary for non-loanee farmers. The main objective of the scheme is to provide insurance coverage to the farmers in the event of failure of the any of the notified crop as a result of natural calamities, pests, diseases or errant weather condition. The novel features of MNAIS are coverage of prevented sowing/planting risk and post harvest loss, provision of higher level of indemnity, provision for mid-season on-account payment of compensation on the basis of expected crop loss, allowing private sector participation. In case of adverse seasonal conditions during crop season, claim amount up to 25 percent of likely claims would be released in advance subject to adjustment against the claims assessed on yield basis.

2.7 National Crop Insurance Programme (NCIP)

During November 2013, in order to insulate farmers from farming risks, the Ministry of Agriculture and Cooperation, Government of India directed the state governments to implement the new National Crop Insurance Programme (NCIP) with immediate effect from the ongoing Rabi season. This central scheme has been formulated by merging the Pilot Weather Based Crop Insurance Scheme (WBCIS), Pilot Modified National Agricultural Insurance Scheme (MNAIS) and Pilot Coconut Palm Insurance Scheme (CPIS) to make it more farmer friendly. Loanee farmers will be covered compulsorily under component scheme of NCIP notified by the concerned state, while non-loanee farmers will choose either MNAIS or WBCIS component. Private sector insurers with adequate infrastructure and experience will be permitted to implement NCIP besides Agriculture Insurance Company of India (AICI). Unlike earlier, all farmers even including sharecroppers, tenant farmers, farmers enrolled in contract farming, group of farmers serviced by fertilizer companies, pesticide firms, crop growers, and self help groups are eligible for insurance cover. There will be three indemnity levels instead of two- 70 per cent, 80 per cent and 90 per cent. The Threshold yield (TY) or guaranteed yield for a crop in a Insurance Unit shall be the average yield of the preceding 7 years excluding the year(s) in which a natural calamity such as drought, floods etc. may have been declared by the concerned Government authority multiplied by level of indemnity. However, it may be ensured that at least 5 years' yield data is available for calculating the threshold yield. The insurance companies will be liable to make claim payment from their own resources. Only the premium subsidy will be shared by state and central government on 50:50 basis. Besides, a catastrophic fund at the national level will be set up for providing reinsurance cover to the insurance companies implementing the scheme. However this fund, set up with equal contribution from the state and centre, can be used only in the event of failure to procure reinsurance cover at competitive rates and if premium to claims ratio exceeds 1:5. The novelty of the NCIS is that it incentivises risk reducing measures by farmers by lowering the premium for

the farmers who undertake soil and water conservation measures. Premium structure would be worked out with a discount provision on the premium in respect of a unit area where all farmers have adopted better water conservation and sustainable farming practices for better risk mitigation. Farmers are entitled to maximum premium subsidy up to 50 per cent under WBCIS and 75 per cent under MNAIS on a graded scale. Premium rates have been capped according to the type of crop and season, and in cases where the actuarial premium rates are higher than the capped limit, the sum insured for such crops will be reduced in proportion to the cap level. NAIS was to be discontinued from Rabi 2013–14. However, on the representation of some State governments, GoI reconsidered the matter and communicated that the fourteen States and Union Territories that had already notified NAIS for Rabi 2013–14 could continue its implementation. Further, States which had already notified NCIP should continue to implement it.

Thus, a number of crop insurance schemes have been introduced in the last three decades, and modified as and when required to address operational issues. Payment of crop insurance claims were delayed in many cases because of anomalies in data relating to insured area, insured crops and estimated yield of insured crops. Inconsistencies relating to the insured area of a crop and the area reported to be under such crop in a particular season posed a problem. Committees and groups were also set up periodically to address various issues. The present study attempts to critically examine the performance of NAIS and WBCIS in India with the use of time series data on farmers covered, area insured, sum insured, premium collected, claims paid and farmers benefited, collected from AICI.

3. Coverage of NAIS and Farmers Benefited

To evaluate the performance of NAIS in India, we consider the trend in the coverage of the scheme in both Kharif and Rabi seasons from the year of its initiation i.e. 2000 to 2012 as shown in Table 1 and Figure 1. During Kharif season the number of farmers covered has increased substantially from 84.1 lakh in 2000 to 106.2 lakh in 2012. In the same period, the area covered also increased enormously from 132.2 lakh hectare to 156.4 lakh hectare. But during the Rabi seasons, the number of farmers and area covered are far less in comparison to Kharif seasons, as farmers in India cultivate crops in nearly sixty percent of their area in the Rabi season due to low rainfall and inadequate irrigation facility during this season. Rabi crops are usually grown in irrigated areas, where requirement for insurance is low. The trend in the coverage of the scheme during Rabi seasons reveals that the coverage of the scheme with respect to number of farmers and area covered though has increased substantially over the period 2000-2012, still it is very small in comparison to Kharif seasons. During Rabi seasons, the number of farmers covered has increased from 20.9 lakh in 2000 to 47.6 lakh in 2012. In the same period, the area covered also increased significantly from 31.1 lakh hectare to 61.8 lakh hectare.

Now coming to total number of farmers covered under NAIS which includes both Kharif and Rabi seasons, the number increased from only 105.0 lakh in 2000 to 153.8 lakh in 2012. Similarly, total area under NAIS which includes both Kharif and Rabi crops has increased spectacularly from only 163.3 lakh hectare in 2000 to 218.2 lakh hectare in 2012.

Table 1: Coverage of Nais in India (Kharif and Rabi 2000-2012)

Year	Farmers under NAIS Covered			Area under NAIS Covered (in hectare)		
	Kharif	Rabi	Kharif and Rabi	Kharif	Rabi	Kharif and Rabi
2000	8409374	2091733	10501107	13219829	3111423	16331252
2001	8696587	1955431	10652018	12887710	3145873	16033583
2002	9768711	2326811	12095522	15532349	4037824	19570173
2003	7970830	4421287	12392117	12355514	6468663	18824177
2004	12687104	3531045	16218149	24273394	5343244	29616638
2005	12673833	4048524	16722357	20531038	7218417	27749455
2006	12934060	4977980	17912040	19672280	7632882	27305162
2007	13398822	5044016	18442838	20754747	7387156	28141903
2008	12992272	6210648	19202920	17636187	8857836	26494023
2009	18253072	5681148	23934220	25769817	7899761	33669578
2010	12681995	4967409	17649404	17108731	6937178	24045909
2011	11553854	5239701	16793555	15773199	7609444	23382642
2012	10620484	4761852	15382336	15644281	6179773	21824054
2000-2012	152640998	55257585	207898583	231159075	81829473	312988548

Source: Agriculture Insurance Company of India Limited (AIC).

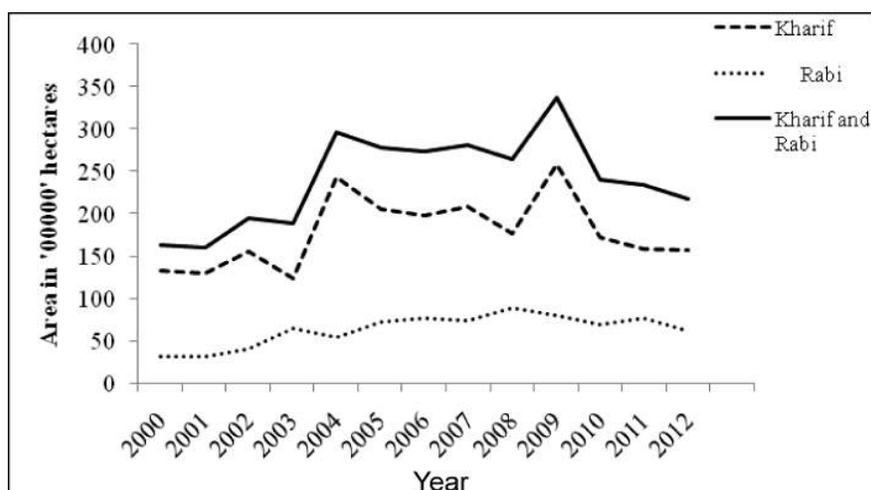


Figure 1: Kharif and Rabi area Under Nais in India (2000-2012)

Table 2: Farmers Benefited Under Nais (2000-2012)

Year	% of Farmers Benefited	
	Kharif	Rabi
2000	43.2	25.2
2001	20.0	23.2
2002	44.0	39.8
2003	21.5	47.5
2004	21.1	21.9
2005	21.2	24.2
2006	24.2	28.0
2007	11.9	31.3
2008	32.5	31.9
2009	43.7	18.4
2010	17.8	22.9
2011	16.0	23.9
2012	17.0	16.9
2000-2012	25.9	27.0

Source: Computed from data collected from AIC.

It is worthwhile to examine whether the farmers are benefited from the scheme, when there is crop loss. As shown in Table 2, the percentage of total farmers benefited, over the period 2000-2012 is only 25.9 percent for Kharif seasons and 27.0 percent for Rabi seasons. The percentage of farmers benefited ranged from 11.9 percent in 2007 Kharif season to 44.0 percent in 2002 Kharif season. In the case of Rabi season, it varied from the lowest 16.9 percent in 2012 to 47.5 percent in 2003.

4. Financial Performance of NAIS

The financial performance of the scheme can be evaluated by examining the quantum and trend in various financial indicators which include sum insured per hectare, premium paid per hectare, claim received per hectare and more importantly the claim- premium ratio. These indicators are shown in Table 3. The financial performance has been evaluated for Kharif and Rabi season separately.

During the Kharif seasons over the period 2000-2012, one farmer on an average has insured 1.5 hectare of land under NAIS. The insured area per participating farmer has remained

more or less constant over the years. The average sum insured during 2000-2012 was Rs 8995 per hectare. During the same period, the average premium paid was only Rs 264 per hectare and the average claim received was Rs. 857 per hectare. Thus, on an average the farmers are receiving more indemnity than the premium amount. The sum insured per hectare and premium paid per hectare has increased steadily over the years. The average claim received per hectare is very high during the drought affected years. The average claim received per hectare ranged from Rs. 372 in 2012 to Rs.1761 in 2009 (Table 3).

To assess the financial performance of NAIS in India, the claim-premium ratio was computed by dividing the indemnity claim or compensation payment by insurance premium collected. If the claim-premium ratio exceeds one, it indicates financial loss on the part of the insurer in insurance business, but from the point of view of the farmer it indicates that he receives more compensation than the premium paid. During the period 2000-2012 Kharif seasons, it is observed that the claim- premium ratio is greater than one for twelve seasons out of the total thirteen seasons. Thus, in majority of the seasons, the insured farmers get more compensation than the amount of premium that they pay to insure their crops. Thus, for the insurance users, the benefits from insurance exceed the cost of insurance. During the same period, the average claim-premium ratio is found to be 3.2 and thus favourable to the farmers. The claim-premium ratio ranges from the lowest 0.8 during 2012 to the highest 7.7 during 2000. The claim- premium ratio is observed to be higher in drought years when there was huge crop loss due to deficiency in rainfall

Table 3: Financial Performance Indicators of Nais in India
(Kharif and Rabi 1999- 2012)

Season/ Year	Area Insured per Farmer (hectare)	Sum Insured per hectare (Rs)	Premium Paid per hectare (Rs)	Claims Received per hectare (Rs)	Claim- Premium Ratio
Kharif					
2000	1.6	5222.0	120.5	924.7	7.7
2001	1.5	5821.4	166.0	383.0	2.3
2002	1.6	6072.3	180.7	1174.6	6.5
2003	1.6	6567.2	209.5	528.3	2.5
2004	1.9	5425.9	180.8	427.7	2.4
2005	1.6	6584.7	209.2	528.5	2.5
2006	1.5	7502.6	224.0	902.9	4.0
2007	1.5	8194.7	239.8	440.6	1.8
2008	1.4	8882.9	271.2	1348.3	5.0
2009	1.4	10716.7	312.7	1760.8	5.6

2010	1.3	13858.9	395.3	959.0	2.4
2011	1.4	14889.8	419.7	1054.4	2.5
2012	1.5	17281.4	489.3	372.4	0.8
2000-2012	1.5	8994.8	264.2	856.9	3.2
Rabi					
1999	1.3	4566.0	48.3	98.6	2.0
2000	1.5	5151.0	62.8	191.2	3.0
2001	1.6	4760.2	71.1	205.5	2.9
2002	1.7	4550.8	78.7	467.0	5.9
2003	1.5	4714.3	89.4	768.4	8.6
2004	1.5	7063.5	134.2	300.5	2.2
2005	1.8	7026.0	138.0	468.7	3.4
2006	1.5	8571.1	172.3	676.0	3.9
2007	1.5	10107.6	190.5	1096.7	5.8
2008	1.4	12586.3	252.1	1703.0	6.8
2009	1.4	13934.0	274.4	500.1	1.8
2010	1.4	15869.3	294.0	947.4	3.2
2011	1.5	14828.9	255.6	478.4	1.9
2012	1.3	16110.1	275.6	0.7	0.0
1999-2012	1.5	10362.3	192.2	674.0	3.5

Source: Computed from data collected from AIC.

Out of total fourteen years of Rabi seasons, claim-premium ratio was again favourable for insurance users (greater than one) for thirteen years. During the Rabi seasons, the claim received per hectare is lower than that of Kharif seasons. During the period 1999 to 2012, the average claim received per hectare was only Rs 674, whereas it was Rs 857 for Kharif season (Table 3). Thus, during Rabi seasons, the farmers are not benefited to the extent they receive indemnity during Kharif seasons.

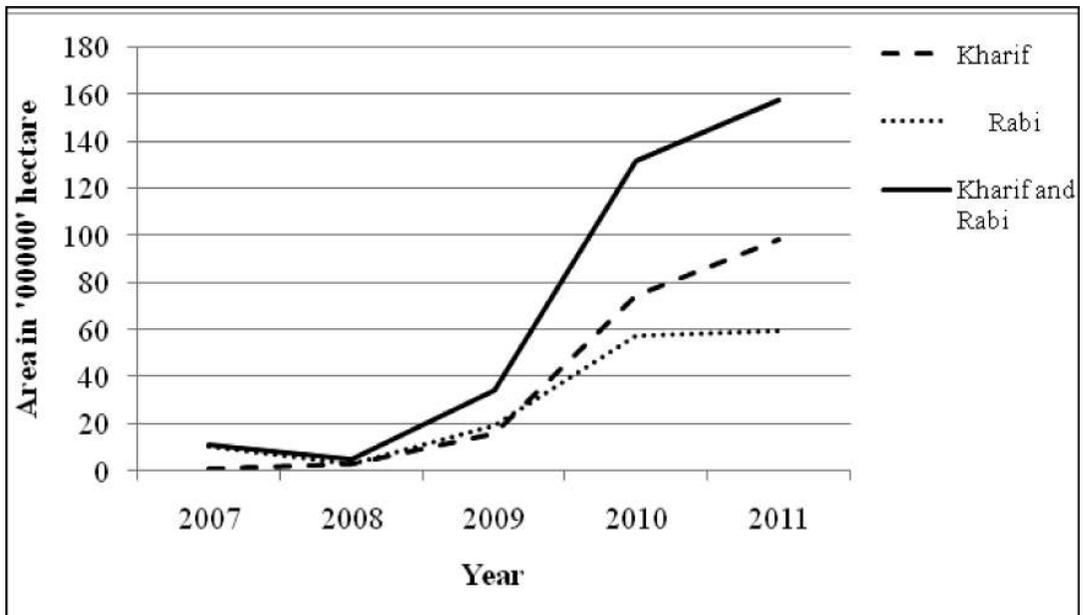
5. Coverage of WBCIS and Farmers Benefited

Table 4 and Figure 2 show the trend in the coverage of WBCIS in both Kharif and Rabi seasons from the year of its initiation i.e. 2007 to 2011. During Kharif season the number of farmers covered has increased substantially from 0.4 lakh in 2007 to 69.1 lakh in 2011. In the same period, the area covered also increased enormously from just 0.5 lakh hectare to 97.8 lakh hectare. The trend in the coverage of the scheme during Rabi seasons reveals that the coverage of the scheme with respect to number of farmers and area covered though has increased over the period 2007-2011, still it is very small in comparison to Kharif seasons. During Rabi seasons, the number of farmers covered has increased from 6.3 lakh in 2007 to 47.7 lakh in 2012. In the same period, the area covered has also increased from 10.2 lakh hectare to 59.4 lakh hectare.

Table 4: Coverage of Wbcis in India (Kharif and Rabi 2007-2011)

Year	Farmers under WBCIS		Area under WBCIS (in hectare)	Covered		
	Kharif	Rabi		Kharif	Rabi	Kharif and Rabi
2007	43790	634635	678425	50074	1018254	1068328
2008	183481	191647	375128	221202	260908	482110
2009	1161055	1201525	2362580	1530782	1891091	3421874
2010	4918950	4385571	9304521	7391329	5757384	13148713
2011	6908926	4765997	11674923	9788401	5944726	15733127
2007-11	13216202	11179375	24395577	18981789	14872362	33854151

Source: Agriculture Insurance Company of India Limited (AIC).

**Figure 2: Kharif and Rabi area under Wbcis in India (2007-2011)**

The total farmers covered under WBCIS which includes both Kharif and Rabi seasons, the number increased from only 6.8 lakh in 2007 to 116.7 lakh in 2011. Similarly, total area under WBCIS which includes both Kharif and Rabi crops hectares increased from only 10.7 lakh hectare in 2007 to 157.3 lakh hectare in 2011.

Table 5 shows the percentage of total farmers benefited under WBCIS over the period 2007-2011. It is 48.7 percent for Kharif seasons and 55.2 percent for Rabi seasons. The

percentage of farmers benefited ranged from 36.4 percent in 2010 Kharif season to 80.6 percent in 2007 Kharif season. In the case of Rabi season, it varied from the lowest 30.0 percent in 2007 to 63.0 percent in 2008. Thus, number of farmers benefited during Rabi seasons is less than in Kharif seasons.

6. Financial Performance of WBCIS

In order to evaluate the financial performance of WBCIS, the quantum and trend in various financial indicators which include sum insured per hectare, premium paid per hectare, claim received per hectare and the claim- premium ratio have been examined as was done in case of NAIS. These indicators are shown in Table 6.

Table 5: Farmers Benefited under Wbcis (2007-2011)

Year	% of Farmers Benefited	
	Kharif	Rabi
2007	80.6	30.0
2008	59.4	63.0
2009	77.8	49.9
2010	36.4	57.6
2011	52.1	57.3
2007-2011	48.7	55.2

Source: Computed from data collected from AIC.

**Table 6: Financial Performance Indicators of Wbcis in India
(Kharif and Rabi 2007- 2011)**

Season/Year	Area Insured per Farmer (hectare)	Sum Insured per hectare (Rs)	Premium Paid per hectare (Rs)	Claims Received per hectare (Rs)	Claim-Premium Ratio
Kharif					
2007	1.1	10586.3	283.1	1046.7	3.7
2008	1.2	15872.5	434.5	725.7	1.7
2009	1.3	13821.1	395.8	1031.5	2.6
2010	1.5	7686.9	227.7	259.6	1.1
2011	1.4	11102.4	338.9	430.8	1.3
2007-11	1.4	10045.9	301.2	417.6	1.4
Rabi					
2007	1.6	17077.3	429.9	986.0	2.3
2008	1.4	20556.2	430.2	1281.0	3.0
2009	1.6	15112.9	298.9	986.0	3.3
2010	1.3	15022.5	306.5	768.3	2.5
2011	1.2	16581.5	350.5	1117.7	3.2
2007-11	1.3	15894.9	333.7	959.6	2.9

Source: Computed from data collected from AIC.

During the Kharif seasons over the period 2007-2011, one farmer on an average has insured 1.4 hectare of land under WBCIS. The insured area per participating farmer has increased marginally over the period. While it was only 1.1 hectare per farmer in 2007, it was 1.4 hectare in 2011. The average sum insured during 2007-2011 was Rs 10046 per hectare. During the same period, the average premium paid was only Rs 301 per hectare and the average claim received was Rs. 418 per hectare. Thus, on an average the farmers are receiving more indemnity than the premium amount. The sum insured per hectare and premium paid per hectare has increased steadily over the years. The average claim received per hectare is very high during the drought affected years. The average claim received per hectare ranged from Rs. 260 in 2010 to Rs.1047 in 2007 (Table 6).

During the period 2007-2011, it is observed that the claim- premium ratio is greater than one for all five years of both Kharif and Rabi seasons. Thus, in all the seasons, the insured farmers get more compensation than the amount of premium that they pay to insure their crops. During Kharif seasons, the average claim-premium ratio is found to be ranging from 1.1 in 2010 to 3.7 in 2007. On the other hand, during Rabi seasons, it ranges from 2.3 in 2007 to 3.3 in 2009.

During the Rabi seasons, the claim received per hectare is higher than that of Kharif seasons. During the period 2007-2011, the average claim received per hectare was Rs 960 for Rabi seasons, whereas it was only Rs 418 for Kharif season (Table 6). Thus during Kharif seasons, the farmers are not benefited to the extent they receive indemnity during Rabi seasons.

7. Performance of NAIS and WBCIS: A Comparison

A careful analysis of the performance indicators presented in Table 7 will help in making a comparative assessment of the performance of NAIS and WBCIS during the period 2007-2011. The insured area per farmer in the case of NAIS and WBCIS has remained same on an average for both the Kharif seasons and the Rabi seasons. The percentage of farmers who benefited out of the total number of insurance users was much higher for WBCIS than for NAIS. During the 2007-2011 period, the percentage of farmers who benefited during Kharif seasons was 49 percent for WBCIS whereas it was quite low at 26 percent for NAIS. Similarly during Rabi seasons, the percentage of farmers benefited was 55 percent for WBCIS whereas it was just 26 percent for NAIS. The indicators of financial performance as shown in Table 7 reveal that the per hectare sum assured, premium paid and claim received were higher for NAIS than for WBCIS during Kharif 2007-2011 but higher for WBCIS during Rabi seasons.

**Table 7: Performance Indicators of Nais and Wbcis in India
During the 2007-2011 Kharif and Rabi Seasons**

Kharif			
Performance Indicators	Unit	NAIS	WBCIS
Area Insured	(Hectare/ Farmer)	1.4	1.4
% of Farmers Benefited		26.0	48.7
Sum Insured	(Rs / Hectare)	11076.3	10045.9
Premium Paid	(Rs / Hectare)	321.5	301.2
Claims Received	(Rs / Hectare)	1147.3	417.6
Claim/premium		3.6	1.4
Rabi			
Performance Indicators	Unit	NAIS	WBCIS
Area Insured	(Hectare/ Farmer)	1.4	1.3
% of Farmers Benefited		25.8	55.2
Sum Insured	(Rs / Hectare)	13417.9	15894.9
Premium Paid	(Rs / Hectare)	253.1	333.7
Claims Received	(Rs / Hectare)	965.3	959.6
Claim/premium		3.8	2.9

Source: Computed from data collected from AIC.

To assess the financial performance, we compared the claim-premium ratio. According to the data, the claim premium ratio exceeded one for all the Kharif and Rabi seasons for WBCIS as well as for NAIS excepting 2012 Kharif and Rabi for NAIS (Table 3). During 2007-2011 Kharif seasons, the average claim-premium ratio was 3.6 for NAIS users and 1.4 for WBCIS users while during 2007-2011 Rabi seasons, the average claim-premium ratio was 3.8 for NAIS users and 2.9 for WBCIS (Table 7). As the claim-premium ratio exceeds one, it suggests financial loss on the part of the insurer in the insurance business whereas, from the point of view of the farmer, it suggests more compensation than the premium paid.

The data suggests that WBCIS, on the whole, performs better than NAIS because of the higher percentage of farmers who have benefited through the scheme. Many empirical studies also reveal higher level of satisfaction of farmers with WBCIS in comparison to NAIS due to faster claim payment and transparency in indemnity calculation. (Gine *et al.*,

2008; Swain, 2014). Moreover, in case of WBCIS, the rainfall data is objective, verifiable and there is less scope for manipulation. However, as we have analysed data for only five years, the findings may be considered as indicative and not conclusive.

8. Conclusion and Policy Implications

In India, where production risk is very high and coping capacity is low, there is a great need for crop insurance to provide economic support to farmers, stabilize their farm income, induce them to invest in agriculture, reduce indebtedness and decrease the need for relief measures in the event of crop failure. Recently, widespread suicides by farmers in Maharashtra, Karnataka, Andhra Pradesh and Odisha speak of the disastrous consequences of agricultural risks on farmers' lives and well being. Government is required to promote crop insurance as a merit good. There is a need to create awareness about the benefits of insurance schemes. Steps are required to link credit with insurance, tie up insurance with other input supply services (seed, fertiliser, irrigation), subsidising insurance and provide reinsurance facility and technical assistance. Marketing of crop insurance scheme should be on the lines of the advertisement and promotional activities undertaken by any private entrepreneur.

In the wake of globalisation and liberalisation and increased climatic aberrations due to climate change, farmers now face joint price and output (yield) risk. NAIS and WBCIS cover only yield risk. To take care of variability in both the yield and market price, there is a need to reintroduce Farm Income/Crop Revenue insurance. As risk factors are location specific, insurance providers should be ready to provide varied insurance products like crop yield insurance, weather index insurance, single peril insurance and revenue insurance to meet the needs of different farmers in different areas.

In the context of climate change with increased covariate catastrophic risk, the private companies may not show their interest in offering crop insurance. Therefore, it is necessary to introduce social control in insurance sector and make it mandatory for all private and public insurance companies to extend certain percentage of their insurance business to cover crop insurance. To increase the coverage of crop insurance and provide varied insurance products, there is a need to promote private participation by providing them government guarantee, subsidy, reinsurance and technical assistance. The public sector may address catastrophic risk and provide multiple peril insurance where subsidy requirement is high, but allow private sector to provide insurance products for less severe events and for individual, independent, idiosyncratic and localized risk. Private participation in agricultural insurance needs to be encouraged to provide varied products with actuarial premium rates for commercial farmers on an individual basis. Appropriate regulatory framework may be developed to monitor private participation in agricultural insurance.

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Financial Inclusion Policy of the Government and Sustainability of Women-headed MSMEs in Odisha

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I. Introduction

Gender empowerment through entrepreneurship development has been chosen as a significant policy and strategy intervention by most developing countries of the world over the last two decades. Although gender empowerment has been variously defined, the UN (2001)³ provided a very comprehensive definition. It defined women's empowerment in terms of five components, such as, 'women's sense of self-worth; their right to have and determine choices; their right to have access to opportunities and resources; their right to have the power to control their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally". On the other hand, Alsop and Heinsohn (2005)⁴ described individuals and groups as empowered when 'they possess the capacity to make effective choices: that is, to translate these choices into desired actions and outcomes'. The World Development Report, 2012 offered a broader notion of empowerment which included control over resources, decision-making, freedom of movement, freedom from the risk of violence and a voice and influence in collective decision-making processes. While it is generally argued that 'financial inclusion' has delivered desired results in the developing countries by enhancing income generation opportunities for entrepreneurs in business, there are contradictory evidences regarding the achievement of objective of sustainable income generation opportunities and improving the living standards, specifically in case of women-headed enterprises supported by micro-finance institutions⁵.

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4 Alsop, Ruth and Heinsohn, Nina (2005), "Measuring Empowerment in Practice: Structuring Analysis and Framing Indicators", World Bank, <http://www.worldbank.org/>

5 Kaur, Prabhjot and Dey, Soma (2013), *Global Journal of Management*, "Andhra Pradesh Micro-Finance Crisis and Its Repercussions in Microfinancing Activities, *Global Journal of Management and Business Studies*, Vol 3 No 7

The objectives of this paper are two-fold. First, to understand the process and extent of 'financial inclusion' of women entrepreneurs with the help of field investigations undertaken in two sample districts of Odisha (one developed and the other underdeveloped, viz. Cuttack and Bargarh respectively). The second objective is to find out whether the coping mechanism adopted by the women entrepreneurs due to financial exclusion at any stage of life cycle of their business adversely affects their operations and sustainability.

II. Women Empowerment Process through Financial inclusion

The process of this women empowerment has, among others, included 'financial inclusion' as an important factor to aid it to initiate and/or expand existing business in terms of generation of additional income and employment of unemployed or underemployed youth in particular and thereby help removal of poverty and lead to sustainable development. Financial inclusion too has been variously defined. The Rangarajan Committee⁶ defined 'financial inclusion' as "the process of ensuring access to financial services and timely and adequate credit where needed by the vulnerable groups such as weaker sections and low income groups at an affordable cost". In case of MSME sector, it was found that a disproportionately high number of enterprises are excluded from institutional financing thereby limiting their operation, profitability and expansion.

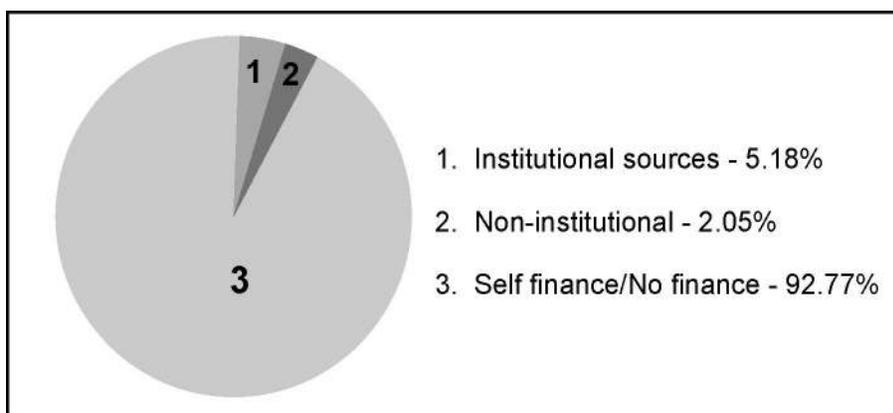
The Fourth Census of MSME sector provides some interesting information regarding financial exclusion. As low as only 5.18% of the units (both registered and unregistered) had availed of finance through institutional sources, 2.05% had finance from non-institutional sources the majority of units i.e. 92.77% had no finance or depended on self finance⁷. Chakrabarty⁸ in his lecture specifically drew attention to the various aspects of exclusion of enterprises in micro and small scale sector and by using recent data (in Chart 1) indicated that institutional sources provide only 5.18% of loan requests coming from MSME sector.

In the context of the above as well as the various official claims about a lot of emphasis being given to coverage in terms of numbers accessing credit needs further investigation in terms of adequacy, timeliness and impact on sustainability of women enterprises.

6 RBI (2008), "Report of the Committee on Financial Inclusion"

7 Vijay Bhaskar, P. (2014), "Role of Financial Sector in Spurring Growth and Expanding Financial Inclusion in North Eastern Region", Speech at CII Banking Collagium in Kolkata on September 19, 2014

8 Chakrabarty, K.C. (2012), Lecture at SME Banking Conclave organized by Chamber of Commerce



Source: Highlights of 4th Census on MSMEs

Although a number of studies has been conducted on MSME indicating inclusion or otherwise, very few studies have emphasized on inclusion aspects of women in business. Similarly promotion of women enterprises through Women Self-Help Groups under Micro-finance studied by several authors in India and elsewhere provide contradictory evidences regarding the achievement of objective of sustainable income generation opportunities and improving the living standards. Abhijit Banerjee and his associates⁹ point out the huge gap between perception and realization. In a state like Odisha, hardly any study has scratched the surface of this aspect scientifically and provided strong evidence one way or another. In order to fill the gap, we had undertaken a field investigation in selected sample units in Odisha.

III. Methodology and Coverage of the study

This study has used the sample survey data of 240 women enterprises selected on random sampling basis from two districts of Odisha; Cuttack, industrially advanced and Bargarh, industrially backward district. From each district 120 sample units in micro and small sector owned and operated by women were randomly selected equally distributed between urban and rural areas. Primary data from 240 enterprises were collected and used for analysis. In Bargarh there were 13 samples from REGP, 7 from PMRY and 47 from PMEGP in rural and 53 from urban areas. In Cuttack district, there were 17 REGP units, 11 PMRY units, 43 and 49 units respectively from rural and urban PMEGP units.

Benefits including employment and income, and the challenges for women entrepreneurs in urban and rural areas were analysed. A sample of other stakeholders e.g. managers of District Industries Centres (DIC), representatives of banks and financing institutions, district administration, local self-governments (*Panchayats*, Municipalities and Notified Area Councils (NAC) and NGOs were also approached for discussions. Data and information

⁹ Banerjee, A. and others(2014), "The miracle of microfinance? Evidence from a randomized evaluation", March, 2014

were collected from the respondent entrepreneurs and officials during the year 2010-11. "Before and after" method was used to assess performance of MSME operation in relation to financial inclusion¹⁰.

IV. Business Type and Socio-Economic Characteristics of Women Entrepreneurs

A significantly high proportion (95%) of women, have started their business and have been running the enterprises as 'sole-proprietor'. Not finding a 'good-fit' business partner by women entrepreneurs is a major reason to go alone in business. Women entrepreneurs in Odisha are aware that service oriented units are more sustainable with well-developed processes for renewal and reconfiguration of their business models. Despite this, most entrepreneurs in the MSME sector in Odisha tend to gravitate towards opening up of production units. At all-India level too, the proportion of service sector units was found too low at 16.78% while manufacturing constituted more than two thirds of total enterprises as reported by Prime Minister's Task Force on MSME in 2010. Service-oriented enterprises require managers with adequate skills, education, experience and exposure, which women entrepreneurs in poor states and underdeveloped regions usually do not possess. They also find it difficult to procure skilled people and retain them for long-period.

Although women entrepreneurs feel that service units are more attractive and appealing, inadequate knowledge and exposure pose as major constraints to open such enterprises. Most women have started their enterprises in production and trade, accounting for more than 84% of the coverage in these two types with the manufacturing taking the lead in investment. Service sector has been least invested, Average investment per unit is also the lowest for the service sector where manufacturing takes the lead.

Table 1: Type of Enterprises

District	Rural/Urban	Production No	%	Service No	%	Trade No	%
Bargarh	Rural	33	55	9	15	18	30
	Urban	43	72	7	12	10	17
	District	76	63	16	13	28	24
Cuttack	Rural	38	63	12	20	10	17
	Urban	37	62	7	12	16	27
	District	75	62	19	16	26	22
	Rural	71	59	21	18	28	23
	Urban	80	67	14	12	26	22
	Districts	151	63	35	15	54	22

Source: Primary Survey 2010-11

10 Rath, Binayak (2007), "Post Evaluation Study of the Scheme of Micro-Credit Help to Women Self-Help Groups (WSHG) in KBK Districts of Odisha

Socio-economic and cultural characteristics have important bearing on the quality of leadership and management orientation of entrepreneurs and specifically of women entrepreneurs, who start ventures under several constraints. Contrary to the general belief that it is the poor women who start business to improve their standard of living and get out of poverty, in our samples, it was found that a disproportionately high 83% of women entrepreneurs were “non poor” represented by “Above Poverty Line” status. Only a little over 10% of the entrepreneurs was from the disadvantaged communities. Women entrepreneurs were educated; nearly 50% passed Class 12. A very high proportion (87%) of the women entrepreneurs married at the time of starting a business.

It is the non-poor category of young women who has taken interest to do business. With double-digit inflation experienced in the second half of the first decade of 21st century, the poor women did not feel that they should venture into a new business and run it successfully to earn enough on a sustainable basis to graduate to APL status. On the contrary, the women from APL family who were better-off than those from BPL families have started business in large numbers mostly with support from other earning male family members. The poor have concentrated on labour as their source of livelihood. Table 2 provides information about socio-economic characteristics and civil status of women sample entrepreneurs.

Table 2: Civil and Socio-Economic Status of Women Entrepreneurs (%)

District	Rural/ Urban	Production No	%	Service No	%	Trade No	%
Bargarh	Rural	33	55	9	15	18	30
	Urban	43	72	7	12	10	17
	District	76	63	16	13	28	24
Cuttack	Rural	38	63	12	20	10	17
	Urban	37	62	7	12	16	27
	District	75	62	19	16	26	22
	Rural	71	59	21	18	28	23
	Urban	80	67	14	12	26	22
	Districts	151	63	35	15	54	22

Source: Primary Survey 2010-11

Another important factor for APL women being in business is that they are more exposed to government programmes, oftentimes meet bank officials as a substantial proportion have bank accounts (including accounts in cooperative societies), and their male family members have better clouts in dealing with officials and marketing outlets. An attempt is made in this paper to understand and examine the extent of financial inclusion in the context of economic empowerment of these women entrepreneurs.

V. Results and Discussion

Financial inclusion is evaluated here on three basic criteria. First and the foremost, financing institutions providing finance for initial investment in plant and machinery and first cycle working capital for starting an enterprise. Second, the extent to which the working capital requirements of the enterprises started with assistance of financial institutions are further met by such institutions. And third, the extent to which institutional finance has helped financial stability of women enterprises by providing additional finance for market facilitation.

5.1 Initial Capital for Investment

Policies and programmes to develop MSME are based on the presumption that provision of initial capital from financial institutions with built-in subsidy can help entrepreneurs to start business. The margin money to be provided by the entrepreneurs was usually low for general category and much lower for special category persons including women entrepreneurs. It was therefore expected that the entire initial capital requirement including estimated working capital for the first cycle, over and above the owners' contribution, would be provided by financing institutions. One can safely say that there has been financial inclusion if high proportion of business enterprises had access to institutional finance and high extent of initial investment capital provided by financing institutions.

Table 3: Financial Inclusion of Women Enterprises in Bargarh and Cuttack Districts

District	Rural / Urban	Average Investment/ Unit Rs. Lakh	% of Investment met from Resources provided by Financial Institutions	Range (%) met
Bargarh	Rural	4,33,516	78.22	71-100
	Urban	2,31,406	79.69	71-91
Cuttack	Rural	8,24,682	76.58	71-96
	Urban	2,35,841	86.22	66-91

Source: Primary Survey, 2010-11

Data in the above table indicates that the objective of providing initial investment resources including working capital for the first cycle of business operation of women enterprises under MSME sector was invariably met by the financing institutions. From this point of view, it can be concluded that financial inclusion of women enterprises was high at it was under credit-linked investment subsidy programme(s) supported by policies at the level of Government of India and the State Government. However, it is not clear about the extent of coverage i.e. the number of women entrepreneurs who approached for financial resources and the number assisted by financial institutions because such data are not readily available at district level. If at all at India level, less than 6% has access to capital, in case of Odisha, the proportion is likely to be lower.

5.2 Working Capital

Each enterprise requires liquid assets for various operational purposes. The liquid asset at hand of an enterprise is called working capital. It is required to pay for various expenses planned and unplanned to manage a business and meet its short-term obligations. Working capital requirements vary from one business to another depending upon the type of business. Within a business the requirement of working capital may vary from one month to another or from one season to another. Net working capital requirements are dependent mainly on two factors: earnings of the enterprises and frequency with which these amounts are earned, and the business expenses and how often the payments are needed to be conciliated.

Often it was found that while starting a business, the women entrepreneurs did not adopt any scientific business method to estimate working capital requirements. This was specifically true for very small investors-say up to investment of Rs. 2-3 lakh and even sometimes up to investment of Rs. 5 Lakh. Many women entrepreneurs reported that they had thought that they would somehow manage to have some resources to run the business once the initial investment capital with some working capital at the start-up was available. In their enthusiasm to increase the number of units assisted, even the agencies promoting such enterprises, do not give adequate emphasis to properly estimate working capital requirements and how they would be met after the first cycle of operations is over.

For successful operation, working capital availability is crucial as it ensures existence of sufficient funds for carrying out everyday operations of an enterprise in a smooth manner. Every business should have short cycles of cash conversion. 'Cash conversion cycle' assesses the period of time for which an enterprise would be divested of funds in case it raises its investments, as a procedure of its strategies for business growth. The organization needs to take some important steps in this direction like reducing the customers' credit period, talking terms with suppliers and raising their period of credit with the suppliers, preserving the appropriate inventory level that lessens the costs of raw materials and right cash management that would ensure reduced cash holding prices.

A shortfall in working capital has a damaging impact on operations as well as on the financial stability of an enterprise. It indicates that the enterprise is facing liquidity problems and is unable to pay for costs related to short term periods. Hence, financial planning, which includes planning of working capital investment requirement is very important for running a business expeditiously. It is found from Table 4 that only 37% of the enterprises were assisted with institutional finance for meeting a good proportion of working capital needs. Of the total estimated fund requirement for working capital only about 32% was provided by financial institutions.

**Table 4: Working Capital Requirements of Women Enterprises Met
by Financial Institutions**

District	Rural/ Urban	Enterprises Approached For Working Capital (No)	Numbers Assisted	% (of Numbers Assisted)	Working Capital Requirement Rs Lakh	Working Capital Provided By Financial Institutions Rs. Lakh	% of Working Capital Requirement Met
Bargarh	Rural	60	19	32	47.98	14.00	29.18
	Urban	60	22	37	39.17	12.90	32.93
Cuttack	Rural	60	26	43	32.14	10.16	31.61
	Urban	60	21	35	24.53	7.22	29.43
Overall		240	88	37	143.82	44.28	31.79

Source: Primary Survey, 2010-11

In MSME sector specifically at micro-enterprise level, proportion of entrepreneurs preparing a very scientific working capital estimate would be very few although data on this aspect is not available either at all-India level or at state level. In the case of the sample women entrepreneurs, it was found that with investment around Rs. 10 lakh and above, under 20% had some kind of an estimate of requirement of working capital. It is these enterprises which also had access to low-interest finance from family or friends on a very short-term basis. And they also had clout influencing bankers to provide them short-term accommodation to meet working capital requirements. Another 10% also in the high-end of micro-enterprise also had access to short-term funds of family members and relations. Similar proportion of enterprises in urban areas also managed to get longer-term credit from their suppliers to tide over liquidity crisis in the short run.

5.3 Coping Mechanism

With a view to adjusting to circumstances on account of severe shortfall in working capital, nearly 23% of women enterprises in rural areas adopted a self-destructive mechanism or reducing production or waiting for better times when they could get some more resources from their previous sales on credit. More than one fifth adopting such course severely impacted on revenue and caused embarrassment to entrepreneurs. It was severe in case of the women entrepreneurs in underdeveloped district Bargarh where most rural entrepreneurs adopted credit sale as compared to their counterparts in Cuttack. In case of urban entrepreneurs, the situation was slightly better with a little under 21% adopting coping mechanism of reducing production for the time being till situation improved.

Table 5: Entrepreneurs Coping Mechanism for Working-Capital Shortage

District	Rural/Urban	Institutional Working Capital Unassisted Units (No)	Coping Mechanism		
			Reduce Production	Access High-Cost Credit	Access Suppliers' Credit
Bargarh	Rural	41	12 (29%)	18(44%)	11 (27%)
	Urban	38	8(21%)	17(45%)	12(32%)
Cuttack	Rural	34	5 (15%)	17(50%)	12(35%)
	Urban	39	8(21%)	22(56%)	9(23%)

Source: Primary Survey 2010-11

Nearly 49% of sample women enterprises accessed high-cost credit specifically during good marketing season to meet the working capital shortage. About 1/3rd in rural Bargarh and 1/4th in rural Cuttack tried to influence their suppliers of raw materials to provide them with longer term credit so as to help them better manage difficult liquidity position.

5.4 Financial Stability and Sustainability of Women Enterprises

More than 60% of women entrepreneurs in so called APL category are close to the fence of 'poverty line'. Varying market conditions including unfair competitions both from within and outside the country, has substantially increased the vulnerability to fall below the poverty line of the hitherto APL women entrepreneurs. Specifically where the net income per enterprise is low and family has adjusted to a higher standard of living because of additional income from business, additional investment required to grow faster or expand business is not taking place. In order for expansion to take place, reinvestment from net profit should be leveraged to get additional resources from financing institutions. This has not been happening specifically for those entrepreneurs earning less than Rs.150000 or so. And to add to this, financial institutions are not providing adequate working capital to these firms interested in expanding their operations with high turnovers and higher net profit.

VI. Conclusion

The financial inclusion of women entrepreneurs in the sample areas is mostly limited to the first round of credit delivered by financial institutions under MSME policy directive to promote employment and income through investment promotion linked to subsidy. Financial inclusion performance in the crucial second round that would help in operation and consolidation achieved in the initial round is poor as only a little less than one third in terms of amount of working capital is provided by the institutions supposed to take care of units already established by women. It is a sorry state that nearly 63% of the women entrepreneurs do not get access to working capital from financing institutions.

The coping mechanism for a substantial number of enterprises is destructive in nature substantially affecting production and profit in negative and sustainability of enterprises.

Specifically those units who are earning a net income of less than Rs.150000 per annum will not be in a position to expand their business by further borrowing from the market. Therefore the financial inclusion to help in financial stability must be supported by the following steps:

- i) Government and the Reserve Bank of India must issue guidelines to public sector banks to provide adequate working capital to entrepreneurs and specifically to women entrepreneurs. The nodal agencies must assist entrepreneurs in estimating their working capital requirements. Banks wanting in performance must be sanctioned by RBI.
- ii) Other facilities developed by the Ministry of MSME (through KVIC) and the Office of the Development Commissioner, MSME (through MSME Development Institutes), and the concerned state government institutions must be well provided and monitored for their development effectiveness. The services that can improve operations and lead to better financial inclusion and sustainability of enterprises must be identified for each area of operation. Performance of financial and development institutions must be monitored and follow-up effective actions taken.
- iii) For each group of business activities, area specific intensive studies must be undertaken every three years to help identify constraints that should be removed within specific timeframe.
- iv) The programme for developing young women as entrepreneurs should go beyond the present EDP training course. Adequate emphasis should be given to strategic issues and how to manage them in the short medium term.

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Women's Financial Inclusion: The Path Travelled and the way Forward

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The United Nations' Millennium Development Goal recognizes gender equality as a desirable objective of governance worldwide. It places special emphasis on empowering women, which in current context necessarily encompasses institutions and practices that help them unlock their economic potential. The National Mission for Financial Inclusion, the Pradhan Mantri Jan Dhan Yojana, by placing household-based financial inclusion as the objective heralds hope for greater financial inclusion of women in particular. The paper studies the varied dimensions of financial exclusion of women in India – in terms of deposit accounts owned, credit received, et al – and explores the multi-axial inequities that exist in this regard. It also examines the gaps in financial inclusion that exists between women belonging rural and urban areas, between women of different social groups and across regions of the country. By recognizing that financial inclusion is only a necessary ingredient, and by no means a sufficient one, certain policy suggestions have been made. This calls for convergence of institutions and re-orientation of specialized agencies.

Keywords: financial inclusion, woman empowerment, gender

Jel Classification Code: G2

1. Introduction

Among the 8 Millennium Development Goals promulgated following the Millennium Summit of the UN in 2000, Gender Equality ranks high among the priorities for all signatory nations. "Goal 3: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN" exhorts all nations to strive towards a scenario based on greater parity and equality among the two genders. Despite scintillating economic growth witnessed in India, the UNDP categorically indicts

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India on its dismal performance on the front of gender equality. It says, “Gender inequality in India persists despite high rates of economic growth with the outcomes lower among Dalits and Adivasis. Participation of women in employment and decision-making remains far less than that of men and the disparity is not likely to be eliminated by 2015”, which is the targeted time framework for compliance for MDGs. Gender inequality is also reflected in India’s low rank on the Gender Inequality Index, which is 129 out of 146 countries with a value of 0.617. In fact, among the South Asian countries, India is second from the bottom, just above Afghanistan.

Gender Inequality Index, which is a composite index crafted to capture all relevant facets and aspects of manifestation of gender inequality encompasses measurement of ‘economic status’ of women vis-à-vis their male counterparts. It is only a logical extension from here to link financial exclusion of women as a key cause for their low economic status and stagnation in such stratum. The need to provide bank credit to women on an equitable basis has been frequently highlighted in the literature. Lack of credit constrains economic opportunities available to women –personally and to their households – resulting in deepening their economic and social deprivation.

2. Financial Inclusion – Defined

Financial inclusion merits a definition. This means the process of facilitating those sectors and segments of the population that are outside, to become a part of the formal financial system and enrolling individuals or groups into the formal financial sector. These could be through:

- a. Direct loans or banking facilities to the targeted vulnerable communities or groups;
- b. Facilitation of economic activity in a particular geographical area of operations or location;
- c. Development of local or national infrastructure to enable a particular type of business activity, which could then be practiced or performed by a group or groups which can include women; and
- d. Providing an enabling environment and/or enhancements for such economic activity to take place. The enabling environment includes laws, regulations, taxation, skills development, duty waivers, subsidies, etc. In this context, tax concessions and duty waivers given to make enterprises be “financially inclusive” are often forgotten. In fact, due to lack of awareness, enhancement of access to finance or financial inclusion that has already taken place in various sectors, and the enabling environment that has been created, are taken for granted with no value attached to them.

3. Financial Inclusion – Examined

Going by the above delineation of financial inclusion, it only takes a skimming over statistics to discover that women in India are indeed in a category which may be called ‘financially excluded’. Women’s access to banking services may be gauged through two indices: extent of credit supplied to women and extent of deposits received from women. In respect of credit supplied, only about 12 per cent of the individual bank loan accounts were in the name of women in 2006; in the same year, women formed about half of India’s population (48.4 per cent). The remaining 88 per cent of the individual bank loan accounts were held by men. On the other hand, the share of deposit accounts held by women was higher; in 2006, 24.7 per cent of the individual bank deposit accounts were in the name of women.

Table 1: Number of Loan Accounts and Bank Deposits per 10,000 Population in 2006 by Gender

No of loan accounts per 10,000 population			No of bank deposits per 10,000 population		
Women	Men	All	Women	Men	All
14(14)	100	58	2043(35)	5817	3988

Figures in brackets indicate percentage of credit/deposits accounts of women to that of men

Source: RBI, Basic Statistical Returns, various issues; <http://www.censusindia.gov.in>

Certain other indicators of access to banking services also show the extent of disparity between men and women. In 2006, the number of bank deposits per 10,000 women was less than half the corresponding figure for men. For every 100 bank deposits in the name of men in the same year, there were only 35 bank deposits in the name of women (Table 1). Similarly, for every Rs 100 saved as deposits by a man on an average, a woman saved only Rs 29. The access to credit for women was even lower; for every 100 bank loan accounts held by men in 2006, women held only 14 loan accounts. Similarly, for every Rs 100 of bank credit given to a man, a woman received only Rs 15.

Table 2: Per Capita Credit and Deposits in 2006 by Gender (in Rs)

	Women	Men	All
Credit per capita	625 (15)	4290	2518
Deposit per capita	4720 (29)	16,558	10,823

Figures in brackets indicate percentage of per capita credit/ deposits of women to that of men. Source: RBI, Basic Statistical Returns, various issues; <http://www.censusindia.gov.in>

Commercial banks were more important for women as a means of savings than as a source of credit. Per 10,000 women in 2006, there were only 14 bank loan accounts as compared to 2,043 deposit accounts. The share of women in total deposits outstanding was almost double their share in total credit outstanding. To put it rather crudely, women received as credit only about one-tenth of the amount of deposits they contributed. That women remain inadequately covered by the banking system is evident from the fact that they own only 20.8 per cent of the total deposit accounts in scheduled commercial banks and 11.3 per cent of the total deposits. At the credit scenario, they had access to only 19.8 per cent of the small borrowal accounts of scheduled banks with an outstanding credit share of 16.8 per cent (RBI, Basic Statistical Returns, 2010).

Agriculture, the principal employer in India, has witnessed progressive feminization of its workforce in the recent years. In 2007, women formed about 40 per cent of the agricultural workforce in India (NCW, 2008). According to the Population Census of India, in 2001, women constituted about 33 per cent of the total cultivators in India as compared to 20 per cent in 1991. Despite their growing ubiquity in the agricultural sector, women received on an average only 6 per cent of the total direct agricultural credit in the period 2004-06. The remaining 94 per cent of direct agricultural credit went to men, who formed about 67 per cent of the total cultivators (Table 3).

Table 3: Triennium Averages of Percentage Shares of Women in Number of Loan Accounts and Amount of Agricultural Credit

Period	Share in Total Number of Accounts under Direct Agricultural Credit under	Share in Total Amount Direct Agricultural Credit
1998-2000	6.5	7.0
2001-2003	6.8	7.4
2004-2006	5.9	6.3

The figures are worked out as per cent of total bank loan accounts and credit given to individuals that is men and women taken together excluding credit to all institutional borrowers. Source: RBI, Basic Statistical Returns, various issues.

Urban-rural Gap

The use of commercial banks as an agency of savings was more widespread among urban women than rural women. In 2006, the number of bank deposits per 10,000 women in urban areas was double the number of bank deposits per 10,000 women in rural areas. For every rupee saved by a rural woman as bank deposit, a woman from urban areas saved Rs 4.50. The disparity between women from rural and urban areas in access to banking services seemed to have increased in the recent years. The ratio of the number of deposits per 10,000 women in urban areas to rural areas increased between 2001 and 2006. The increase

was even more striking if we considered the ratio of the per capita amount of deposit from women in urban areas to rural areas. Further, between 1996 and 2006, there was a fall in the share of deposits mobilised from women through rural and semi-urban bank offices (taken together). This meant an increase in the share of deposits mobilised from women through urban and metropolitan offices during this period.

Table 4: Number of Bank Deposits Per 10,000 Population in Rural and Urban Areas by Gender

Number of Bank Deposits Per 10,000 persons in 2001	Women	Men	All
Rural Areas	1,702	4,726	3,256
Urban Areas	3,338	8,278	5,938
Ratio of number of bank deposits per capita in urban areas/ rural areas in 2006	2.0	1.8	1.8
Rural Areas	1,535	4,611	2,774
Urban Areas	3,292	8,703	6,134
Ratio of numberof bank deposits per capita in urban areas/rural areas	2.1	1.9	2.2

The figure for rural area has been worked out taking total number of deposits held with rural and semi-urban bank branches as a proportion of rural population in that year. Similarly, in the case of urban areas, the ratio is worked out taking the total number of deposits held with urban and metropolitan branches as proportion of urban population in that year. The figures for rural and urban population for 2006 are estimated using the exponential growth rate between 1991 and 2001

Source: RBI, Basic Statistical Returns, various issues; Gol (2001).

Table 5: Amount of Bank Deposits Per Capita in 2006 by Gender (in Rs)

Amount of bank deposit per capita in 2001	Women	Men	All
Rural areas	1,850	5,990	3,978
Urban areas	6,846	22,465	15,064
Ratio of amount of bank deposits per capita in urban areas/rural areas	3.7	3.8	3.8
Amount of bank deposit per capita in 2001	Women	Men	All
Rural areas	2,380	8,678	5,611
Urban areas	10,624	35,492	23,685
Ratio of amount of bank deposits per capita in urban areas/rural areas	4.5	4.1	4.2

Source: RBI, Basic Statistical Returns, various issues, Göl (2001)

3.1. Disparities Across Regions Of India

In terms of the total amount of deposits mobilised from women, the shares of Southern and Western regions were considerably higher than the shares of North-Eastern, Eastern and Central regions in 2006. The shares of Eastern and Central regions in the total amount of deposits from women (as well as the total number of deposit accounts) were significantly lower than the shares of female population residing in these regions. Moreover, there was stagnation, or even a fall, in the shares of the North-Eastern, Eastern and Central regions with respect to the total amount of deposits mobilised between 1996 and 2006 from women. There was also a fall in the number of bank deposits per 10,000 women in the North-Eastern, Eastern and Central regions between 1996 and 2006. In the same period, there was a rise in the number of bank deposits per 10,000 women in the Southern and Western regions.

3.2. Differences Across Social Groups

The disparity in terms of access to banking services between women from various socioeconomic groups has also widened in the recent period. Between 1997 and 2006, the share of Dalit and Adivasi women – socio-economically one of the most backward sections of the population – in the total bank credit (under Small Borrowal Accounts) declined steadily.¹⁰ In 2006, Dalit and Adivasi women received only 1.3 per cent of the total credit given under the Small Borrowal Accounts as compared to 4.8 per cent in 1997. If we assume that a woman not belonging to Dalit and Adivasi groups received Rs 100 as bank credit, an average Dalit/Adivasi woman received only Rs 9 in 2006. The corresponding figure for a Dalit/Adivasi woman was higher at Rs 35 in 1997. The disparity was larger if we compared a Dalit/Adivasi woman with a man not belonging to Dalit and Adivasi groups. In 2006, a Dalit/Adivasi woman received only Re 1 as credit from banks for every Rs 100 received by her male counterpart from non-Dalit/Adivasi groups. Here again, there was a rise in disparity; the corresponding amount for a Dalit/Adivasi woman in 1997 was Rs 7.

To conclude, while there has been an overarching expansion of the basic banking services in India over the years, women remain largely secluded from these services. Women account for about one-fifth of the individual savings mobilised through bank deposits. Less than concomitantly, women receive only around one-tenth of the total individual credit from banks. Additionally, increase in the spread of banking services to women has not been distributed equitably across various sections of women. The increase in spread of bank deposits has taken place principally for urban women. Women from Southern and Western regions (comprising the historically vanguard States in banking development) have seen a further expansion in their access to bank deposits, while the access to women from North-Eastern, Eastern and Central regions (comprising the historically deprived States in banking development) has relatively slackened. Dalit and Adivasi women belonging to socio-economically backward groups have seen a fall in their share in total bank credit.

4. Financial Inclusion and Women

The crucial instrumentality of financial inclusion for women can be appreciated on the basis of its functions – financial inclusion allows them to save securely, borrow for consumption or investment and insure against risk, and hence contributes mainly towards growth and poverty reduction. Evidence from India shows that branch expansion to rural unbanked areas, as a consequence of nationalisation of scheduled commercial banks in 1969, significantly reduced poverty. Studies commissioned by international agencies point in the direction of a consistent link between financial sector development and economic growth. For illustrative example, sample the fact that less than 20% of households in Africa are banked (only 12% in Tanzania), compared to over 90% in OECD countries.

Apart from the co-existence of absence of economic growth and financial exclusion, an incidence of even greater significance is the lack of access to finance and financial services among women, even though they happen to be major players in their respective economies or sectors. Consider the fact that in Kenya, 40% of smallholder farms are run by women, yet women only receive 10% of MSME credit; or that in South Africa, 58% of SMEs are run by women - yet, only 43% of women who run small businesses have bank accounts compared to 52% of their male counterparts; or that in Bangladesh, 27% of deposits come from women but women only receive 1.8% of credit. Hence the phenomenon that women are increasingly taking centre-stage in economies while being credit-constrained is a worldwide concern. It is therefore imperative that women be brought into the fold of finance and banking as a potent and powerful means of achieving the ultimate aim of women's economic empowerment leading to greater gender equality.

4.1. Constraints in Women's Financial Inclusion

There are several typical constraints on the path of women's financial inclusion which needs to be paid attention to in order to overcome them.

On the supply side we have issues such as (i) inability to fulfil the collateral requirements as women often lack land/property rights; (ii) limited physical outreach of women and typical bank opening hours which affects women more than men as they are less mobile; (iii) difficulty to satisfy documentation requirement as women often lack proof of identity; (iv) product feature like eligibility, loan term etc. may not meet women's requirement; (v) marketing messages not targeted at poor women; (vi) service delivery can be patronising towards women; (vii) there are fewer women in the senior management positions of formal financial sector.

Demand side constraints include the following issues: (i) relatively lower income of women because of the kind of work they do; (ii) women are often at lower levels of education and literacy than men, which affects their capability to earn and their financial capability; (iii) relative lack of access to mobile phones; (iv) lack of decision-making power and self-

esteem; (v) poor access to information, poor social networks and greater risk aversion; (vi) greater familiarity to informal products etc.

These aspects have to be paid attention to before any noteworthy progress can be made in the desired direction.

4.2. Financial Inclusion and Jan Dhan Yojana

The Prime Minister Jan Dhan Yojana, the country's newest mission mode program to target the financially excluded including the 'financial untouchables' has been billed as being one which opened a record 11.5 crore accounts in a span of 6 months. Data on the accounts opened are yet to be analysed, but it'll be heartening to notice a majority of them being opened in the name of women. This is 'smart banking' because globally women's thrift levels have been proved to be higher than for men. Also, provisions of the PMJDY clearly state that as and when the facility of overdraft is available, the same shall be preferably extended to a women member of the family if there are competing male members. This makes much economic sense, since the results of a study using a global dataset covering 350 Microfinance Institutions (MFIs) in 70 countries indicates that more women clients is associated with lower portfolio-at-risk, lower write-offs, and lower credit-loss provisions, thereby making women better credit risks than men. This provision, however monetarily insignificant it might seem, places much economic power and financial sovereignty in the hands of women – and will generate much spillover effects on their social and economic status.

With relaxation of norms and criteria for people to be designated as Banking Correspondents (BCs), it has become a viable source of income for several categories of people to be enrolled as such and further the cause of financial inclusion. Sensitisation of BCs to be extra-solicitous of women's participation in the banking infrastructure of the country will pave way for women to be inspired to save more – in however small denominations it may be. Several cases explored in Abhijit Banerjee and Esther Duflo's *Poor Economics* illustrate the potency of enthusiastic and well-meaning grass-root workers in harnessing the savings of poor women and channeling them into the formal banking institutions. With the proactive intervention of banks in implementing PMJDY so far witnessed, this proposition is not very hard to envision.

4.3. Further Possibilities – Role of the Bharatiya Mahila Bank

It's rather globally accepted now that mere provision of savings bank accounts, even with an overdraft facility, will not significantly impact the lives of poor women. If at all there is any ambivalence as regards the utility of micro-finance and its influence on making better the lives of women and SHGs (that happen to be the chief clients of micro-finance world-wide) it is because of the low level of equilibrium that such groups often find themselves locked into. Provision of funds and credit at relatively benign rates fail to provide the

requisite thrust in the right direction because many of these activities happen to be in the 'low-earning potential' bracket. This highlights the need for funding for skills development to help in economic activity. The approach must be aligned in the direction of inspiring women with entrepreneurial skills, to mobilise local NGOs to arouse women to train in vocations that can potentially lift them out of low levels of earnings and place them on curves with higher trajectory. Focus may also be laid to promote asset ownership among women, with multi-dimensional externalities on women's status in the family and society. The Bharatiya Mahila Bank (BMB), a public sector bank inaugurated on 19 November 2013 with the broader objective of lending predominantly to women, is indeed the kind of institution posited to offer backward and forward linkages for women's economic empowerment.

4.4. Forward Linkages

BMB needs to be the link between enterprising women across the breadth of India and corporate entities willing to provide viable business models for women. In acting as the conduit for engagement between women and women-centric businesses by providing the crucial missing link of credit at concessional rates, BMB can significantly alter the scenario of women entrepreneurship in the country. BMB has been recently signing Memoranda of Understanding (MoU) with leading brands such as Cavin Care's 'Trends in Vogue', Naturals to help women set up franchises of such established brands – through provision of soft loans. This is indeed a step in the right direction and the bank needs to redouble its efforts in pursuing such initiatives and broadening the base in rural areas also. Much like international sports equipment brands outsourcing product manufacturing to women SHGs in Northern States such as Punjab, BMB can also persuade brands to outsource production to groups of women. It could provide the requisite financing and technical assistance, in partnership with local NGOs, to such women's concerns.

4.5. Backward Linkages

In addition to enabling women to seek out non-conventional and smart business models, BMB could also play a pivotal role in elevating the status of women in their primary sectors of employment as well. Whereas we have seen an increasing feminization of the workforce in agriculture, including a rise in women cultivators, ownership of critical assets to aid in modern methods of agriculture remains abysmally low. Enhancing access to and ownership of critical agricultural assets by women not only raises incomes, but improve women's wellbeing by reducing their vulnerability and enhancing their health, self-esteem, and sense of control. BMB can play a pioneering role in providing cheap credit to women or women's groups that undertake cooperative farming to procure tools and machines to improve productivity and efficiency of their agricultural practices. Separately, women can also be taught how to sublease their equipment to other users, following proper protocols of such contracts to guard against issues of moral hazard. Organizing awareness camps,

such as those currently being held by BMB will provide the necessary push to women entrepreneurs to contribute their mite to nation's progress, even as they endeavor to heighten their sense of dignity.

5. Conclusion

In many developing countries, the poor, and more specifically the poor women, still constitute an untapped market for provision of financial services. In India, an area of concern, apart from provision of decent work and working condition, is ensuring financial inclusion of women which is crucial for their economic empowerment and integration into the economy. If the XII Five Year Plan's vision of improving the position and condition of women by addressing the structural and institutional barriers as well as strengthening gender mainstreaming is to be realised, then one crucial step will be to ensure their financial inclusion. An important strategy of financial inclusion in India, particularly for women, has been Micro finance. The strategy encourages access of SHGs to banks both as a means of savings and providers of loan services. But at present the micro-credit and SHG movement as the sole panacea for addressing

poverty and women's empowerment is increasingly coming under critical review and the country is considering a Bill to regulate Micro-finance institutions. Hence there is an imperative need to garner the efforts of all formal financial institutions towards this end, keeping in view the different demand and supply side issues associated with the problem. This has the potential to create a long term social impact too, where women can act as important drivers of the excluded segments of the economy and thereby further the agenda of 'more inclusive growth'.

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Status and Trend of Financial Inclusion in India: An Inter-State Analysis

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The aim of the paper is to study the status and trend of financial inclusion of 18 major states in India. The status of financial inclusion across major states has been analysed by using an index of financial inclusion at two points of time, viz. 2001-02 and 2010-11. Different dimensions of financial indicators are used to measure the availability, access and usage of financial system. The findings show that the richer states perform better than the poorer states. There is also no significant change in the level of financial inclusion of major states between the two points of time. The states tend to maintain their respective level of banking activity vis-à-vis the rest with the policy implication that more attention is required to be paid in the low performing states to enable them to close the gap with respect to better performing states.

Key Words: Financial inclusion, India, Euclidean distance.

Introduction

Financial inclusion has gained importance since early 2000s as a policy objective for national level policy makers, multilateral institutions, and others in the development field. The rise of financial inclusion as an important policy goal is due in part to mounting evidence that access to financial services can make a positive difference in the lives of the poor. An increasing number of academic studies show that granting the poor access to financial services can make a difference in their lives in various ways [see, e.g. Burgess and Pande (2005), Bruhn and Love (2009)]. As per the Rangarajan Committee report (2008) Financial Inclusion is defined “as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as the weaker sections and low income groups at an affordable cost”. Broadly speaking, Financial Inclusion is the delivery of banking services at an affordable cost to the vast sections of disadvantaged and low income groups.

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Despite broad international consensus on the importance of financial inclusion as a powerful social development instrument, it is estimated that over two billion people continue to be financially excluded from the formal financial sector. With over 135 million financially-excluded households, India is home to the world's second largest financially-excluded population after China. Only 34 percent of the Indian population is currently engaged with the formal financial sector and the urban rural divide is very apparent.

In most developing countries, a large segment of society, particularly low-income people, has very little access to financial services, both formal and semi-formal. As a consequence, many of them have to necessarily depend either on their own or informal sources of finance and generally at an unreasonably high cost. The situation is worse in most least developed countries (LDCs), where more than 90 percent of the population is excluded from access to the formal financial system (United Nations, 2006).

While the importance of financial inclusion has been widely accepted, much less is known about how inclusive the financial systems are and who has access to which financial services. The literature on financial inclusion lacks a comprehensive measure that can be used to measure the extent of financial inclusion across countries. Though indicators of the depth of banking system, capital markets, and insurance sector are widely available, there is less information available about the degree of financial inclusiveness. Lack of information is more conspicuous in developing countries where there is little systematic information on who is served by the formal financial sector, which financial institutions or services are the most effective at supporting access by poor households and small enterprises, or what practical and policy barriers may be hindering the accessibility.

Individual indicators, *viz.*, number of bank accounts and number of bank branches that are generally used as measures of financial inclusion, can provide only partial information on the level of financial inclusion in an economy. Financial services or products rendered by banks, postal savings banks, credit unions, finance companies, micro-finance institutions (MFIs), and other formal and quasi-formal non-bank institutions generally form the basis for measuring the financial inclusion.

In order to fill the gap in the existing literature, the present paper makes an attempt to construct a financial inclusion index that captures information on several dimensions of an inclusive financial system. The paper is organized as follows. The second section gives a brief note on the methodological aspect of the study. The third section analyses the empirical results, while the last section brings the concluding remarks.

Methodology

The Model

We have followed a multidimensional approach for constructing an index of financial inclusion (IFI). The index is computed by first calculating a dimension index for each dimension of financial inclusion. The dimension index of a state j for i^{th} dimension, d_{ij} , is computed by the following formula.

$$d_{ij} = \frac{A_{ij} - m_i}{M_i - m_i}, \quad 0 \leq d_{ij} \leq 1 \quad (1)$$

where

A_{ij} = Actual value of the j th state with respect to dimension i

m_i = minimum value of dimension i

M_i = maximum value of dimension i

From Equation (1), higher the value of d_{ij} , higher the state's achievement in dimension i .

If n dimensions of financial inclusion are considered, then a state j will be represented by a point = $(d_{1j}, d_{2j}, d_{3j}, \dots, d_{nj})$ on the n -dimensional Cartesian space.

In the n -dimensional space, the point $O = (0,0,0, \dots, 0)$ represents the point indicating the worst situation while the point $I = (1,1,1, \dots, 1)$ represents the highest achievement in all dimensions. The index of financial inclusion, IFI_j , for a state, then, is measured by the normalized inverse Euclidean distance of the point from the ideal point $I = (1,1,1, \dots, 1)$.

The equation of the index of financial inclusion is given in the following.

$$IFI_j = 1 - \sqrt{\frac{(1 - d_{1j})^2 + (1 - d_{2j})^2 + \dots + (1 - d_{nj})^2}{n}} \quad (2)$$

The numerator of the second component in the right hand side in equation (2) is the Euclidean distance of from the ideal point I . Normalizing this component by and subtracting by 1 gives the inverse normalized distance. The normalization is done in order to make the value lie between 0 and 1 and the inverse distance is considered so that higher value of the IFI corresponds to higher inclusion (Sarma, 2008).

Construction of the present index

For constructing the index of financial inclusion we have considered three basic dimensions of an inclusive financial system. These dimensions are: availability of banking services, banking penetration or access to banking services and usage of the banking system. The motivation behind these dimensions is mainly due to two factors, viz. data availability for the states and recent development in the literature (Sarma, 2008).

Availability of banking services (d_1)

The services of an inclusive financial system should be easily available to its users. Availability of services can be indicated by the number of bank branches per lakh population or number of branches per 100 square km area. The present study has used both the number of branches with respect to population and area.

Banking penetration/access (d_2)

The inclusive financial system should penetrate widely among its users. That is, the financial system should have as many as users as possible. Hence, the number of people having a bank account is a measure of the banking penetration of the system. Considering this, the value of this measure would be 1 if every person in an economy has a bank account. However, there may be persons having more than one bank account, while at the same time there may be others who may have none. Therefore, number of accounts per capita is likely to actually provide an overestimation of the proportion of the banked population. Hence, we have used number of bank accounts as a proportion of the total adult population as an indicator of this dimension. We have calculated this for both deposit accounts and credit accounts. However, this does not reflect the financial access of the poor. SHG-Bank linkage programme is conceived to fill the gap existing in the formal financial network and extending the outreach of banking to the poor. In order to incorporate the financial inclusion of the poor, we have used the number of self help groups (SHGs) as a proportion of the total adult population. Therefore, the present study has used no. of deposit accounts, no. of credit accounts and no. of SHGs as proportions to adult population as an indicator of the dimension of banking penetration.

Usage (d_3)

Merely having a bank account is not enough for an inclusive financial system. It is imperative that the banking services are adequately utilized. As observed by Kempson et al (2004) that "in some apparently highly-banked countries, a number of people with bank account are nonetheless making very little use of the services on offer...". The present study therefore used two basic services of the banking system – deposit and credit. Accordingly, the volume of deposit and credit as proportion of the state's NSDP has been used to measure this dimension. Further, in order to consider the utilization of services by the poor, volume of SHG loan as proportion to NDSP has been used to measure the dimension of usage.

Thus, considering the above three dimensions – availability, penetration/access and usage – we can represent a state j by a point (d_{1j}, d_{2j}, d_{3j}) in the three dimensional Cartesian space, such that $0 \leq d_{1j}, d_{2j}, d_{3j} \leq 1$, where d_{1j}, d_{2j}, d_{3j} denote the dimension indices for j^{th} state computed by using equation (1). In the three dimensional Cartesian space, the point $(0,0,0)$ will indicate the worst situation (complete financial exclusion) and the point $(1,1,1)$ will indicate the best or ideal situation (complete financial inclusion).

The IFI for the state j is measured by the normalized inverse Euclidean distance of the point (d_{1j}, d_{2j}, d_{3j}) from the ideal point $(1, 1, 1)$. Algebraically,

$$IFI_j = 1 - \sqrt{\frac{(1-d_{1j})^2 + (1-d_{2j})^2 + (1-d_{3j})^2}{3}} \quad (3)$$

To find the levels of financial inclusion of major states the following criteria have been adopted.

- $0.5 \leq IFI \leq 1$ \rightarrow high financial inclusion
- $0.3 \leq IFI \leq 0.5$ \rightarrow medium financial inclusion
- $0 \leq IFI \leq 0.3$ \rightarrow low financial inclusion

Although the IFI proposed here follows a multidimensional approach of index construction similar to UNDP approach, there are methodological differences between the two approaches.

The first point of methodological difference with UNDP's HDI methodology is the manner in which dimension indices are combined to compute the final index. Unlike the UNDP's methodology of using an average to compute the final index, the present index is based on a measure of the distance from the ideal.

The second difference is with respect to the choice of minimum and maximum values for the dimension. While UNDP methodology uses pre-fixed values for the minimum and maximum for each dimension to compute the dimension index, the present method uses empirically observed minimum and maximum for each dimension. The empirically observed minimum and maximum values are used as it is difficult to fix what should be the minimum/maximum for any dimension of financial inclusion. Further, by using the empirical values, the study has attempted to measure financial inclusion with respect to a prevailing situation. It measures the extent of financial inclusion in an economy relative to the prevailing situation in all economies.

Data and Time period

The index of financial inclusion has been constructed in order to assess the relative position of 18 major states in India. The financial inclusion of the major states has also been compared between two points of time. In order to construct the index we have used the data on number of deposit and credit accounts and their volume, number of SHGs and volume of SHG loan, number of bank branches, population, geographical area and net state domestic product (NSDP). The information on the number of accounts, number of

branches of scheduled commercial banks and volume of deposit and credit have been collected from the Basic Statistical Returns of Scheduled Commercial Banks in India published by RBI. The number of SHG and volume of loan to SHG are collected from Status of Microfinance in India published by NABARD. Population of different states and the adult population have been collected from Census of India while the data on NSDP have been collected from CSO. The data are collected at two points of time, viz. during 2001-02 and 2010-11.

Empirical Findings

The indices of financial inclusion of 18 major states computed by using the data for three dimensions, viz. availability, penetration/access and usage during 2001-02 are presented in Table 1. It is revealed from table that Kerala had the highest level of financial inclusion among 18 major states in India. On the other hand, Assam had the lowest level of financial inclusion. The top five states with financial inclusion are Kerala, Punjab, Karnataka, Andhra Pradesh and Tamilnadu. On the other hand, the bottom five states with financial inclusion are Assam, Chhattisgarh, Madhya Pradesh, Bihar and Rajasthan. While the states with higher than average financial inclusion were Kerala, Punjab, Karnataka, Andhra Pradesh, Tamilnadu, Uttaranchal and Maharashtra, all other states had lower than average financial inclusion.

It is observed from Figure 1 that states having higher than average per capita NSDP had higher level of financial inclusion whereas states having lower than average per capita NSDP had lower level of financial inclusion, excepting the states like Uttarakhand, West Bengal, Gujarat and Haryana during 2001-02. While Uttarakhand with lower per capita NSDP had higher financial inclusion, West Bengal, Gujarat and Haryana with higher per capita NSDP had lower level of financial inclusion. This shows that poorer states had lower level of financial states than the richer states in India during 2001-02. In other words, there is gap in the financial inclusion between poorer and richer states in India.

Considering the different indices of financial inclusion, it is observed from Table 2 that states like Kerala and Uttarakhand had high level of availability of banking services during 2001-02. While states like Andhra Pradesh, Karnataka, Kerala and Punjab had high level of access of banking services. On the other hand, only Maharashtra had high level of usage of banking services. It is observed that none of the states was better in all the component indices. Kerala, which had high level of financial inclusion in respect of availability and penetration/access to bank services, had low financial inclusion in usage of banking services. Punjab and Haryana, which had high level of availability of banking services, had low level of access and usage of banking services. Andhra Pradesh, which had high level of access and usage of banking services, had low level of availability of banking services. Maharashtra

and Tamil Nadu, which performed better in usage and access of banking services respectively, performed worse in other banking services. All other states performed worst in different banking services, resulting in low level of financial inclusion.

Figure 2 presents the scoring position of major states in respect of different dimensions of financial inclusion during 2001-02. It can be observed from the figure that different dimensions of financial inclusion of major states were concentrated at the lower scores, except with few exceptions. This indicates that the status of many states in respect of different dimensions of financial inclusion was low during 2001-02.

There is no improvement in the status of financial inclusion across states in India during 2010-11. The indices of financial inclusion of these states during 2010-11 are presented in Table 3. It is revealed from table that Kerala retained the highest level of financial inclusion among 18 major states in India. On the other hand, Chhatisgarh has the lowest level of financial inclusion. There is no change in the position of top five and bottom five states though there is change in the position within these states. The states with higher than average index of financial inclusion during 2001-02 are also found to remain above average financial inclusion during 2010-11. In addition, Haryana joined the group. On the other hand, all other states, which had lower than average index of financial inclusion during 2001-02, remain below average financial inclusion during 2010-11.

Figure 3 shows that states having higher than average per capita NSDP are found to have higher level of financial inclusion whereas states having lower than average per capita NSDP have lower level of financial inclusion, excepting the state of Gujarat during 2010-11. Gujarat with higher per capita NSDP shows lower level of financial inclusion. This shows that poorer states have lower level of financial states than the richer states in India during 2010-11. In other words, gap remains in the financial inclusion between poorer and richer states in India.

Considering the different indices of financial inclusion, it is observed from Table 4 that states like Haryana, Kerala and Punjab have high level of availability of banking services during 2010-11. While states like Andhra Pradesh, Karnataka, Kerala, Maharashtra and Tamilnadu have high level of access of banking services. On the other hand, Andhra Pradesh and Maharashtra have high level of usage of banking services. It is observed that none of the states is better in all the component indices. Kerala, which has high level of financial inclusion in respect of availability and penetration/access to bank services, has low financial inclusion in usage of banking services. Punjab and Haryana, which have high level of availability of banking services, have low level of usage of banking services. Andhra Pradesh, which has high level of access and usage of banking services, has low level of availability of banking services. Maharashtra, which performs better in access and usage of banking

services, has low level of availability of banking services. Contrary to the above, states like Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh have worst performance in all the component indices. These states have low level of index of financial inclusion in all the component indices. Surprisingly, Gujarat, a higher income state, has performed miserably in all the component indices.

Figure 4 presents the scoring position of major states in respect of different dimensions of financial inclusion during 2010-11. It can be observed from the figure that different dimensions of financial inclusion of major states are concentrated at the lower scores, except with few exceptions. This indicates that the status of many states in respect of different dimensions of financial inclusion is low during 2010-11.

Comparing the indices of financial inclusion of major states between the two points of time, 2001-02 and 2010-11, it is observed that the level of financial inclusion has remained unchanged, except in the case of Haryana and Uttarakhand (Table 5). While in the case of Haryana, financial inclusion has increased from low level to medium level, in the case of Uttarakhand it has decreased from medium level to low level. It is observed that the average index of financial inclusion of 18 states has increased marginally. While the increase in the indices of financial inclusion is observed in the states like Andhra Pradesh, Assam, Chhattisgarh, Haryana, Maharashtra, Odisha, Tamilnadu and West Bengal, the decrease in the indices is observed in the states like Bihar, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Punjab, Rajasthan, Uttarakhand and Uttar Pradesh. While the rank of indices of states like Kerala, Jharkhand and Madhya Pradesh has remained unchanged, it has improved in the states like Andhra Pradesh, Assam, Haryana, Maharashtra, Odisha and Tamil Nadu, and deteriorated in the states like Bihar, Chhattisgarh, Gujarat, Karnataka, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh and West Bengal. The status of financial inclusion of major states between two points of time can also be seen from Figure 5.

Conclusion

The paper has studied the status and trend of financial inclusion of 18 major states in India. The status and relative position of financial inclusion across major states have been analysed at two points of time by using an index of financial inclusion. Different dimensions of financial indicators are used to measure availability, access and usage of the financial system by the members of the economy. The findings show that the richer states perform better than the poorer states. There is also no significant change in the level of financial inclusion of major states between the two points of time. The states tend to maintain their respective level of banking activity vis-à-vis the rest with the policy implication that more attention is required to be paid in the low performing states to enable them to close the gap with respect to better performing states.

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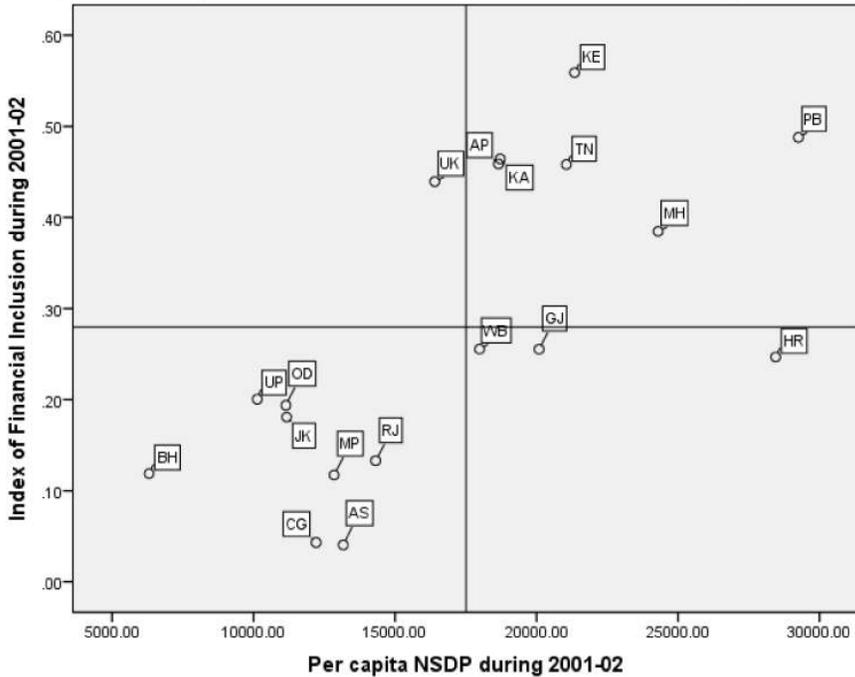
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Figure 1: Per capita NSDP and Index of Financial Inclusion during 2001-02



Note: NSDP=Net State Domestic Product, AP=Andhra Pradesh, AS=Assam, BH=Bihar, CG=Chhattisgarh, GJ=Gujarat, HR=Haryana, JK=Jharkhand, KA=Karnataka, KE=Kerala, MP=Madhya Pradesh, MH=Maharashtra, OD=Odisha, PB=Punjab, RJ=Rajasthan, TN=Tamilnadu, UK=Uttarakhand, UP=Uttar Pradesh, WB=West Bengal.

Figure 2: Distribution of Major States on the basis of Different Dimensions of Financial Inclusion during 2001-02

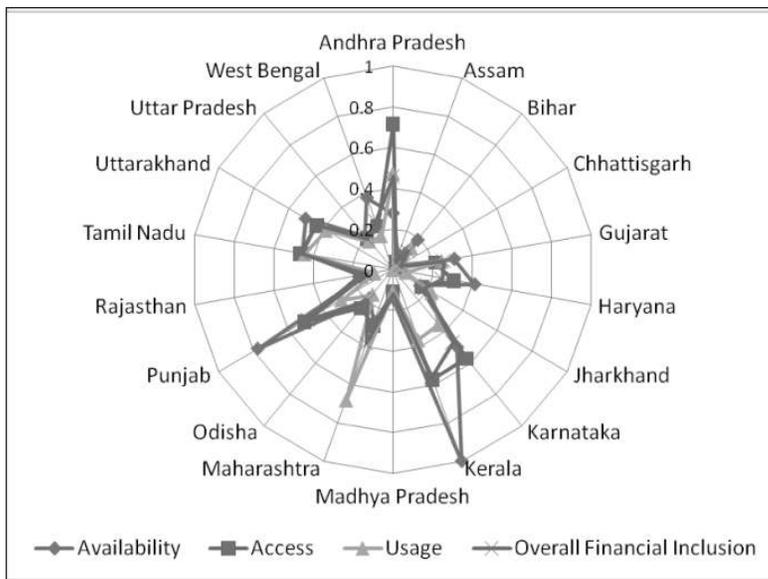
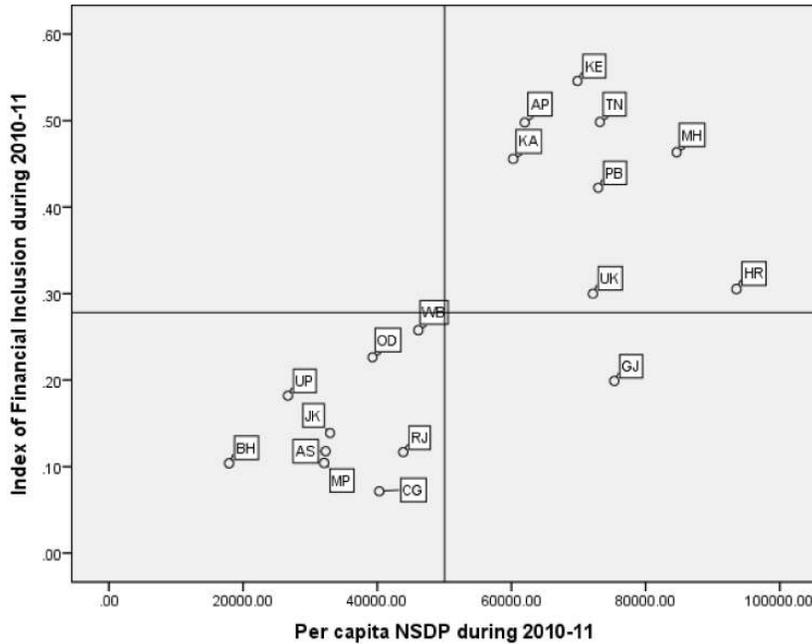


Figure 3: Per capita NSDP and Index of Financial Inclusion during 2010-11



Note: NSDP=Net State Domestic Product, AP=Andhra Pradesh, AS=Assam, BH=Bihar, CG=Chhatisgarh, GJ=Gujarat, HR=Haryana, JK=Jharkhand, KA=Karnataka, KE=Kerala, MP=Madhya Pradesh, MH=Maharashtra, OD=Odisha, PB=Punjab, RJ=Rajasthan, TN=Tamilnadu, UK=Uttarakhand, UP=Uttar Pradesh, WB=West Bengal.

Figure 4: Distribution of Major States on the basis of Different Dimensions of Financial Inclusion during 2010-11

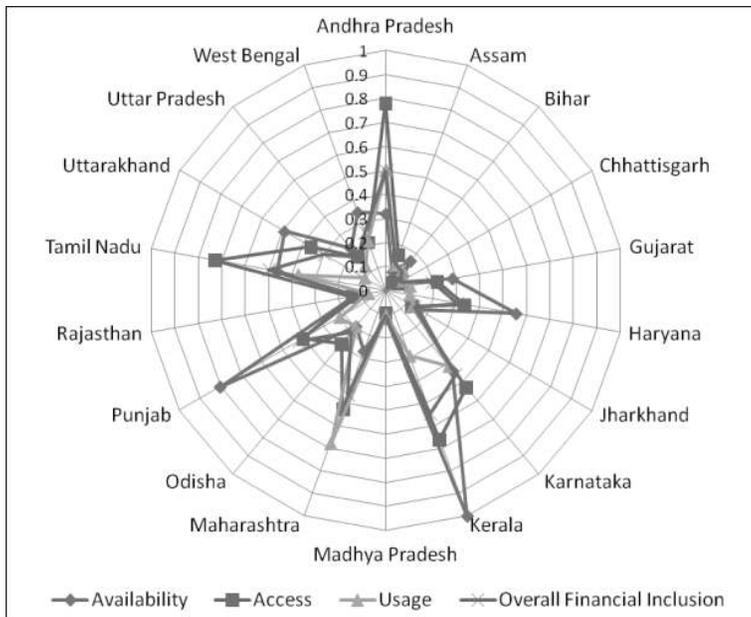


Figure 5: Comparison of Financial Inclusion of States between Two Points of Time

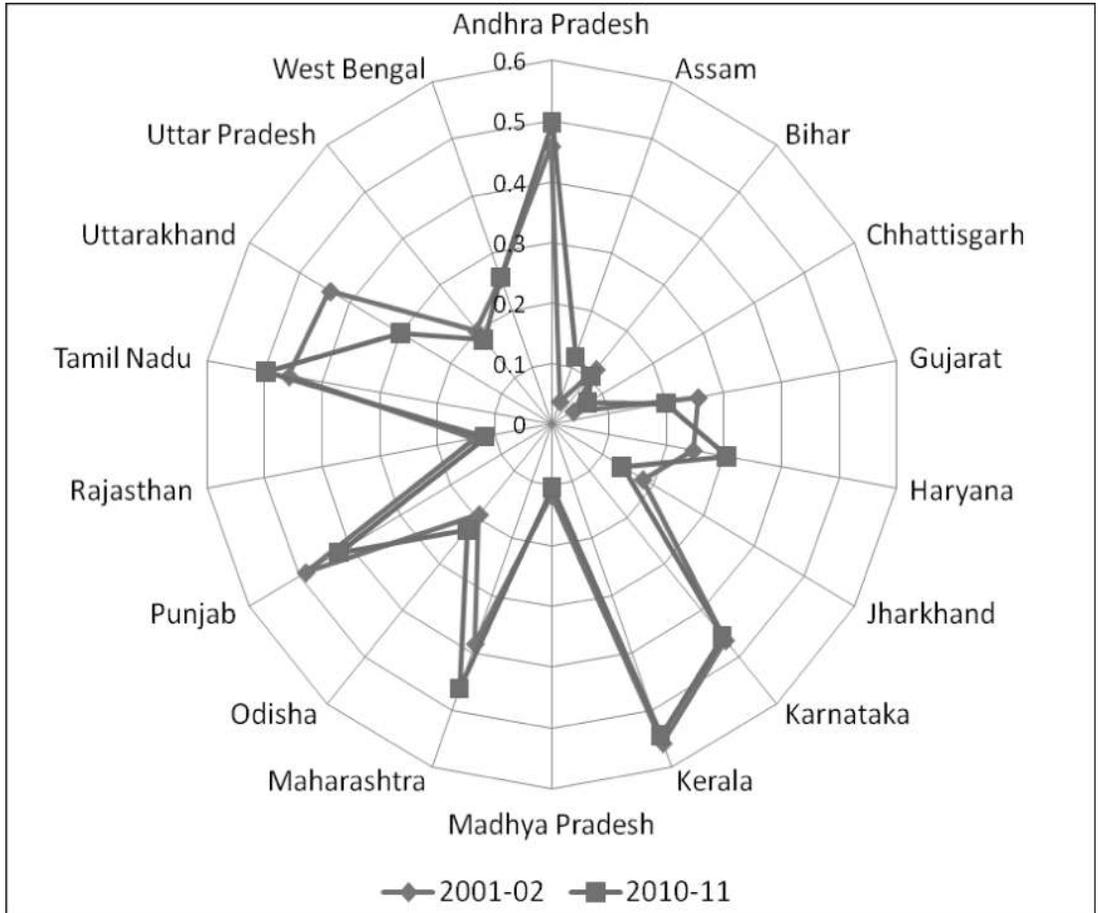


Table 1: Index of Financial Inclusion of Major States in India during 2001-02

Sl. No.	States	D1 (Availability index)	D2 (Penetration index)	D3 (Usage index)	IFI	Rank
1	Andhra Pradesh	0.277432	0.7176103	0.473797	0.458786	4
2	Assam	0.078578	0.0433625	0.001237	0.040538	18
3	Bihar	0.191119	0.0315209	0.141129	0.118732	15
4	Chhattisgarh	0.053177	0.021622	0.054984	0.043138	17
5	Gujarat	0.309532	0.2128258	0.24675	0.255291	9
6	Haryana	0.412076	0.3059714	0.064575	0.246707	10
7	Jharkhand	0.15533	0.1657996	0.222966	0.180826	13
8	Karnataka	0.497474	0.5670801	0.350831	0.46416	3
9	Kerala	0.999692	0.573319	0.36631	0.558933	1
10	Madhya Pradesh	0.13959	0.1053822	0.107169	0.11724	16
11	Maharashtra	0.270916	0.290703	0.68151	0.384613	7
12	Odisha	0.182468	0.2444518	0.156843	0.193748	12
13	Punjab	0.775462	0.5079597	0.296613	0.487726	2
14	Rajasthan	0.142453	0.1641812	0.09357	0.132899	14
15	Tamil Nadu	0.460568	0.4686779	0.445421	0.458137	5
16	Uttarakhand	0.501358	0.4365415	0.385862	0.439258	6
17	Uttar Pradesh	0.218187	0.1996403	0.18389	0.20045	11
18	West Bengal	0.376043	0.2285072	0.176254	0.255446	8
	All	0.335636	0.29362	0.247206	0.279813	

Note:

1. Top five States: Kerala, Punjab, Karnataka, Andhra Pradesh and Tamilnadu
2. Bottom five States: Assam, Chhattisgarh, Madhya Pradesh, Bihar and Rajasthan

Table 2: Distribution of Major States based on their scoring during 2001-02

	States with Scores		
	0 < 0.3	0.3 < 0.5	0.5 ≤ 1
Availability	Andhra Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Uttar Pradesh	Gujarat, Haryana, Karnataka, Punjab, Tamil Nadu, West Bengal	Kerala, Uttarakhand
Access	Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Uttar Pradesh, West Bengal	Haryana, Tamil Nadu, Uttarakhand	Andhra Pradesh, Karnataka, Kerala, Punjab
Usage	Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Orissa, Punjab, Rajasthan, Uttar Pradesh, West Bengal	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Uttarakhand	Maharashtra
Total Financial Inclusion	Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, West Bengal	Andhra Pradesh, Karnataka, Maharashtra, Punjab, Tamil Nadu, Uttarakhand	Kerala

Table 3: Index of Financial Inclusion of Major States in India (2010-11)

Sl. No.	States	D1 (Availability index)	D2 (Penetration index)	D3 (Usage index)	IFI	Rank
1	Andhra Pradesh	0.31984	0.78142	0.5039295	0.49784437	3
2	Assam	0.08222	0.1586285	0.1141557	0.11777831	14
3	Bihar	0.16061	0.0445024	0.1103639	0.10389679	17
4	Chhattisgarh	0.071701	0.0618871	0.0808713	0.071454	18
5	Gujarat	0.284159	0.2200087	0.1030858	0.19890288	11
6	Haryana	0.555	0.3347321	0.1016031	0.3053242	7
7	Jharkhand	0.159339	0.1273387	0.1301394	0.13881739	13
8	Karnataka	0.436009	0.5262637	0.4117071	0.4557572	5
9	Kerala	0.999998	0.6600742	0.2907002	0.54588701	1
10	Madhya Pradesh	0.117859	0.091393	0.1037182	0.10425803	16
11	Maharashtra	0.269006	0.5250516	0.6774984	0.46336394	4
12	Odisha	0.195457	0.2896047	0.1976818	0.22633655	10
13	Punjab	0.803275	0.4008328	0.223348	0.42239276	6
14	Rajasthan	0.134494	0.1428721	0.074514	0.1167687	15
15	Tamil Nadu	0.462909	0.7295725	0.3730664	0.49845472	2
16	Uttarakhand	0.491464	0.3632368	0.1019992	0.29988526	8
17	Uttar Pradesh	0.229624	0.1842971	0.1347071	0.1819571	12
18	West Bengal	0.347196	0.2141793	0.2195646	0.25776326	9
	All	0.3253275	0.340009	0.2195919	0.29293848	

Note: 1. Top five States: Kerala, Tamilnadu, Andhra Pradesh, Maharashtra and Karnataka.
2. Bottom five States: Chhattisgarh, Bihar, Madhya Pradesh, Rajasthan and Assam.

Table 4: Distribution of Major States based on their scoring during 2010-11

	States with Scores		
	0 < 0.3	0.3 < 0.5	0.5 ≤ 1
Availability	Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Uttar Pradesh	Andhra Pradesh, Karnataka, Tamil Nadu, Uttarakhand and West Bengal	Haryana, Kerala, Punjab
Access	Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and West Bengal	Haryana, Punjab and Uttarakhand	Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamilnadu
Usage	Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Kerala, Madhya Pradesh, Orissa, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh, West Bengal	Karnataka, and Tamil Nadu	Andhra Pradesh, Maharashtra
Total Financial Inclusion	Assam, Bihar, Chhattisgarh, Gujarat, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttarakhand, Uttar Pradesh, West Bengal	Andhra Pradesh, Haryana, Karnataka, Maharashtra, Punjab and Tamil Nadu	Kerala

Sl. No.	States	Index of Financial Inclusion			Rank	
		2001-02	2010-11	Increase/Decrease	2001-02	2010-11
1	Andhra Pradesh	0.4588	0.4978	Increase	4	3
2	Assam	0.0405	0.1178	Increase	18	14
3	Bihar	0.1187	0.1039	Decrease	15	17
4	Chhattisgarh	0.0431	0.0715	Increase	17	18
5	Gujarat	0.2553	0.1989	Decrease	9	11
6	Haryana	0.2467	0.3053	Increase	10	7
7	Jharkhand	0.1808	0.1388	Decrease	13	13
8	Karnataka	0.4642	0.4558	Decrease	3	5
9	Kerala	0.5589	0.5459	Decrease	1	1
10	Madhya Pradesh	0.1172	0.1043	Decrease	16	16
11	Maharashtra	0.3846	0.4634	Increase	7	4
12	Odisha	0.1937	0.2263	Increase	12	10
13	Punjab	0.4877	0.4224	Decrease	2	6
14	Rajasthan	0.1329	0.1168	Decrease	14	15
15	Tamil Nadu	0.4581	0.4985	Increase	5	2
16	Uttarakhand	0.4393	0.2999	Decrease	6	8
17	Uttar Pradesh	0.2005	0.1820	Decrease	11	12
18	West Bengal	0.2554	0.2578	Increase	8	9
	All	0.2798	0.2929	Increase		

Trends in Financial Inclusion: An Analysis of SHG Bank Linkage Programme

K. C. Badatya¹

K. H. Badatya²

Financial Inclusion is one of the key dimensions of the overall strategy for attaining “Inclusive Growth”. However, the extent of financial exclusion from different perspectives is quite large and alarming. But Government of India, Reserve Bank of India including NABARD took colossal steps towards financial inclusion based on the observations of the Committee on Financial Inclusion (Rangarajan Committee). The SHG-Bank linkage programme was conceived to fill the gap existing in the formal financial network and extending the outreach of banking to the poor. The spread of the SHG-BLP in different regions, however, has been uneven on account of various factors like pro-active role of State Governments, presence of well performing NGOs, socio-cultural factors, better performance of SHGs, etc. The spread of SHG movement has been skewed in favour of the Southern Region. There is clear evidence of the fact that the SHG movement in India has spread to other regions/States, though not to the same extent as in the Southern States. Further progress in the SHG-Bank linkage programme needs to reckon these regional variations in the spread of the programme in order to cater to the basic goal of inclusive growth and alleviating poverty.

I. Defining Financial Inclusion

Financial inclusion is delivery of banking services at an affordable cost to the vast sections of disadvantaged and low-income groups. Financial Inclusion is one of the key dimensions of the overall strategy for attaining “Inclusive Growth”. It is also defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost (Rangarajan 2008). Financial Inclusion, broadly defined, refers to universal access to a wide range of financial services at a reasonable cost. These include not only banking products but also other financial services such as insurance and equity products (Rajan2009).

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The concept of financial inclusion has to include not only “opening of an account” in the bank, but also regular savings in the account and building a relationship with the bank thus enabling the borrower to access loans on a regular basis. If it is viewed that financial inclusion can only lift the financial condition and standards of life of the poor particularly, small and marginal cultivators and rural landless workers, than confining financial inclusion to ensuring a bare minimum access to a savings bank account without frills would not achieve the purpose. Having a current account / savings account on its own, is not regarded as an accurate indicator of financial inclusion. While certain sections have at their disposal a wide range of financial services and products, at the other extreme these sections are denied access to even the most basic of financial products.

The Government of India, Reserve Bank of India and NABARD have been making concerted efforts to promote financial inclusion as one of the important national objectives of the country. Some of the major efforts made in this regard include - nationalization of banks, building up of robust branch network of scheduled commercial banks, co-operatives and regional rural banks, introduction of mandated priority sector lending targets, lead bank scheme, formation of self-help groups, permitting BCs/BFs to be appointed by banks to provide door step delivery of banking services, zero balance Basic Savings Bank Deposits (BSBD) accounts, etc. The fundamental objective of all these initiatives is to reach the large sections of the hitherto financially excluded Indian population.

II. Extent of Financial Exclusion

The extent of financial exclusion from different perspectives as per NSSO 59th Round Survey Results showed that

- 51.4 per cent of farmer households are financially excluded from both formal/informal sources. Of the total farmer households, only 27 per cent access formal sources of credit; one third of this group also borrowed from non-formal sources.
- Overall, 73 per cent of farmer households have no access to formal sources of credit. Across regions, financial exclusion is more acute in Central, Eastern and North-Eastern regions. All three regions together accounted for 64 per cent of all financially excluded farmer households in the country. Overall indebtedness to formal sources of finance of these three regions accounted for only 19.66 per cent.
- However, over the period of five decades, there has been overall improvement in access to formal sources of credit by the rural households (Table 1).

Table 1: Break-up of Institutional and Non-Institutional Rural Credit

	1951	1961	1971	1981	1991	2002	2014
I Institutional Agencies	7.2	14.8	29.2	61.2	64.0	57.1	60.0
a Government	3.3	5.3	6.7	4.0	5.7	2.3	2.0
b Co-op. Society/bank	3.1	9.1	20.1	28.6	18.6	27.3	28.9
c Commercial bank incl. RRBs	0.8	0.4	2.2	28.0	29.0	24.5	30.7
d Insurance	--	--	0.1	0.3	0.5	0.3	1.0
e Provident Fund	--	--	0.1	0.3	0.9	0.3	0.3
f Others institutional agencies*	--	--	--	--	9.3	2.4	1.1
II Non-Institutional Agencies	92.8	85.2	70.8	38.8	36.0	42.9	40.0
a Landlord	1.5	0.9	8.6	4.0	4.0	1.0	0.4
b Agricultural Moneylender	24.9	45.9	23.1	8.6	6.3	10.0	6.5
c Professional Moneylender	44.8	14.9	13.8	8.3	9.4	19.6	23.1
d Traders and Commission Agents	5.5	7.7	8.7	3.4	7.1	2.6	2.2
e Relatives and Friends	14.2	6.8	13.8	9.0	6.7	7.1	3.1
f Others	1.9	8.9	2.8	4.9	2.5	2.6	0.7
Total	100						

Source: All India Debt and Investment Survey, Various Issues

Similarly, as per census 2011, only 58.7% of households are availing banking services in the country (Table 2). However, as compared with previous census 2001, availing of banking services increased significantly largely on account of increase in banking services in rural area

Table 2: Availing banking Services

Category	2011	2001
Rural	54.4	30.1
Urban	67.8	49.5
Total	58.7	35.5

Source: Census Reports, Gol

Similarly, 'Financial Access Survey' of International Monetary Fund observed that in India, financial exclusion measured in terms of bank branch density, ATM density, bank credit to GDP and bank deposits to GDP are quite low as compared with most of developed countries in the world (Table 3).

Table 3: Select Indicators of Financial Inclusion – 2011

No.	Country	Bank Branches (No.)	ATMs (No.)	Bank Branches (No.)	ATMs (No.)	Bank Deposits	Bank Credit
		Per 1000 KM		Per 0.1 Million		As % of GDP	
1	India	30.43	25.43	10.64	8.9	68.43	51.75
2	China	1428.98	2975.05	23.81	49.56	433.96	287.89
3	Brazil	7.93	20.55	46.15	119.63	53.26	40.28
4	Indonesia	8.23	15.91	8.52	16.47	43.36	34.25
5	Korea	79.07	-	18.8	-	80.82	90.65
6	Mauritius	104.93	210.84	21.29	42.78	170.7	77.82
7	Mexico	6.15	18.94	14.86	45.77	22.65	18.81
8	Philippines	16.29	35.75	8.07	17.7	41.93	21.39
9	South Africa	3.08	17.26	10.71	60.01	45.86	74.45
10	Sri Lanka	41.81	35.72	16.73	14.29	45.72	42.64
11	Thailand	12.14	83.8	11.29	77.95	78.79	95.37
12	Malaysia	6.32	33.98	10.49	56.43	130.82	104.23
13	UK	52.87	260.97	27.87	122.77	406.54	445.86
14	USA	9.58	-	35.43	-	57.78	46.83
15	Switzerland	84.53	166.48	50.97	100.39	151.82	173.26
16	France	40.22	106.22	41.58	109.8	34.77	42.85

Source: Financial Access Survey, International Monetary Fund (IMF), 2011

III. Financial Inclusion -Trend in Progress

3.1 Number of Branches and Banking Outlets in Villages

Concerted efforts since 2005, were made by RBI to increase the number of branches of Scheduled Commercial Banks, which increased manifold from 68,681 in March 2006 to 1,02,343 in March 2013, spread across length and breadth of the country. In rural areas, the number of branches increased from 30,572 to 37,953 during March 2006 to March 2013. As compared with rural areas, number of branches in semi-urban areas increased more rapidly. However, the compound annual rate of growth (CARG) of rural bank branches (3.06%) is lower as compared to semi-urban (8.89%), urban (7.57%) and metropolitan (7.57%) branches during 2006 to 2013 (Table 4).

Table 4: No. of Bank Branches

Year	Rural	Semi-Urban	Urban	Metropoliton	Total
2006	30572 (44.50)	15274 (22.24)	11864 (17.27)	10971 (15.97)	70687
2007	30461(44.35)	16035 (23.35)	12649 (18.42)	11566 (16.84)	72718
2008	30732(44.75)	17212 (25.06)	13944 (20.30)	12438 (18.11)	76334
2009	31489(45.85)	18764 (27.32)	15325 (22.31)	13478 (19.62)	81065
2010	32289(47.01)	20358 (29.64)	16653 (24.25)	14697 (21.40)	86007
2011	33325 (48.52)	22419 (32.64)	17706 (25.78)	15660 (22.80)	91121
2012	35364 (51.49)	25076 (36.51)	18541 (27.00)	17078 (24.87)	98071
2013	37953 (55.26)	27219 (39.63)	19327 (28.14)	17844 (25.98)	104356
CARG (%)	3.06	8.89	7.57	7.57	5.90

5.90 Figures in parentheses indicate percentages

Source: Basic Statistical Returns, RBI.

The number of banking outlets in villages with population more than 2000 as well as less than 2000 increased consistently since March 2010. Total number of banking outlets (including RRBs) in villages increased from 67,694 in March 2010 to 2,68,454 in March 2013 (increased around 4 times during the period of three years). Of total branches, banking outlets through BCs increased from 34,174 to 2,21,341 during the same period (increased around 6.5 times).

3.2 Basic Savings Bank Deposits (BSBD) accounts

The number of BSBD accounts opened increased from 73.45 million in March 2010 to 243.0 million in March 2014. Banks have been advised to issue KCCs to small farmers for meeting their credit requirements. Up to March 2014, the total number of KCCs issued to farmers

remained at 40.0 million with a total outstanding credit of Rs.262,29,800 million. Banks have been advised to introduce General Credit Card facility up to Rs. 25,000 at their rural and semi-urban branches. Up to March 2014, banks had provided credit aggregating to Rs.7,63,400 million in 7.0 million GCC accounts.

3.3 ICT Based Accounts - through BCs

In order to provide efficient and cost-effective banking services in the un-banked and remote corners of the country, RBI directed commercial banks to provide ICT based banking services – through BCs. These ICT enabled banking services have CBS connectivity to provide all banking services including deposit and withdrawal of money in the financially excluded regions. The number of ICT-based transactions through BCs increased from 26.52 million in March 2010 to 329.0 million in March 2014, while transactions amount increased steadily from Rs.69,200 million to Rs.52,40,000 million during the same period (Table 5).

Table 5: Progress of Financial inclusion –villages covered, KCCs issued, BSBD Accounts opened, progress in ICT based Accts-BCs.

Year	Village covered		BSBD Acct (No. in mln)	KCCs(No. in mln)	GCCs (No. in mln)	ICT based Accounts – BCs	
	pop > 2000	pop < 2000				Transactions (No.)	Transactions(Amt in Rs. Cr.)
2010	27353	26905	73.45	24	1.4	26.52	692
2011	54246	45937	104.76	27	1.7	84.16	5800
2012	82300	65234	138.50	30	2.1	155.87	9709
2013	40837	-	182.06	34	3.6	250.46	23388
2014	46126		243.00	40	7.0	329.00	52400
Absolute Change	18773	38329	169.55	16	5.6	302.48	51708
Change (%)	69	142	231	67	400	1141	7472
CARG (%)	14.0	55.7	34.9	13.6	49.5	87.7	195.0

Source: Statistical Tables Relating to Banks in India, various issues,

3.4 Pradhan Mantri Jan-DhanYojana (PMJDY)

Pradhan Mantri Jan-DhanYojana (PMJDY) is National Mission for Financial Inclusion initiated in August 2014 to ensure access to financial services, namely, Banking/ Savings & Deposit Accounts, Remittance, Credit, Insurance, Pension in an affordable manner. Account can be

opened in any bank branch or Business Correspondent (Bank Mitra) outlet. PMJDY accounts are being opened with Zero balance. However, if the account-holder wishes to get cheque book, he/she will have to fulfil minimum balance criteria. Account holders would avail the benefits in term of interest on deposit, accidental insurance cover of Rs.0.1 million, no requirement of minimum balance, life insurance cover of Rs.30,000 easy transfer of money across India, beneficiaries of Government Schemes through Direct Benefit Transfer, overdraft facility after satisfactory operation of the account for 6 months, access to Pension, insurance products.

Against the estimated target of opening bank accounts for 75 million uncovered households in the country, as on date (January 31, 2015) Banks have opened 1,085 million accounts after conducting survey of 2,102 million households in the country. Coverage of 99.74 per cent of the surveyed households has been achieved. The survey was conducted in about 0.23 million Sub Service Areas (SSAs) in rural areas and wards in urban areas in a record time of 4 months. Out of the accounts opened, 60 per cent are in rural areas and 40 per cent are in urban areas (Table 6). Rupay cards have been issued to more than 1,000 million beneficiaries who will get a benefit of personal accidental insurance of Rs. 0.1 million under the Yojana. In addition there is a life insurance cover of Rs.30,000 for eligible beneficiaries. A deposit of Rs. 1,04,996 million has been mobilized in the accounts opened under PMJDY.

Table 6: Progress in PMJDY - Accounts Opened (As on 31 January 2015)

No		No. Of Accounts (In million)			Rupay Debit Card (No. In million)	Balance In Accounts (In Rs. million)	With Zero Balance (No. In million)
		Rural	Urban	Total			
1	PSBs	53.3 (54.1)	45.1 (45.9)	98.4 (100.0)	91.2	81746	65.5
2	RRBs	18.5 (84.9)	3.3 (15.1)	21.8 (100.0)	1.5	15995	15.9
3	Private Banks	3.2 (61.6)	2.0 (3.84)	5.2 (100.0)	4.6	7255	3.0
	Total	75.0 (59.8)	50.5 (40.2)	125.5 (100.0)	110.8	104996	84.5

Figures in parentheses indicate percentages

Source: Department of Financial Services, Ministry of Finance, Govt

IV. SHG-Bank Linkage Programme - An Analysis

Microfinance sector in India has progressed remarkably since 1990s and this sector has been acting as an important ally in expanding *financial inclusion* in rural areas (NABARD, 2012). Reserve Bank provides guidelines to banks for mainstreaming micro-credit providers, *inter alia*, stipulated that micro-credit extended by banks to individual borrowers directly

or through any intermediary would be reckoned as part of their priority sector lending. The SHG-Bank Linkage Programme (SHG-BLP)^{*} provides a major succor to the rural women folk from financial exclusion and has helped them in gaining financial access for their livelihood. The launching of SBLP as a rural financial innovations in the rural sector in the beginning of 90s' for increased popularity of Microfinance is a viable tool for extending credit to the poor as also addressing the issues on financial inclusion. NABARD's efforts at improving the access of the informal delivery strategy through SHGs developed by NABARD has expanded into the largest mF Programme in the world, in terms of its outreach. The programme registered a significant growth both in terms of coverage and the outreach of credit to the poor. Beginning with a modest number of 255 SHGs being linked during 1992-93, a cumulative total of 74,29,500 SHGs were linked with banks by March 2014. The cumulative disbursement of bank loans was Rs. 42,92,752 million and refinance assistance was of Rs. 26,14,208 million by March 2014. Over the seventeen years period (1997-2014) the SHGs linked grew at a compound annual growth rate (CAGR) of 56.53 per cent. Families assisted grew by 45.52 per cent. The average loan per SHG increased by 31.95 per cent (Table 7).

Table 7: Growth Indicators of SBLP

No.	Particulars / Year	1997-98	2004-05	2013-14	CARG (%)
1.	SHGs Linked	5719	7.97	7429500	56.53
2.	Families Assisted (No. in million)	0.24	11.0	97.0	45.52
3.	Bank Loan (Rs. In million)	119	299.42	42927.52	44.49
4.	Refinance Assistance (Rs. million)	107	9678	2614208	41.01
5.	Average Loan / SHG (Rs.)	2081	37547	175768	31.95

Source: Status of Microfinance in India, NABARD

^{*} Promotion of mF through the concept of Self Help Groups (SHGs) started in 1987, when NABARD sanctioned grant assistance from Reseach and Development Fund (R & D Fund) to MYRADA for providing seed money to the Credit Management Groups (CMGs). The success of this experiment was complimented by launching a pilot project by NABARD in 1992 for linking 500 SHGs of poor people with the banks to facilitate relationship banking (NABARD, 1995). In February 1992, the project was made operational throughout the country through a set of well defined guidelines with special reference to the objectives, criteria for selection of SHGs, size of group, assessment of credit, rate of interest, repayment period, security, etc. In 1996, RBI classified loans to SHGs as a mainstream activity of banks under their priority sector lending. The Gol bestowed national priority to the programme through its recognition in the Union Budget 1999.

4.1 Region-Wise Outreach

Even though the outreach of the programme has been extended to almost all States, in terms of progress in total coverage, the Southern region continued to lead the other regions since the beginning of the linkage programme. The share of the Southern region has, however, come down with the increasing share of other regions. Between 2001 and 2014, whereas the share of southern region decreased from 73 per cent to 50 per cent, the share of other regions, except central region has shown an increasing trend.

Table 8: Year-wise and Region-wise Cumulative Share of SHGs

(percentage)

Region	March 1997	March 2001	March 2005	March 2011	March 2014
Southern	63	73	58	48	50
Eastern	13	8	17	20	20
Central	12	9	12	11	9
Northern	4	3	5	5	5
Western	7	6	6	12	12
N-Eastern	<1	<1	2	4	4
Total	100	100	100	100	100

Source: Status of Microfinance in India, NABARD

4.2 Spatial Disparity in the SHG-Bank linkage Programme

Notwithstanding the remarkable progress, geographically there has been a skewed development of SHG-Bank linkage programme. There is wide regional disparity both in terms of the spread of SHGs linked to banks and cumulative bank loans disbursed under the programme (Table 9).

Table 9: Region-wise Progress of SHG-Bank Linkage Programme

(As on March 31, 2014)

Region	No. of SHGs	Loan O/s to SHGs (Rs. million)	Average Loan to SHGs (Rs.)	Total Savings (Rs. million)	Average Saving Per SHG (Rs.)	SHG per 1 lakh popn
Southern	3696324 (49.8)	3179133 (74.1)	86008	623862 (63.0)	16878	1471
Eastern	1468786 (19.8)	494463 (11.5)	33665	152655 (15.4)	10393	543
Central	685929 (9.2)	269666 (6.3)	39314	79056 (8.0)	11525	223
Northern	365208 (4.9)	110063 (2.6)	30137	28294 (2.9)	7748	231
Western	896954 (12.1)	164046 (3.8)	18289	92990 (9.4)	10367	515
N-Eastern	316299 (4.3)	753791 (17.6)	23832	12882 (1.3)	4073	695
Total	7429500 (100.0)	4292752 (100.0)	57780	989741 (100.0)	13322	615

Source: computed from data sourced from Status of Microfinance in India, NABARD

While the Southern Region accounted for 74.1 per cent of the total loans outstanding to SHGs, the share of North-Eastern Region was about 17.6 per cent. For all regions excluding Southern Region, even though the share of total SHGs linked to banks was close to 50 per cent, their share in total loans outstanding to SHGs was only 25.9 per cent implying that adequate credit is not being routed through SHGs in these regions. As the regions vary in geographical area and population, the number of SHGs is normalised by the population of the region and SHG per lakh population has been taken as a better indicator of SHG spread in the respective regions. The number of SHGs per lakh population for the Southern Region is 1471, which is more than double the average at all-India (615) and almost five times of the Central Region (223).

In addition to the inter-regional disparity, there is wider intraregional disparity among the constituent States in SHG spread. The progress of SHG-Bank linkage programme has not been homogeneous in any region (Table 10).

In the Southern Region, where the programme has been very successful, SHGs per lakh population varied between 1677 in Andhra Pradesh and 1800 in Kerala as at end March 2014. In the North-Eastern region, the major share was accounted for by Assam with 3.8 per cent of the total SHGs while the rest of the six States in the region had a negligible share in the total SHGs. Similarly, Rajasthan was distinctly ahead in the Northern Region in terms of spread of SHGs. In the Eastern Region, SHG spread in Orissa was comparable with the Southern States. There is clear evidence of the fact that the SHG movement in India has spread to other regions/States, though not to the same extent as in the Southern States. However, a major concern remains the scale of finance in the non-southern regions. The average loan per SHG in these regions continues to be much lower than that in the Southern Region. Further progress in the SHG-Bank linkage programme needs to reckon these regional variations in the spread of the programme.

Table 10: State-wise Variations in the SHG-Bank Linkage Programme

Northern Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
Haryana	0.6	0.5	170	95
H P	0.5	0.3	548	166
J & Kr	0.0	0.0	7	6
New Delhi	0.0	0.1	17	4
Punjab	0.3	0.2	83	32
Rajasthan	3.5	1.8	375	94
Chandigarh	0.0	0.0	44	13
Total	4.9	2.9	230	69

North-eastern Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
Assam	3.8	1.1	914	210
Ar.P	0.0	0.0	187	22
Manipur	0.1	0.0	352	54
Meghalaya	0.1	0.1	244	43
Mizoram	0.0	0.0	17	19
Nagaland	0.0	0.0	123	64
Sikkim	0.0	0.0	56	38
Tripura	0.1	0.1	249	141
Total	4.3	1.3	695	166

Central Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
C.garh	1.5	1.8	438	84
MP	2.1	1.3	217	62
UP	5.1	4.4	190	97
UK	0.5	0.4	370	96
Total	9.2	8.0	223	88

Eastern Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
A & N	0.1	0.0	1268	238
Bihar	3.6	1.7	258	86
JK	1.2	0.9	262	96
Odisha	7.0	4.6	1233	368
WB	8.0	8.2	648	239
Total	19.8	15.4	543	183

Southern Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
Andhra Pradesh	19.1	35.4	1677	2500
Karnataka	9.5	11.0	1161	641
Kerala	8.1	5.8	1800	510
Lakshadweep	0.0	0.1	355	6
Pondicherry	0.3	0.2	1960	838
Tamilnadu	12.7	10.6	1306	683
Total	49.8	63.0	1464	1259

Western Region				
States	Share in (%)		Indicator of SHG	
	Total SHGs	Total Loans	Spread	Finance
Goa	0.1	0.1	560	192
Gujarat	2.6	1.7	325	48
Maha	9.3	7.6	616	117
Total	12.1	9.4	515	94

Source: Computed from Status of Microfinance in India, NABARD

Participation of Banks

Commercial banks and RRBs were the major players in the SBL Programme. Although, the cumulative number of SHGs financed by commercial banks increased from 8,704 during 1997-98 to 40,22,810 during 2013-14 growing at an annual compound rate of 47 per cent, their share has come down from 61 per cent to 54 per cent during the said period. However, the cumulative share in bank loans outstanding gone up to 68 per cent from 65 per cent. The share of RRBs in number of SHGs financed decreased to 29 per cent from 36 per cent and loan outstanding came down from 33 per cent to 26 per cent during 1997-2014. Co-operatives have entered into the programme at a later stage and have peaked up very fast. The SHGs financed by cooperatives have grown at an annual compound rate of 65 per cent during 1997-2014 (Table 11).

Table 11: Participatory Bank-wise Cumulative Growth in SBLP at All India Level

Banks	No. of SHGs					Bank Loan O/S (Rs. Million)				
	1997-98	Share (%)	2013-14	Share (%)	CARG (%)	1997-98	Share (%)	2013-14	Share (%)	CARG (%)
CBs	8704	61.0	4022810	54	46.74	15.5	65.0	2938841	68	60.27
RRBs	5192	36.0	2111760	29	45.57	7.8	33.0	1104895	26	57.38
Coops	421	3.0	1294930	17	65.20	0.5	2.0	249016	6	70.25
Total	14317	100.0	7429500	100	47.81	23.8	100.0	4292752	100	59.78

Source: computed from data sourced from Status of Microfinance in India, NABARD

5. Conclusion and Suggestions

Though SHG-BLP has contributed appreciably towards achieving the objective of equitable financial inclusion. SHG-Bank linkage programme was conceived to fill in the gap existing in the formal financial network and extending the outreach of banking to the poor. The spread of the SHG-BLP in different regions, however, has been uneven on account of various factors like pro-active role of State Governments, presence of well performing NGOs, socio-cultural factors, better performance of SHGs, etc. The spread of SHG movement has been skewed in favour of the Southern Region. There is clear evidence of the fact that the SHG movement in India has spread to other regions/States, though not to the same extent as in the Southern States. However, a major concern remains the scale of finance in the non-southern regions. Further progress in the SHG-Bank linkage programme needs to reckon these regional variations in the spread of the programme in order to cater to the basic goal of inclusive growth and alleviating poverty. Further progress in the SHG-Bank linkage programme needs to reckon these regional variations in the spread of the programme in order to cater to the basic goal of inclusive growth and alleviating poverty (Badatya & Badatya 2008).

In order to reduce the regional imbalances in the spread of the SHG-Bank linkage programme, NABARD had identified 13 States – Assam, Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Maharashtra, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh, Uttarakhand and West Bengal, which have a large population of the poor, for focused attention. Due to the intensified efforts in these states, their share in the total SHGs credit linked increased from 31 per cent in March 2002 to 48.2 per cent in March 2014.

Notwithstanding deficiencies, the SHG-BLP augurs well for the tasks of financial inclusion, financial equity as well as efficiency. Banks need to assume the lead role in taking the financial services to the vast sections of disadvantaged. Banks need to play a more pro-active role in identification of income generating activities (IGAs) as well as in encouraging NGOs promoting SHGs in the Central, Eastern and North-Eastern regions which could give a fillip to the SHG-BLP. Though the growth of the micro finance in the form of SHG –BLP was intended to provide sustainable access to the unbanked poor, positive developments in the group dynamics helped SHGs to graduate themselves towards undertaking different sustainable IGAs. Studies have revealed that a large number of members of SHGs are availing loans for income generating activities once their consumption needs are addressed (Badatya at al. 2006 & Badatya & Badatya 2008)

As on March 31, 2014, the average loan provided to SHGs was Rs. 1,75,768. On an average, per member loans workout in the range of 12,000-14000. Such a loan amounts are not adequate for pursuing any meaningful livelihood activity. The scale of finance needs to be stepped up especially in the non-southern regions, where it is almost half of that at the All-India level. As observed by the Committee on Financial Inclusion (Chairman: Dr. C.

Rangarajan), in several cases, bankers show unenthusiastic attitude in promoting SHGs pointing reasons of shortage of staff, time, etc. Special training and awareness programme about the model is needed for the branch officials.

The Steering Committee on agriculture and allied sectors for formulation of the Eleventh Five Year Plan (2007-2012) had suggested that the share of direct accounts with a credit limit of Rs. 25,000 in total direct finance may be targeted at a substantially higher level to improve credit flow to the small and marginal farmers. Towards this, formation of Joint Liability Groups (JLGs) has been intensified which has also significantly facilitated financial inclusion thus reducing high level of exclusion particularly among small and marginal farmers.

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Financial Inclusion of Women in Odisha : Role of Pradhanmantri Jan Dhan Yojana

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Financial inclusion of the poor and vulnerable in general and women in particular has been universally accepted as one of the important components of inclusive growth. In this respect the present paper tries to have a critical assessment of PMJDY in Odisha with particular emphasis on the role of Regional Rural Banks vis a vis Public Sector Banks. The study focuses on demand side view by taking a sample of one hundred women beneficiaries of PMJDY and a supply side view by taking a sample of fifty bankers from commercial banks. The demand side analysis finds that the beneficiaries are not fully aware of the features of the scheme to take advantage of financial benefits. From supply side the bankers agree that financial inclusion through PMJDY is a difficult but not impossible endeavour.

Key Words: Financial Inclusion, PMJDY, Commercial banks, Women Beneficiaries

I. Introduction

About four hundred million people accounting for more than thirty six percentage of population still live below poverty line in India. In this respect, financial inclusion is considered to be an important determinant for social inclusion of the poor and the vulnerable. It is in fact one of the essential conditions for reduction of poverty and socio-economic inequalities in the society (Rangarajan Committee, 2008). In fact it has become a policy imperative for inclusive growth in many countries including India.

United Nations defines the main goals of inclusive finance as access to a range of financial services such as savings, credit, insurance, remittances and other banking payment services to all bankable households and enterprises at reasonable cost. Different stake holders- government, regulators, public & private banks and people- play an important role in inclusive finance. The formal financial system in India is mostly dominated by commercial banks.

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Against this background, Prime Minister Narendra Modi's launching of Pradhan Mantri Jan Dhan Yojana (henceforward PMJDY) on 15 August, 2014 to provide all households in the country with banking services has turned out to be a game changer as it provides the platform for Direct Benefits Transfer (DBT) which in turn will help in plugging leakages in subsidies and thereby provide savings to the exchequer. The focus of PMJDY was to empower the weaker sections of the society, including women, small and marginal farmers and land less labourers. It started from 28th August 2014 and the target was fulfilled much before the required date of 26th January 2015. Such overwhelming support by people to be financially included was never seen before. Record Number of 11.50 crore bank accounts have been opened under PMJDY as on 17th January 2015 against the original target of 7.5 crores by 26th January, 2015. In fact, it has entered the Guinness Book of World Records as the highest number of bank accounts opened in one week (18096130 accounts between 23rd to 29th August, 2014).

However, the concept is not much different from earlier introduced schemes. Thus assessment of PMJDY for a state like Odisha which is one of the most unbanked states of India is desirable from supply as well as demand points of view. The objectives of the present paper are as follows:

- 1) To evaluate the PMJDY with reference to Odisha.
- 2) Assessment of PMJDY in Odisha from the point of view of women beneficiaries (demand point of view).
- 3) Assessment of PMJDY from the points of view of bankers (supply point of view).

II. Research Methodology

Secondary data were collected from the websites of Ministry of Finance, Government of India for information on PMJDY. Data from various other sources such as Economic Survey of Odisha, various journals and articles were collected which have been duly acknowledged. Since it is too early to make any sort of impact study of PMJDY, the paper tries to look at benefits and drawbacks of the scheme from bankers and customers' point of view in Odisha. The focus is on commercial banks because they account for a substantial percentage of banking in Odisha in terms of branches, deposits and advances. The two commercial banks that are chosen are State Bank of India (hereafter SBI), and Odisha Gramya Bank (hereafter OGB) representing the public sector banks and rural banks respectively. For the opinion polls, a random sample of 50 bankers across different grades from the two banks was chosen to get the supply side view. Similarly, a random sample of women beneficiaries from 100 households was chosen to get the demand side view. The women from 100

households are deliberately chosen from urban slums for two reasons. One is that women are part of vulnerable groups. Secondly, assuming that they are more knowledgeable than their rural counterparts their opinions would reflect the relative success/failure of this scheme. The constraint of the present study is that we have taken only those districts which are common to the operations of both SBI and OGB. Hence only thirteen districts are covered.

The paper is divided into five sections including the section of introduction. In section II the features of PMJDY are briefly discussed. Section III focuses on banking in Odisha. In section IV the paper tries to have a comparative analysis of status of PMJDY in public sector and rural banks in Odisha. Empirical findings are analysed to look at the demand side and supply side of financial inclusion in section V. Lastly, summary conclusions and policy suggestions are discussed in section VI.

III. Features of PMJDY

Realising the value of inclusive growth both government and Reserve Bank of India have taken several initiatives prior to launching of PMJDY scheme for the purpose of decreasing financial exclusion. Major initiatives taken in this regard were introduction of 'No-frill Accounts', simplification of Know Your Client (KYC) norms, general credit card (GCC) facility with the objective to provide hassle free credit up to Rs.25, 000 basing upon future cash flows, use of technology, new branch at unbanked areas and financial education.

Under PMJDY, an account can be opened in any bank branch or Business Correspondent (Bank Mitra) outlet. PMJDY accounts are being opened with Zero balance. However, if the account-holder wishes to get cheque book, he/she will have to fulfil minimum balance criteria. It focuses on coverage of households as against the earlier plan which focused on coverage of villages. It focuses on coverage of rural as well as urban areas. Earlier plan targeted only villages above 2000 population while under PMJDY the whole country is to be covered by extending banking facilities in each sub-service area consisting of 1000 – 1500 households such that facility is available to all within a reasonable distance. Any individual above the age of 10 years can open an account.

The main features of the scheme are as follows:

- a. Interest on deposit.
- b. Accidental insurance cover of Rs.1.00 lakh
- c. No minimum balance required.
- d. Life insurance cover of Rs.30,000/-
- e. Easy Transfer of money across India
- f. Beneficiaries of Government Schemes will get Direct Benefit Transfer in these accounts.

- g. After satisfactory operation of the account for 6 months, an overdraft facility will be permitted
- h. Access to Pension, insurance products.
- i. Accidental Insurance Cover, RuPay Debit Card must be used at least once in 45 days.
- j. Overdraft facility up to Rs.5000/- is available only in one account per household, preferably lady of the household.

Looking at the above features in a more detailed manner, one finds that the scheme provides for life cover of Rs. 30,000/- payable on death of the beneficiary due to any cause, but with fulfilment of certain eligibility conditions: These basic eligibility conditions are i. Person opening bank account for the first time, with RuPay Card in addition, during the period from 15-08-14 to 26-01-15, or any additional period as may be extended further by Government of India. ii. The person should normally be head of the family or an earning member of the family and should be in the age group of 18 to 59 (i.e. person should be at least 18 years old, and should not have completed 60 years of age). In case the head of family is 60 years or more of age, the second earning person of the family in the above mentioned age group will be covered, subject to eligibility. Person must have a RuPay card and Bio – Metric card linked to bank account if not already there. iv. For the coverage to be effective the above RuPay Card should be valid and in force at the time of the death of the member v. Only one person in the family will be covered in the Bima Scheme and in case of the person having multiple cards / accounts the benefit will be allowed only under one card i.e. one person per family will get a single cover of Rs.30,000/-, subject to the eligibility conditions. vi. The life cover of Rs 30,000/- under the scheme will be initially for a period of 5 years, i.e. till the close of financial year 2019-20. Thereafter, the scheme will be reviewed and terms and condition of its continuation, including the issue of future payment of premium by the insured thereafter, would be suitably determined. vii. In case the PMJDY account is held jointly, then the first account holder i.e. primary account holder will be eligible for cover subject to the eligibility conditions.

The significance of discussing the above features is to look into the fact that whether the beneficiaries are really aware of the intricacies of the scheme. The bankers have been instructed to open accounts in easiest possible manner and treat this as corporate social responsibility. However, whether the targeted beneficiaries are educated enough to take positive advantages of the scheme or not is yet to be judged. This is going to be tested in section V.

IV. Banking in Odisha

Access to institutional finance is one of the most important ways of looking at financial inclusion. The average population per bank branch in Odisha declined from 16,800 in March

2003 to 12284 in March 2013 which is somewhat comparable to the national average figure of 12,200. Nearly 54% of bank branches of Odisha are in rural areas. The percentage is 26.75 and 19.6 for sub urban and urban area respectively (Odisha Economic Survey, 2013-14). The growth rate of deposits has been 19.53% as on January 2015.

The financial sector in the State is dominated by commercial banks (Table 1). The branches of commercial banks constitute 91.08% of all banks having 96.18% of total deposits and 95.15% of advances. As per latest information the C.D ratio of commercial banks is 75.87. Commercial banks can be divided into three major groups-public sector banks, private sector banks and regional rural banks. The public sector banks are dominated by State Bank of India constituting 33% of branches; 40% of deposits and 40% of advances of total public sector banks. Similarly among RRBs, OGB is a major component constituting 53% of RRB branches, 60% of total RRB deposits and almost 59% of total RRB advances. The number of branches of commercial bank has increased to 3483 in 2012-13 but the unfortunate fact is that the per capita bank deposit of commercial banks in Odisha in 2012-13 is 34,232 rupees, much below the national average of Rs 56,380.

Apart from the branch network and its population coverage, another major indicator of banking development is the credit-deposit (CD) ratio. In the turn of the last decade in 2001, the CD ratio of Odisha at 42 per cent was way below the national average of 54 per cent. As the State experienced rapid economic growth, the CD ratio not only accelerated but also exceeded the national average and peaked at 79 per cent in 2005-06. Subsequently the CD ratio moderated, particularly after 2007-08 when growth slowed. As on latest information Odisha's CD ratio is at 86.94 per cent.

Table1: Total Bank Deposits and Advances of Different Categories of Banks of the State - at the end of 2012-13 (in Crores)

Banks	No of branches	Total Deposits	Total Advances	C- D Ratio
SBI	706	45164	38845	86.01
Total Public Sector banks	2313	113037.89	98445.52	87.09
Total Pvt Sector Banks	269	17684.33	11465.36	64.83
Odisha Gramya Banks	475	6098.5	3639.62	59.68
Total RRBs	901	10155.16	6170.26	60.76
Total Commercial Banks	3483	140877.38	121169.61	86.01
Total cooperative Banks	341	5587.77	6172.42	110.46
Grand total	3824	146465.15	127342.03	86.94

Source: Odisha Economic Survey, 2013-14, Planning & Co ordination Department, Bhubaneswar.

Against this background, it is important to bring the poor and under-privileged sections of the society within the banking fold for inclusive growth. In this context, the recent financial inclusion drive through PMJDY is important.

V. PMJDY: OGB vis-a-vis SBI

As already discussed, the banking penetration should be such that every unbanked person has an account and access to credit and for this the formation of PMJDY scheme was introduced. Now the question is whether the vulnerable group of population is really benefited. Whether the mere opening of an account is enough to embrace each and every person particularly the women into the mainstream is to be tested.. To look into this, the present study tries to take up a comparative analysis of two types of commercial banks, the public sector banks and the RRBs.SBI is chosen from public sector banks and OGB is chosen from RRBs. The significance of taking these two banks is that they are well spread over a vast area of the state. Since the operation of OGB is only for thirteen districts we have restricted the comparison to thirteen districts only.

Now coming to PMJDY, nearly 41.63 lakh accounts have been opened in the state (by 31st Jan, 2015). The total deposit for these accounts comes around Rs 240 crores. Taking only SBI and OGB, the absolute number of accounts opened under SBI is higher than that of OGB. Table 2 analyses the percentage of zero balance accounts and average deposits per account under PMJDY. It is found that the percentage of zero balance accounts is much higher for SBI (68.77%) compared to OGB (54.60 %). If one looks at inter district comparison, one finds that for the public sector bank the percentage of zero balance accounts ranges from 61.76 % (Jajpur) to 77.71% (Nayagarh).On the other hand , the percentage of zero balance accounts for RRBs ranges from 34.63% (Jagatsinghpur) to 63.58% (Puri). Thus, it can be inferred that probably, SBI has not been successful to create sufficient awareness among the beneficiaries regarding different eligibility conditions associated with PMJDY. The average deposit per account is much higher for OGBs compared to SBI. If the above mentioned factors are taken as indicators for financial inclusion, OGB scores higher than SBI. The other probable inference that may be drawn is that perhaps more number of accounts are opened just to fall in line with the directives of the central government.

Table2: District wise PMJDY Accounts and deposits of SBI & OGB, Odisha

Districts	% of Zero balance Accounts		Avg deposit per Account	
	SBI	OGB	SBI	OGB
Angul	69.29	57.61	420.30	793.11
Balasore	64.22	58.07	460.83	905.80
Bhadrak	69.65	58.12	303.08	502.05

Cuttack	70.08	40.79	416.29	708.63
Dhenkanal	65.28	57.40	443.78	995.82
Jagatsinghpur	72.74	34.63	357.73	739.78
Jajpur	61.76	55.88	501.19	796.73
Kendrapada	69.19	37.34	351.64	974.65
Keonjhar	72.20	51.21	368.46	956.35
Khordha	73.93	55.82	337.12	683.59
Mayurbhanj	71.80	59.98	446.84	980.56
Nayagarh	77.71	57.23	278.31	1115.90
Puri	64.05	63.58	361.86	602.52
Total	68.77	54.60	395.54	831.89

Source: Local head Office, SBI, Bhubaneswar & Local Head Office, OGB, Bhubaneswar

Table 3: Female PMJDY account holders, Rural, Urban& Total (in %)

Districts	% of Female account holders(rural)		% of Female account holders(urban)		% of Female account holders(total)	
	SBI	OGB	SBI	OGB	SBI	OGB
Angul	56.50	31.71	53.57		55.62	31.71
Balasore	50.17	35.77	46.75		48.91	35.77
Bhadrak	44.48	39.07	46.66		45.30	39.07
Cuttack	45.99	26.57	47.51	35.17	46.48	27.57
Dhenkanal	48.46	15.00	44.67		46.82	15.00
Jagatsinghpur	40.78	41.62	41.34		40.93	41.62
Jajpur	42.77	33.78	42.47		42.76	33.78
Kendrapada	50.53	41.73	46.74		49.46	41.73
Keonjhar	52.75	53.69	38.86		50.04	53.69
Khordha	48.70	29.97	49.77	38.51	49.39	30.92
Mayurbhanj	46.59	52.52	51.70		48.36	52.52
Nayagarh	49.54	26.15	34.93		48.99	26.15
Puri	50.29	26.72	43.03	5.38	48.38	26.31
Total	48.32	35.40	47.25	33.74	47.97	35.37

Source: Calculated from SBI and OGB data

Table 3 describes the female PMJDY account holders as a percentage of rural, urban and total account holders for both the banks. It is found that percentage of female account holders in OGB (35.37%) is lower than SBI (47.97%) . Among the different districts the percentage is higher for SBI than OGB except in three districts Jagatsinghpur, Keonjhar and Mayurbhanj. If the data are decomposed into rural and urban area, one finds that even for rural areas the situation is same notwithstanding the fact that OGB is predominantly a rural bank. As Table 3 suggests OGB has no urban branches in most of the districts. For OGB, rural as well as urban (only three districts as well as total) female participation in financial inclusion is poor. The percentage of female account holders is much below 50% in all the districts except Mayurbhanj and Keonjhar. Thus one can infer from the above analysis that OGB has not done enough to attract women beneficiaries.

VI. Findings of the study

For the poor and vulnerable, financial inclusion is very much required. However, the demand side must be fulfilled with the supply of facilities. The demand side comes from the customers and it is well known that they are having no/little access to institutional finance. For this purpose, the significance of PMJDY from demand view point is analysed by taking the beneficiaries into account. Similarly the supply side view is taken by collecting the views of the bankers.

6.1 Demand side view

For the study, a random sample of 100 women beneficiaries of PMJDY were chosen from two slums in Bhubaneswar -one from unit-8 and the other from unit-3-to have a cross section data for demand view point. Here it is not restricted to the two banks mentioned earlier primarily because they could not identify the names of banks clearly. Rather everybody showed the pass books issued to them. All of them are working in informal sectors. 80 of them are working as domestic helps. Rest twenty are engaged in laundry work and part time cooking etc. Each woman has some sort of independent income. The average earning of the sample is around rs 2500 p.m. Out of one hundred respondents 79 were illiterate; 16 were literate and 5 were having education level of primary and above. The age of the women varies between 17 to 55. Eighty five of them are married.

To test the awareness of these women a number of questions were asked based on the features of PMJDY. Table 4 analyses the percentage of beneficiaries responding to various features across different educational levels. It was found that only three features i.e interest on deposits, no minimum balance required and DBT facilities are well understood by all of them irrespective of education level. However, regarding the other questions the response was not very clear. Almost all of them are ignorant about the eligibilities required for availing the benefits. The correlation between literacy and awareness is not at all there.

Table 4: Response of the women beneficiaries to different features of PMJDY (Demand Side) in %

Sl No	Features	illiterate	literate	Primary and above	total
1	Interest on deposits	100	100	100	100
2	No minimum balance required	100	100	100	100
3	Overdraft of rs 5000	100	100	100	100
	(i) do you know the conditions	0	12.5	40	4
4	Rupay debit card	94.94	75	100	92
5	Life insurance cover of rs 30000	88.61	93.75	80	89
	(i) do you know the conditions	0	6.25	20	2
6	Easy transfer of money across India	63.29	62.5	80	64
7	DBT facilities	100	100	100	100
8	Accident insurance of one lakh	77.22	68.75	60	75
	(i) do you know the conditions	0	6.25	20	2
9	Operation of account for minimum 6 months	0	0	20	1
10	Access to pension and insurance product	0	0	0	0
11	What prompted you to open?			0	0
	(i) Advised by bankers	69.62	25	20	60
	(ii) T.V	18.99	56.25	60	27
	(iii) Demonstration effect	11.39	18.75	20	13

Source: Field Report

One of the most important facts found was that a majority of them were motivated by bankers to open accounts. It can be inferred that the priorities of these schemes are to fulfil the target rather than making them aware about the benefits they are going to derive and the procedures required to avail of the benefits. No-minimum balance account and financial inclusion are not necessarily correlated. This is rather a target fulfilling objective of the bankers. Similarly being literate is not enough to be financially aware. On the other hand, regular advertisements on news paper and on TV have made them more knowledgeable at least in one factor i.e. that they cannot be refused by any bank to open account with slightest deviation from norms which is a positive sign. On the other hand 92 of them said that various advertisements on TV and newspapers made them think that benefits will be sanctioned to them once they open the accounts. Thus the modalities and

conditions for operation of such accounts and the subsequent benefits that would be accrued to them are not known to them. In this respect the purpose of financial inclusion of the women beneficiaries is defeated.

6.2 Supply side views

The supply side views are analysed by taking the experiences and opinions of fifty bankers across different grades of two banks. Bankers of both the banks have successfully executed the scheme. However, there are major differences between the two in terms of cost, technical knowhow, infrastructure facilities, credit risks and lack of manpower. On the part of SBI, it is not a difficult task to open accounts as they are using the B.C. (business correspondent) model and outsource the task to the B.C's known as bank Mitrs. The Bank Mitrs, on their part, engage the local unemployed youth who are familiar with local people's habits and customs to open accounts in CSPs (customer service points).

On the other hand, in spite of the fact that the penetration of RRBs is basically rural, the bankers from OGB are finding it difficult as they do it by themselves. Cost factor is also a major hindrance as it was found out that the RUPAY cards had not been issued by OGB (only around 1% of total accounts has been issued Rupay cards) due to the fact that different firms have quoted prices not viable for them. As against this, Rupay card issued as a percentage of total number of accounts is 86.83% for SBI. For almost all bankers it is a part of social responsibilities. Lack of proper education to understand the minimum financial transactions have made them apprehensive about the scheme.

Table5: Supply Side response to PMJDY by Bankers (in %)

Opinion	SBI	OGB	TOTAL
Social responsibility	96	80	88
lack of manpower	24	92	58
Lack of infrastructure facilities	40	96	68
Credit risk	84	84	84
Lack of technology	32	84	58
Credit counselling	72	92	82
Preference of overdraft to women	76	64	70

Source:Opinion poll survey

Table 5 gives an account of responses by the bankers to the different parameters in percentages. It is found that for a smaller bank like OGB lack of manpower, lack of technology and lack of infrastructural facilities are most important constraints compared to SBI. On

the other hand, for credit counseling the percentage is higher for OGB. Thus, it may be inferred that OGB has been relatively more successful in making the beneficiaries aware of the credit and insurance related features of PMJDY.

VII. Summary, Conclusion and Policy prescriptions

The aim of the study was to look at the financial penetration of PMJDY for women in Odisha. For this purpose commercial banks were chosen .One public sector bank and one regional rural bank were chosen as these banks compared to other banks have a better spread in Odisha. In our study SBI represents the public sector bank and OGB represents RRBs as they have wide coverage in terms of branches, deposits and advances.

One finds that huge number of accounts in commercial banks have been opened under PMJDY. Features of PMJDY are designed in such a way so as to empower the poor and vulnerable in general and women in particular. The bankers in our sample substantiated this concept as 70 percent of them are in favour of advancing loans to women. However, from the demand side it was found that the women do not know enough of this scheme to take advantage of the programme.

Given the lower penetration of formal credit and recourse to money lenders what matters is the availability of credit to women. Assuming that the urban women are more articulate, the finding implies that the poor and working class women beneficiaries are yet to know much about the intricacies of PMJDY. Thus one may infer that the picture might be worse for rural women. In this respect financial empowerment of women is still a distant dream. For example, one of the conditions to be eligible for additional financial services is that the account should be operative at least for six months. If any account holder with zero balance is not aware of this, he/she will be out of the financial system. Without proper support system accompanying the scheme, the women of Odisha would lag behind their counterparts in other states.

The following suggestions are made on the basis of the present study.

- 1) The frequency and intensity of meetings between bankers and beneficiaries should be increased to create demand for financial products and services. Active Rupay cards and operation of accounts as the prerequisites for availing of any further benefit should be clearly conveyed to the beneficiaries. Here the role of electronic and print media is very important.
- 2) Regional Rural Banks should emphasise on taking more women into their fold. Our data shows that the percentage of women account holders is very less for these banks.
- 3) Public Sector banks will have to launch a massive campaign to create full awareness

among the beneficiaries and improve the level of financial literacy. Our data show that the percentage of zero accounts is very high reflecting the low level of awareness.

- 4) Banks must focus on mobilization of savings by motivating the women beneficiaries and extending hassle-free bank credit in the lines of SHG-Bank linkages.
- 5) Banks should perceive financial inclusion as a business opportunity rather than a compulsion and use it as a means to expand resource base of the country's financial system, protect low income group from being exploited.

Finally, if it was the UPA government who has called DBT programme a game changer in 2012, it is now the turn of Modi Government to call PMJDY a game changer. What is clear is that it is a game. What is not clear is that whether India's unbanked poor-the pawns in these games -will benefit in future or not. Women's' participation in financial inclusion is long way to go and only time will test the effectiveness of PMJDY scheme.

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Financial Inclusion: A Catalyst to Economic Growth of Odisha

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Financial inclusion has become one of the critical aspects in the context of inclusive growth and sustainable development in a developing state like Odisha. Financial sector stability and thus, development attained through financial inclusion can break the vicious circle of poverty, and take away the people at the bottom of the pyramid. In the long-run, financial inclusion through its multiplier effects, would enable people of the state to invest in better nutrition, housing, health and education, and would help generating larger employment opportunities, reducing inequalities, and would help removing poverty. Thus, the government needs to create an enabling environment for banks and financial institutions to work effectively for achieving greater degree of financial inclusion in the state. The banks and private players in turn need to move beyond treating this, an obligation and recognize and appreciate the business potential of tapping into yet underserved areas and design appropriate and innovative products and business models. In achieving financial inclusion in the state, the role of social sector and more importantly the technology should not be underestimated. In this context, this paper is an attempt to advocate for financial inclusion as a catalyst to long-run economic growth of resource rich Odisha.

Key words: Financial Inclusion, Inclusive Growth, Odisha

1. Introduction

Since last few decades a consensus has been developed that the financial system can serve as a catalyst to economic growth and development of a nation. Strong and robust financial institutions are the pillars of economic growth, development and prosperity of modern economies (Rao and Bhatnagar, 2012). The formal financial channels collect savings and idle funds and distribute them to entrepreneurs, businesses, households and government for investment projects and other purposes with the view of a return. In this way financial system plays the role of intermediation and acts as a buffer in the mobilization

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and allocation of savings for productive activities in an economy. Precisely, managing the financial liquidity to avoid inflationary pressures and to flush out enough liquidity to sustain the growth are the main functions of financial systems among others. Realizing this importance of financial sector in bringing about a balanced sustainable inclusive growth, the architects of Indian economy strived to focus on financial inclusion – a key driver for economic development at national level and economic empowerment at an individual level as a human right of the modern age (Lewis, 2007)¹.

Amartya Sen (2000) persuasively reiterated that poverty is not merely insufficient income, but rather the absence of wide range of capabilities, including security and ability to participate in economic and political systems. Consequently, the poor and deprived are required to be provided with much needed financial assistance in order to cruise them out of their conditions of poverty. Accordingly, there should be an appropriate policy support in channeling the financial resources towards the economic upliftment in any developing economy. Financial inclusion is intended to connect people to banks with consequential benefits, ensuring that the financial system plays its due role in promoting inclusive growth.

Financial inclusion is considered as the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players. The purpose of financial inclusion is to provide equitable opportunities to every individual to avail the facility of formal financial channels for better life, better living, and better income. Financial inclusion is, thus, a policy support which has been designed to provide essential financial assistance to the people at the bottom of the pyramid in order to sail them out of their conditions of poverty.

Financial inclusion promotes thrift and develops the culture of savings and also enables efficient payment mechanism by strengthening the resource base of financial institutions which benefit the economy as ample resources become available for efficient allocation among productive avenues. Thus, financial inclusion has significant potential as a means of achieving inclusive growth. In a developing nation like India, poor people are more vulnerable because their major problems arise from the need for finances. The formal banking services, by exploiting economies of scale, and making judicious use of targeted subsidies may reduce or eliminate market imperfections and facilitate financial inclusion of the poor, ultimately leading to higher incomes. The access to financial services by poor people would lead to their consumption smoothing and investments in health, education and income generating activities, thus, expanding growth opportunities for them (Dixit and Ghosh, 2013).

Financial exclusion leads to social exclusion. The excluded sections of the society comprise marginal farmers, landless labourers, self employed in informal and unorganized sectors, urban slum dwellers, migrants, ethnic minorities and a chunk of senior citizens and women. Access to a well-functioning financial system, by creating equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to development and protects themselves against economic shocks. Access to finance by the poor and vulnerable groups is a prerequisite for poverty reduction and social cohesion. It is, thus inferred that financial inclusion increases the amount of available savings, increases efficiency of financial intermediation, and allows for tapping new business opportunities thereby improving the socio-economic standards of people (Banerjee and Francis, 2014).

It is with this backdrop, this paper is an attempt to examine the role of financial inclusion as a catalyst to economic growth of Odisha, a rich state of emerging India amidst poverty. The rest of the paper is organized as follows: Section 2 reviews the relevant extant literature; Section 3 makes the discussion of the linkages between financial inclusion and economic growth; Section 4 makes an analysis of the performance of financial inclusion plan in Odisha, spells out the reasons for its sluggish stance, and also comes out with viable suggestions; and Section 5 concludes.

2. Literature Review

At the outset, a large body of existing literature on financial economics identifies the possible reasons for financial exclusion. The people with low income and living in rural/remote areas are outside the ambit of formal financial system due to strict identity requirements by financial institutions (Collard et al., 2001; Connolly and Hajaj, 2001), stringent terms and conditions (Caskey, 1997; Kempson et al., 2000); high transactions costs, refusal by banks (Bayot, 2002; Belsky and Calder, 2004), physical access problems caused by bank closure (Caskey, 1997; Kempson et al., 2000), psychological and cultural barriers, social security problems (Kempson et al., 2004), lack of secured and profitable financial products (Kempson and Whyley, 1999), and proper financial literacy (Kempson et al., 2004; Wallace and Quilgars, 2005). Thorat (2007) has highlighted the reasons like hilly and sparsely populated areas with poor infrastructure, lack of awareness, low income/assets, and social exclusion, illiteracy, distance from branch, branch timing, tedious documentation procedures, unsuitable products, language, staff attitude and requirements of independent documentary proof of identity and address etc. for widespread financial inclusion in India. Regarding the extent of financial exclusion in Indian states, Mohan (2006) provides the facts as in Table-1. Financial exclusion causes a number of socio-economic and other problems such as poor means of livelihood, bad education and health, worst social security, unemployment, inequality and poverty (Mishra, 2014a).

Table-1: Extent of Financial Exclusion in Indian States

Extent of Financial Exclusion	Indian States
Above 75%	Meghalaya, Arunachal Pradesh, Uttarakhand, Assam, Mizoram, Manipur and Jharkhand
Between 50% - 75%	Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Nagaland, Odisha , Sikkim, Tripura and Uttar Pradesh
Between 25% - 50%	Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu and West Bengal
Below 25%	Andhra Pradesh

Source: Mohan, Rakesh (2006)

Thus, it has been conceived, perceived, and observed that financial inclusion can be a catalyst to socio-economic development that can effectively and efficiently overcome the major social problems of unemployment, inequality and abject poverty. Empirical evidence using household data indicates that access to basic financial services such as savings, payments, and credit can make a substantial positive difference in poor people's lives (Caskey, Duran, and Solo 2006; Dupas and Robinson, 2009). Sameer (2009) emphasized on the scaling up the access to finance for India's rural poor through viable and cost effective Business Correspondence model of financial inclusion policy. Joshi (2011) by emphasizing the role of financial inclusion in the process of poverty alleviation, agriculture, industry, infrastructure and human resource development, suggests that banks should not merely provide access to financial services, but at the same time should work to generate capacity within population to prepare themselves for development.

Karmakar, Banerjee, and Mohapatra (2011) make out a strong case for considering financial inclusion from a much broader perspective, and argue that the objective should include meeting not just micro-credit needs, but also micro-insurance to cover emergencies, besides providing regular pension by way of old age security. This demand side analysis is presented in the study in general terms as well as with particular reference to farmers and tribal people. As for the supply side, they look at different models of providing financial services such as Business Correspondents and Facilitators; the Regional Rural Banks; and the Post Offices.

Kuppan (2012) argued that financial inclusion is a great step to alleviate poverty in India, and to achieve this, the government should provide a congenial environment in which banks are free to pursue the innovations necessary to reach the unreached and still make

profit. In this connection, Srinivasan (2012) prophetically advocated that there are posts of gold at the bottom of the pyramid; banks can see long term profitability by looking at it rather than at the top. So, financial inclusion is not only a profitable business model for banks, but at the same time a policy stimulant for achieving inclusive growth.

Sahu (2013) in an empirical study found that the low rate of financial inclusion in Indian states is due to low rate of growth of per capita net state domestic product. Dixit and Ghosh (2013) in a study argued that for achieving inclusive growth there is a need for resources, and for resource generation and mobilization efficient and transparent access to financial services is a must, and this can be accomplished through financial inclusion. In a similar study Banerjee and Francis (2014) emphasized that access to basic banking services provides congenial conditions for growth of individuals, households and private institutions, and thus, a sustainable socio-economic development can be simultaneously achieved alongside financial inclusion. Shyni and Mavoothu (2014) emphasized on the pivotal role of formal financial institutions, NGOs and SHGs for inclusive growth through financially including the low income and weaker section of the population.

However, studies concerning the role of financial inclusion in the economic growth of Odisha are a few. Mohanty (2013) argued that financial inclusion is an inevitable means of achieving rapid economic development in Odisha. He said that socio-economic underdevelopment is due to financial exclusion, and addressing financial exclusion requires a holistic approach that creates awareness about financial products, education and advice on money management, debt counseling, savings and affordable credit – the various dimensions of financial inclusion. Sahoo (2013) found the evidence of 70 per cent success of the use of accounts with banks and post offices in Odisha for the wage payment under MGNREGA as a means to accelerate the pace of financial inclusion especially in rural areas. Subudhi and Nishanka (2012) advocated for the tribal banking as an effective means of achieving greater degrees of financial inclusion in Odisha. Mishra (2014a) examines the role of financial inclusion in contributing to inclusive growth of Odisha, and suggests that a proper banking policy, financial literacy plans, and projects on micro pension and micro finance can go a long way in making the State a stable, industrialized and developed one.

It is, therefore understood that financial inclusion is essential for fostering economic growth in a more inclusive fashion in an emerging state like Odisha. For financial inclusion to promote growth, the policy objective should move from 'opening an account' in banking and non-banking sectors to developing the habit of regular savings, and finally to a relationship which enables the borrower to access credits on regular basis mostly for productive purposes.

3. Financial Inclusion and Economic Growth

Financial inclusion is integral to the inclusive growth process, and sustainable development of a country. Financial inclusion gives the poor the resources to migrate for better jobs, invest in entrepreneurship, and insure themselves against bad times, and economic shocks. Thus, financial inclusion is a new paradigm of economic growth which plays a major role in driving away the poverty (Mishra, 2014b). Financial Inclusion, which gained importance since early 2000's due to the findings about financial exclusion of nearly 3 billion people across the world and its positive correlation with poverty, is fundamental to the social agenda of reducing poverty and income inequality (Bhasin and Thenmozhi, 2014). In India, financial inclusion as policy initiative came into being in 2005. Since then it has been implemented as a flagship policy in the country.

The 11th Plan period of India emphasized on the importance of faster, sustainable and more inclusive growth of the country thereby reducing poverty, creating employment opportunities, enhancing access to health and education, and providing for environmental sustainability. All these called for including people from all the strata of the society in the mainstream of the financial system and hence, economic system of the nation. Access to a well-functioning financial system, by creating equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to development and protects themselves against economic shocks.

Financial inclusion is thus, a policy initiative to achieve the inclusive growth provided it is supported by various factors like real initiatives from banks and financial institutions, technological development, financial literacy and so on. In order to address this issue, there can be three approaches: (i) the strategies of financial inclusion should be such that savings, including small savings, are effectively mobilized and channelized through a formal financial system and converted to investments for sustainable and inclusive growth; (ii) easier and safer access to various financial services such as accumulating savings, availing credit facilities, making investments, and other financial transactions, provide some economic opportunities to vulnerable populace of the nation thereby alleviating the menace of poverty; and (iii) financial inclusion can contribute to inclusive growth of the country by facilitating the transfer of funds directly to the accounts of the beneficiaries of flagship programs of government of India such as National Rural Employment Guarantee Programme, Social Security Programme, etc. thereby permanently solving the problems of procedural complexity of cash payments, unnecessary delay, leakages of money before reaching the hands of the beneficiaries, high transaction costs, etc.

So, it is highly essential that the financial inclusion plan should be a success. There can be

a three dimensional approach which is required for the success of financial inclusion in Odisha – first, there should be the availability of transparent, fair and affordable products and services which enable households to save, borrow and invest; second, there should be a responsive policy framework which promotes fair products and services and eliminates harmful ones; and third, there should be a broad-based delivery system which connects low-income households with high-quality services. Then only the sweet fruits can amuse everyone interested to grow with others.

4. Financial Inclusion in Odisha

The economy of Odisha is predominantly agrarian and rural-oriented. Prevalence of acute and persistent poverty had characterized the economy of Odisha in the past. The recurrent events of natural calamities have further exacerbated the distress of the people, particularly the weaker sections of the society such as small and marginal farmers and landless labourers. A large number of rural communities are physically excluded for want of connectivity and other infrastructural support. The rural people depend mostly on agriculture to eke out their subsistence. However, agricultural growth in Odisha is virtually stagnant and employment opportunities are rather limited. The state has a fairly well spread structure of banks with one branch of commercial bank for around 17 thousand persons on an average. In spite of this, many people in both rural and urban areas do not have access to the banking system, and they lack proper awareness of the banking products. As per Census 2011, out of the 96,61,085 households of Odisha, 43,51,103 (nearly 45%) have availed banking facility. In rural areas, out of 81,44,012 households, 33,40,993 (about 41%) and in urban areas, 10,10,110 of 15,17,073 households (66.6%) have access to banking services. Others are simply financially and hence, socially excluded.

In the State, there are several reasons why people are financially marginalized. In remote, hilly and scarcely populated areas with poor infrastructure, physical access itself acts as a deterrent. Lack of awareness and low income, are the causes of social exclusion. Illiteracy acts as barrier for financial inclusion. Distance from the branch, the stipulated timings, cumbersome documentation and procedures, unsuitable products, language, staff attitudes are the common reason of exclusion. It also makes it difficult to arrange the independent documentary proof of identity and address for transacting through a bank account especially for poor migrants and slum dwellers. Thus, achieving financial inclusion is the primary objective which has multiplier effects in terms of increased economic activity, greater employment opportunities, reduced inequality, better income, health and education. All these can be instrumental for the upliftment of marginalized sections of the society.

The highlights of the progress of financial inclusion plan in Odisha are as follows. The number of Bank Branches in Odisha up to June 2014, has increased to 4338 recording a growth rate of 12.9% over the corresponding period of last year. Out of this, 2372 branches are in rural areas, 1150 branches are in semi-urban areas and 816 branches are in urban areas. The deposit has also increased to RS.1,70,527.24 cr recording a growth of 13.66% over last year for the same period. Though the advances in priority sector have been 57% as of June 2014 against national norm of 40%; still there is a decline in percentage of priority sector advance to the total advances given by banks. The banks in Odisha have made provision for banking facilities in 1877 unbanked villages having population of more than 2000 by March 2012. Of these, 54 villages are covered through bricks and mortar branches, 7 villages through ultra small branches, 1740 villages through appointment of Business Correspondents and 83 through mobile vans. In addition, 1502 villages with population between 1600 and 2000 were identified for banking facilities by 2013. Similarly, by March 2012, over 6 lakh No-frill accounts were opened and 24 financial literacy counseling centres were also established. During 2011-12, over 10 lakh Kissan credit cards were issued. Moreover, over 8000 Swarozgar credit cards and over 1000 Artisan credit cards were issued. During 2011-12, over 58000 SHGs were made credit-linked. The State government has been providing interest subvention on crop loans to farmers and term loans for agriculture as well as short term and long term loans to fish and dairy farmers to provide institutional credit to them at affordable rates. Table-2 clearly indicates the significance of banking sector penetration in Odisha in promoting financial inclusion plan for inclusive growth of the state.

Table-2: Financial Inclusion Achievements in Odisha (As on End-March, 2014)

Particulars	Achievements in Odisha
Total No. of Branches	3,8602
(a) In Rural	2,189
(b) In Unbanked Villages	343
Total No. of Customer Service Points Deployed	5,189
Total No. of Banking outlets in villages with population > 2,000	3,086
(a) Through Branches	1,443
(b) Through BCs	1,621
(c) Through other Modes	22
Total No. of Banking outlets in villages with population < 2,000	18,365
(a) Through Branches	733
(b) Through BCs	16,360
(c) Through other modes	1,272
Total No. of Banking Outlets in all Villages	21,451
Total No. of BC outlets in urban Locations	55

Basic Savings Bank Deposit Accounts through branches	
(a) No. in actual	53,05,399
(b) Amount (in thousands)	Rs.76,59,723
Basic Savings Bank Deposit Accounts through BCs	
(a) No. in actual	54,91,558
(b) Amount (in thousands)	Rs.17,98,311
Basic Savings Bank Deposit Accounts (Bank as a whole)	
(a) No. in actual	1,07,96,957
(b) Amount (in thousands)	Rs.94,58,033
Over Draft Facility availed in Basic Savings Bank Deposit Accounts	
(a) No. in actual	67,002
(b) Amount (in thousands)	Rs.29,697
Kissan Credit Card (KCC) – through branches	
(a) No. in actual	13,08,873
(b) Amount (in thousands)	Rs.4,48,76,252
Kissan Credit Card (KCC) – through BCs	
(a) No. in actual	13,800
(b) Amount (in thousands)	Rs.2,20,873
Kissan Credit Card (KCC) – Bank as a Whole	
(a) No. in actual	13,22,672
(b) Amount (in thousands)	Rs.4,50,97,126
General Credit Card (GCC) – through branches	
(a) No. in actual	1,75,858
(b) Amount (in thousands)	Rs.57,40,185
General Credit Card (GCC) – through	
(a) No. in actual	3,614
(b) Amount (in thousands)	Rs.31,682
General Credit Card (GCC) – Bank as a Whole	
(a) No. in actual	1,79,471
(b) Amount (in thousands)	Rs.57,71,866
Total transactions in BC-ICT Accounts (during the quarter)	
(a) No. in actual	17,27,594
(b) Amount (in thousands)	53,88,547
Artisan Credit Card (ACC)	
(a) No. of Cards issued	1,514
(b) Amount	Rs. 4.77 cr
Swarozagar Credit Card (SCC)	
(a) No. of Cards issued	4,954
(b) Amount	Rs.16.,585

Weavers Credit Card (WCC) c) No. of Cards issued (d) Amount	7,999 Rs.17.66 cr
Joint Liability Group(JLG)² (a) No. of Application disbursed (b) Amount	13,088 Rs.108.68 cr
SHGs – Bank Linkage Model (a) No. of SHGs (b) Savings of SHGs with Banks (c) Bank Loan Disbursed to SHGs	6.20 lakh Rs.483.77 cr Rs.442.93 cr
Mission Shakti – Credit Linkage provided to Women SHGs (a) No. in actual (b) Amount	36053 Rs.421.85 cr
Credit – Deposit (CD) Ratio (a) Rural (b) Semi-Urban (c) Urban	85.31 % (Benchmark is 60%) 66.17 % 44.33 % 57.66 %
Advance to Weaker Section Advance to Minority Communities	Rs.17,209.14 cr Rs.2,601.35 cr

It is inferred that the banks are performing to the best of their efforts to provide financial services to unreached in affordable costs, and looking at their penetration rate in the state, it can be said that they might have seen the ‘Gold Post’ at the bottom of the pyramid. As per CRISIL Inclusix³ scores, the Odisha has 43.3 point which indicates above average level of financial inclusion in the state. As reported by SLBC, the domestic scheduled commercial banks planned to open 2,361 brick and mortar branches in 2045 GPs of Odisha during by end of March, 2015. Different banks have also been allotted Gram Panchayats for setting up their branches. The state Govt. has agreed to provide 400-500 sq feet built up space in Rajiv Gandhi Seva Kendra of uncovered GPs for opening of 4597 brick and mortar branches free of rent for five years.

On 28 August 2014, Pradhan Mantri Jan Dhan Yojana has been launched in the State in order to deepen financial inclusion. It is a mega financial inclusion plan with the objective of covering all households in the country with banking facilities along with inbuilt insurance coverage. The purpose is to accelerate growth, fight poverty effectively and to empower the last man in the last row at the bottom of the pyramid (Khuntia, 2014). This scheme of

2 JLG is a tool for extending credit to tenant farmers/oral lessees and share croppers for farming activities and also non-farming sector.

3 The CRISIL Inclusix score, which was first time published in June 2013, constructed on the basis of branch penetration, deposit penetration and credit penetration, indicates the overall improvement in the financial inclusion.

‘Mera Khata – Bhagya Vidhaata’ has been showing a satisfactory performance over the last 3 months. As on Nov 7, 2014, Finance Department Report says, 22.28 lakh accounts have been opened in Odisha under Pradhan Mantri Jan Dhan Yojana – a comprehensive scheme for financial inclusion of poor households. Maximum number of accounts has been opened in the districts of Khurda, Cuttack, Balasore and Ganjam while minimum number of accounts has been opened in Gajapati, Rayagada, Malkangiri and Boudh districts.

Despite all these initiatives, the financial inclusion strategy is showing a sluggish performance in Odisha. There are several challenges in achieving total financial inclusion in the state. These challenges are of structural, social and regulatory in nature. The structural challenges are the branch expansion in rural unbanked areas. Human resource operation in remote areas is not profitable for bank that is nearly adjusting 600 million new customers. Offering a simple load product without proper security is the risk for bank management. Processing capacity of the banks is also limited. Regulatory Challenges are to see the followings : (i) viability, (ii) security, (iii) capacity, (iv) cash handling, (v) setting of local service points, (vi) enrolment process – time consuming and identity problems, (vii) issue of personalization cards, (viii) connectivity problems, (ix) reconciliation of transaction with BC and CBS, (x) bank staff not confident at operating level, (xi) BC-cum-technology vendor is an ideal combination, (xii) prospective BCs are sitting on the fence and watching others. Similarly the Social challenges are: (i) rural populace having inhibition to approach bank branches, (ii) illiteracy of lower economy status so inhibition and (iii) lack of active customer education campaign.

It is, therefore, foremost responsibility of the planners, policy makers and regulators to create a congenial socio-economic-cultural-politico and technological environment which shall substantially accelerate the pace of financial inclusion in order to achieve the long-term goal of inclusive growth of Odisha. In this direction, the government plays a regulatory and prescriptive role. However, government action is necessary, but not a sufficient condition to address and tackle financial exclusion issues. The private sector and the social sector have also an important contribution to make financial inclusion a great success. Typically, financial inclusion agenda among banks and private sector has been driven more by regulatory pressure than by profitable business models. Mainstream financial institutions still perceive financial inclusion as an imposition and not as a viable business opportunity. Banks need to look at low-cost innovative products and processes to turn this into the next big business opportunity. Products/services that are relevant for the unbanked remote or rural areas include insurance in order to absorb economic shocks like adverse weather conditions, health emergencies, social insecurities, and products/services for affordable credit keeping in view the seasonal inflow of income and remittances.

Further, banks and other financial institutions can also substantially contribute to inclusive

growth through financial inclusion by reconfiguring their operations to partner with NGOs, SHGs, and other community organizations to perform certain functions. NGOs and community organizations can be effective and efficient outreach partners. Given their deeper understanding of local communities, NGOs can become knowledge partners who can help banks and other financial institutions in designing appropriate products and reduce the associated risks. It is also noteworthy to mention the successful achievements by the micro-finance movement and NABARD's SHGs – bank linkage policy. Last but not the least, NGOs role in imparting financial literacy to their beneficiaries cannot be overstated.

It is now high-time to understand that financial inclusion is no longer a policy choice, but is a policy compulsion and banking is a key driver for inclusive growth. In order to make financial inclusion a great success, the banks and other financial institutions should design innovative financial products beneficial for the deprived sections of the State. Special provisions and policy measure should be framed for promoting small savings and small loans. The people should be encouraged to access banking and other financial services by ways of no-frills account, financial inclusion campaign, business correspondents, and more importantly through effective financial literacy programmes. Any government or social security payments or payments under all the government schemes should be strictly routed through the service area bank account. This will make people in rural areas to compulsorily have an account in their service area branch to avail of the government benefit. The concepts of micro insurance can go a long way in making financial inclusion plan a big success through its favorable impacts in the cases of crop failure, illness or death. It is, thus apparent that addressing financial exclusion will require a holistic approach in creating awareness about financial products, education and advice on money management, debt counseling, savings, affordable credit and micro insurance.

5. Conclusion

Financial inclusion is a fundamental cornerstone of economic and social development. It is an important step towards inclusive growth. It is not only considered beneficial for the overall socio-economic development of the deprived sections of the community, but also a business opportunity for the formal financial institutions including banks. Given the dimension of the challenge and the diverse nature of the financially excluded segment in Odisha, the responsibility of promoting financial inclusion lies equally on each stakeholder of the financial inclusion ecosystem – government, banks, private and social sector. The continuous developments in technology and its adaptability in Odisha offer a great solution for effective penetration of financial inclusion plans to unbanked areas. Technology enables the provision of a host of services from depositing money into various government schemes to micro loans and micro insurance. Thus, from a policy perspective, two things may be relevant. One is to broaden the domain of policy initiatives under financial inclusion,

which will reduce the dependency on informal source of financial services, particularly credit. Second is to provide greater focus on vulnerable regions of the State in providing access to financial services by which they are lagging. The planners and policy makers, financial and non-financial institutions and technology providers can together found a collaborative model to profitably address the social, moral and economic imperatives to bring financial services available easily and at an affordable cost to the vulnerable and poor strata of the society.

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Financial Inclusion among the Urban Tribal Households in Odisha: A Case Study of Jolli Munda Sahi Community, Khordha District

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Financial inclusion is a prerequisite to economic development. It is an intervention strategy of promoting inclusive growth by making available safe, easy and affordable credit and other financial services to the unbanked poor, disadvantaged sections and regions. The financial inclusion initiatives have been on the rise in a bid to have inclusive financial system. The Scheduled caste, Scheduled tribes, and other disadvantaged and lower income groups have been targeted by these initiatives as they mostly are found to be out of the formal financial system. This study is undertaken to find out the level of financial inclusion in terms of access and usage of financial services; and financial awareness among tribal households in Jolli Munda Sahi, a community situated very close to the city of Bhubaneswar. The study reveals that in spite of the availability of financial infrastructure, around 40% of the total tribal households in the community do not have a bank account. The usage pattern of the account holders is also very limited due to lack of proper financial literacy among them. Lack of sufficient and regular income, document requirement and lack financial awareness are found to be the main reasons for involuntary financial exclusion of the tribal households.

1. Introduction

Financial Inclusion, an intervention strategy for promoting inclusive finance and inclusive growth, is a prerequisite to economic development. An inclusive financial system by connecting the unbanked households to the formal financial systems facilitates their participation in the mainstream economic life and improves their financial condition and living standard. It promotes welfare of the people by enabling them to create financial assets, generate income and build resilience to meet macro-economic and livelihood shock (Sarma, 2008; Khan, 2012). Financial inclusion is important because it is considered as an important condition for sustain able growth (Subbarao, 2009). Financial inclusion

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allows individuals and firms to take advantage of business opportunities, invest in their education, save for retirement, and insure against systemic or idiosyncratic risks (Demirgüç-Kunt, Beck, and Honohan, 2009). Empirical studies also show that access to finance allows poor people to protect, diversify, and increase their sources of income which are the essential routes out of poverty, and inclusive financial development can help poor households in buffering sudden shocks to incomes and assets (Sen, 2010).

The promotion of financial inclusion first of all, requires an understanding of the issue of financial exclusion. World Bank (2014) have clearly distinguished between two types of exclusion such as voluntary and involuntary exclusion and very particularly told about exactly what type of exclusion the financial inclusion drive needs to target. Voluntary exclusion arises from the demand side which refers to the segment of the population or firms that choose not to use financial services either because they do not need those services or because of cultural or religious reasons. Some individuals or firms may be involuntarily excluded from the financial system because they do not have sufficient income. These two types of exclusion are not due to the market failure. Another category of involuntarily exclusion group consists of the individuals and firms that are denied financial services as a result of government failures or market imperfections. The objective of the financial inclusion drive is to minimise the percentage of individuals and firms in this category. Therefore the primary objective of financial inclusion is the minimization of financial exclusion arising from market or government failures.

Rural areas have always remained a top priority in the financial inclusion drive as the extent of financial exclusion is more widespread here with only 54.4 per cent of the households are financially included against 67.8 per cent households in the urban area (Census 2011). Though the magnitude of financial exclusion in urban area is less than that of the rural areas, but a large number of urban poor specifically the slum-dwellers, migrated tribal communities, informal sector workers etc. do not have access to even basic banking facilities in spite of the availability of developed banking infrastructure in these areas. The reasons for their exclusion are completely different from that of in the rural areas. The people in the urban area are exposed to the availability of developed banking infrastructure and thus are expected to have better financial awareness as compared to their rural counterparts. Factors such as non-existence of bank branches, physical distance of the bank, fixed and limited timings of the banks, which are the common reasons for financial exclusion in rural areas, are not found here. They may also have a surplus to save because of higher income than the people in rural area. Against this background, a study on financial inclusion in an urban community situated amidst the easy availability of all banking infrastructure would yield important clues to understand the nature and extent of financial inclusion among these people. Again as the scheduled tribes are the most financially excluded groups (63.68 per cent as per Rangarajan Committee on financial inclusion in 2008)

in the country, the financial inclusion status of this group in an urban set up is worth to be studied. In this context, the present paper examines the financial awareness, extent, and usages pattern of financial services by the tribal households of Jolli Munda Sahi Community, Bhubaneswar. The study also tries to identify the factors influencing the financial exclusion of the tribal households in the community.

The study is based on primary data collected from Jolli Munda Sahi community, situated in the city of Bhubaneswar, Khordha District. It is selected purposefully as it is the oldest tribal community of the city. A census study of all the tribal households in the community is done through a structured schedule during third week of February, 2015. From each house-hold, one respondent was selected for the interview preferably the head of the households. Data analysis is done using descriptive statistics.

The paper is divided into six sections. Section 1 presented above introduces the study of the importance of the problem, objectives and its methodological approach. Section 2 deals with the conceptual background of financial inclusion through a discussion of the definitions, factors and initiatives of financial inclusion in India. Sections 3 and 4 presents the financial inclusion status in India and Odisha respectively. Section 5 analyses and presents the findings from the study area and section 6 gives policy suggestions and conclusion basing on the results from the study area.

2. Concept of Financial Inclusion

Financial inclusion can be broadly defined as an economic state where individuals and firms are not denied access to basic formal financial services. The Rangarajan Committee (2008) defines financial inclusion as “the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost”. According to this definition, having a bank account becomes is a very important aspect of financial inclusion. Further, financial inclusion, apart from providing access to bank account should also include access to credit, affordable insurance and remittance facilities, credit counselling and financial literacy. Thus financial inclusion refers to universal access to a wide range of financial services at a reasonable cost (The Raghuram Rajan Committee, 2008). Along with the provision of financial products and services, financial inclusion drive also addresses the removal of barriers in using these services. Hence financial inclusion, or broad access to financial services, is defined as the absence of price or non-price barriers in the use of financial services (World Bank Policy Research Report, 2008).

Most definitions of financial inclusion only discuss the access, dimension implying the availability or the supply side of finance. However financial inclusion is a broader concept which includes not only the supply side but the demand side as well. It is a multi-faceted concept with a number dimensions such as access, usage and impact. *Access* is the ability

to use available financial services and products from formal institutions. A basic proxy for access can be derived by counting the number of open accounts across financial institutions and estimating the proportion of the population with an account. Usage focuses more on the permanence and depth of financial service and product use. It requires more details about the regularity, frequency, and duration of use over time and the data can be gathered through a demand-side survey. And the impact of dimension is known by measuring changes in the lives of consumers that can be attributed to the usage of a financial device or service (Serrao et al, 2012; Hanning and Stefan, 2010).

Financial inclusion is determined by both the supply and demand side factors. Socio-economic factors, factors relating to physical infrastructure and banking sector factors are very closely associated with financial inclusion (Sarma and Pais, 2008). Geographical factors and income inequality are also important in determining financial inclusion of a country (Kempson and Whyley, 1998). The possibility of financial exclusion is more likely to occur in the lower income section of society than amongst others. From the demand side the barriers like low literacy levels, lack of awareness, knowledge and understanding of financial products, Irregular income, frequent micro-transactions, lack of trust in formal banking institutions, and cultural obstacles (e.g., gender and cultural values) are the factors which obstruct the poor from having access to formal finance (Chakravarty 2012). Occupation type and size of income have a strong link with financial inclusion.

Keeping in view the growing importance and the complexity of building an inclusive financial system the Reserve Bank of India and the Government have been taking various initiatives to expand the outreach of banking facilities and to increase the flow of credit. RBI has adopted a liberal bank-led model for achieving financial inclusion and removed all regulatory bottle necks in achieving greater financial inclusion in the country. The recent focus on financial inclusion is the adoption of market oriented approach that should create a win-win situation for both the supplier and the recipients. The importance of business consideration of banks and other financial institutions side by side the promotion of financial inclusion objective for the long-term sustainability of the process is the goal. The broad strategy for financial inclusion in India in recent years comprises (i) encouraging penetration into unbanked and backward areas and encouraging agents and intermediaries such as NGOs, MFIs, CSOs and business correspondents (BCs) (ii) focussing on a decentralised strategy by using existing arrangements such as State Level Bankers' Committee (SLBC) and district consultative committee (DCC) and strengthening local institutions such as co-operatives and RRBs; (iii) using technology for furthering financial inclusion; (iv) opening of basic banking 'no frills' account; (v) emphasis on financial literacy and credit counselling; and (vi) creating synergies between the formal and informal segments (Thorat, 2008). More recently the Pradhan Mantri Jan Dhan Yojana (PMJDY) by the government is a key step in this direction.

3. Financial Inclusion Status in India

In spite of several initiatives taken by the RBI and Government of India, the progress is not satisfactory. The Financial inclusion status of India analysed from different sources shows that though the country is progressing on the path but still a large sections of the population are remaining excluded from the formal financial sector. As per Census 2011, 14.48 crore (58.7%) households in the country have access to banking services. Of the total rural households 54.4% have access to banking services whereas in urban areas 67.8% households are having access. Similarly the NSSO 59th survey reveals that 45.9 million farmer households in the country (51.4%), out of a total of 89.3 million households do not have access credit, either from institutional or non-institutional. Of the total farmer households, only 27 percent have access to formal sources of credit; one third of this group also borrowed from non-formal sources. Overall, 73 per cent of farmer households have no access to formal sources of credit. Across regions, financial exclusion is more acute in Central, Eastern and North-Eastern regions. All the three regions together accounted for 64 per cent of all financially excluded farmer households in the country.

CRISIL, a global analytical company, with support from Ministry of Finance, Government of India and Reserve Bank of India developed an index to measure the progress of financial inclusion in India. The index is known as CRISIL Inclusix which is based upon three tangible and critical dimensions such as branch penetration, credit penetration and deposit penetration. It's a relative index on a scale of 0 to 100 with 100 indicating the maximum score achievable. In June 2013, CRISIL first time published the Inclusix which presented the extent of financial inclusion across 638 districts of India. The all-India CRISIL Inclusix score is 40.1 which is relatively low and is a reflection of under-penetration of formal banking facilities in most parts of the country.

Table 1: Financial Inclusion at Regional Level

Region	Inclusix 2011	Inclusix 2010	Inclusix 2009
India	40.1	37.6	35.4
Southern Region	62.2	58.8	54.9
Western Region	38.2	35.8	33.9
Northern Region	37.1	34.8	33.3
Eastern Region	28.6	26.3	24.3
North East Region	28.5	26.5	23.8

CRISIL's Inclusix 2013

The trend of the financial inclusion score presented in Table 1 shows that the level of financial inclusion is consistently rising from 2009 at all India level and across all the regions.

But wide disparity exists in the financial inclusion scores across regions. The southern region is far ahead of all other regions in the country in terms of financial access. All the top five districts with highest inclusive score in the CRISIL's index are from southern region with 4 districts from Kerala. The top five scoring states in the Index are Puducherry, Chandigarh, Kerala, Goa and Delhi; and the bottom five scoring states include Arunachal Pradesh, Chhattisgarh, Bihar, Nagaland and Manipur. The distribution of 35 States and Union territories of the country according to the CRISIL's Inclusix score is given below:

Table 2: Distribution of States and Union Territories

Level of Financial Inclusion	CRISIL's Inclusix Score	Number of States/UT
High	> 55	11
Above Average	Between 40.1- 55.0	4
Below Average	Between 25.0- 40.0	17
Low	< 25	3

CRISIL's Inclusix 2013

4. Financial Inclusion Status in Odisha

The financial inclusion status in Odisha is not satisfactory. Only 4.35 million households constituting 45% of the total households in the state are availing banking facilities with 41.2% in rural areas and 66.58% in urban areas (Census 2011). In CRISIL's Index, Odisha occupies 15th rank at 40.6 in the State wise Inclusix score with a Coefficient Variation of 0.23. However because of several initiatives and improvement in the banking infrastructure there is a progress of 7.2 percent in 2011 over 2009.

Table 3: Financial Inclusion Position of the State in the Inclusix

Position of State/District	Inclusix Score			Rank		
	2011	2010	2009	2011	2010	2009
In State wise Inclusix Score	40.6	36.7	33.4	15	18	18
In Top 50 Districts (Khordha)	75.1	72.4	64.0	21	22	34

Source: CRISIL's Inclusix 2013

Among the top 50 districts of India in the Inclusix score, Khordha district of the State occupies 21st rank with a score of 75.1. The district also shows a progressive change of 11.1% in 2011 over 2009. The district wise analysis of the financial inclusion status in Odisha on the basis of the Inclusix score, given in Table 4 below, shows a variation in the scores across the districts.

Table 4: Financial Inclusion Status of the Districts of Odisha

Below Average (Between 25.0 and 40.0 %)		Above Average (Between 40.1 and 55.0%)		Low Inclusion - < 25 % High Inclusion- > 55 %	
Malkangiri	25.2	Ganjam	40.1	Nabarangapur	24.4
Boudh	29.8	Baleswar	40.6	Khordha	75.1
Gajapati	30.7	Dhenkanal	40.8		
Debagarh	32.1	Kendujhar	40.8		
Subarnapur	32.6	Mayurbhanj	41.7		
Nuapada	33.1	Puri	42.7		
Bhadrak	33.5	Jharsuguda	42.9		
Kandhamal	33.5	Jagatsinghapur	44.2		
Balangir	33.6	Anugul	46.5		
Kendrapara	35.1	Sambalpur	46.6		
Kalahandi	36.0	Cuttack	50.4		
Bargarh	36.2				
Jajapur	36.2				
Rayagada	36.3				
Koraput	36.4				
Sundargarh	36.8				
Nayagarh	38.6				

Source- CRISIL's Inklusix 2013

A majority 17 districts in the state fall under the below average category with the magnitude of inclusion between 25 to 40 percent. Another 11 districts have financial inclusion within 40.1 to 55 percent falling under the above average category. Khordha and Nabarangpur districts are the two extreme districts having high and low inclusion respectively. Mostly the districts with higher concentration of tribal population fall under the below average and low financial inclusion category.

5. Analysis and Findings from the Study Area

5.1 Profile of the study area

The Jolli Munda Sahi Community is situated 2kms from Patia, Bhubaneswar on the way to

Nandankan. It was set up during 1975-76 with migrated households from different parts of the state such as Kandhamal, Mayurbhanj, Keoinjhar, Koraput, Baleswar, and Malkangiri districts who came in search of employment and settled down here. The community consists mostly of tribals and a very few households from non tribal communities. Out of a total of 147 households, 104 (71%) are STs, 26 (17.6%) are SCs, 12 households (8%) are OBCs and 5 households (3.4%) are from General category. Munda and Santhal are the two major tribes found here. Total population of the community is 672 with 327 male and 345 female. Out of this 374 (56%) are in the age group 15 and above. The socio economic condition of the people is very poor as they do not have a regular source of income. Most of them work as daily labourers. Around 90% of the houses are Kutcha/thatched houses with mud walls. The literacy rate is very poor in the community at only 39.7 %. Though there is good sex ratio but so far as literacy is concerned females lag far behind (28.4%) than the males (51.6%). There are two Self Help Groups (SHGs) functioning in the community. There is easy availability of all types of financial infrastructure near by the community. Almost all types of commercial banks such as State Bank of India, Indian Overseas Bank, IDBI, Indian Bank, Bank of India, Canara Bank, and Dena Bank are functioning within 2kms distance from the community and within 5 kms Axis Bank and Punjab National Banks are operating.

5.2 Profile of Respondents

A complete enumeration of the entire tribal household was done to know about their financial inclusion status. A total of 104 tribal household heads were interviewed for the study comprising 77% of males and 23% of females. Around 68% of the households are having a family size of 4 to 6 members. The education profile of the respondents shows that 40 of the total household heads are illiterate whereas 38 have completed primary education. As regards to occupation 81% are daily wage earners who are mostly employed as industrial, construction and household workers. But they do not get work throughout the month. They Around 15 to 20 days in a month they work and rest of the days they engage themselves in Handia preparation in the community. There are two households who prepare bamboo baskets. 6.7% of the household heads are salaried employed. Two of them work as peons in Government Press and Secretariat. Another five work in private organisations. Most of them (79%) have Kutcha/thatched houses. Around 45% of the households' reported their monthly income between Rs. 2500-5000 where as another 42% said to have income less than Rs 2500/-. This clearly shows the poor economic status of the tribal households in the community. Though they mostly belong to the lower income group but because of non availability of BPL card they are not avail in a position to the facilities. The profile of the respondents is presented in Table 5 given below:

Table 5: Profile of the respondents

Gender		Source of income	
Male	80(76.9)	Daily labourer	84(80.8)
Female	24 (23.1)	Household Industry	2(1.9)
Family size		Salaried Income	7(6.7)
Less than 4	22(21.2)	Self employment	11(10.6)
4 to 6	71(68.2)	Monthly Income	
7 and Above	11(10.6)	Less than 2500	44(42.3)
Education Level		2500-5000	47(45.2)
Illiterate	40(38.5)	5000-7500	8(7.7)
Primary	38(36.5)	7500-10000	2(1.9)
Secondary	18(17.3)	10000-12500	2(1.9)
Higher secondary	7(6.7)	12500 and Above	1(1.0)
Higher education	1(1.0)	Economic Status	
Type of House		BPL	18(17.3)
Kutccha/thatched	82(78.8)	Non BPL	86(82.7)
Own pucca house	18(17.3)		
Govt.scheme house	3(2.9)		
other(rented)	1(1.0)		

Figures in parenthesis denote percentages

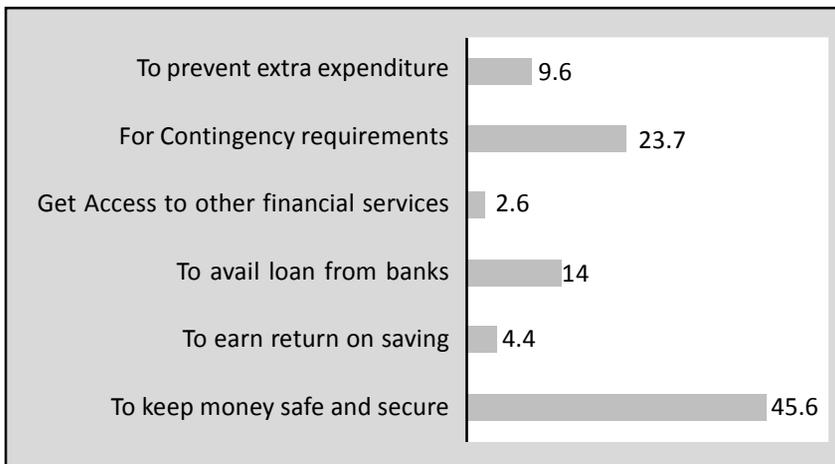
5.3 Access to Banking Services

In spite of having a developed banking infrastructure, only 56% of the households in the community have a savings bank account. Almost all the accounts are opened in the commercial banks situated in the vicinity of their community. Around 42% of the account holders had opened their accounts only recently in the month of November and December 2014 under the Pradhan Mantry Jan Dhan Yojana (PMJDY) scheme. Another 58% had savings account earlier. A majority 62 % of the accounts are opened in the State Bank of India followed by 19% in Indian Overseas Bank and 11% in the Indian Bank. Most of them have

submitted Voter card (77.6%) and Aadhar Card (11%) as proof of document in the banks.

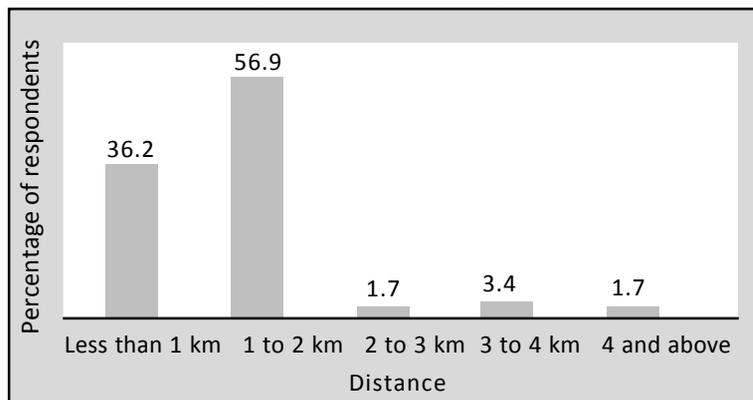
There are multiple reasons reported by the respondents for having a bank account. A majority of them (45.6%) have the perception that bank account is for keeping money safe and secure followed by 24% for meeting the contingency requirement. Only 14% said the reason as to borrow/ avail loans from the bank. Around 10% reported it to prevent extra expenditure. Only a minimum of 4.4% said it for earning return on saving where as another 2.6% said it for availing other financial services such as money transfer and insurance. None of them reported to hold account for getting benefit transfer from govt. Even the account holders under PMJDY also do not know the benefits of holding an account under this scheme. The reasons for holding a bank account is given in Fig.1 below:

Figure.1: Reasons for holding Bank Account



While asked about whether they faced any difficulty in opening their account, 26 % said they have faced the difficulty such as filling of the forms, more time consuming and difficulty in arranging the required documents. Distance is not a problem for them as most of the banks are available within 2 kms distance from their community which they walk out without any cost.

**Figure 2:
Distance of the banks**



5.4 Usage pattern and financial awareness

Even though 56% of the households owned a bank account, the usage pattern and awareness about the banking services is very poor among the account holders. Not all the account holders had ATM cum Debit cards, Credit cards and Cheque books with them. Only 58.6 % of the account holders had ATM cards, 2 of them (3.4%) had credit card, only 8 (13.7%) had cheque book and 5 of them reported using mobile banking. Out of the total ATM card holders less than fifty percent (48%) only use it. Again among the ATM card users more than sixty percent (63.8%) do not use the cards by themselves and take the help of others. Similarly more than fifty percent (53%) of the account holders also do not know depositing and withdrawing money by themselves and take the help of the existing bank staff, friends and relatives.

Table 6: Usage Pattern of the Banking Services

Usage Pattern	Yes	No	Total
Have ATM cum Debit Card	34(58.6)	24(41.4)	58(100.0)
Whether use ATM services	28(48.3)	30(51.7)	58(100.0)
Know how to use ATM	21(36.2)	37(63.8)	58(100.0)
Know Depositing/Withdrawing money	27(46.6)	31(53.4)	58(100.0)
Have Credit Card	2(3.4)	56(96.6)	58(100.0)
Use Mobile Banking	5(8.6)	53(91.4)	58(100.0)
Have Cheque Book	8(13.7)	50(86.3)	58(100.0)
Whether use Cheque Book	2(3.4)	56(96.6)	58(100.0)

Table 7: Frequency of using accounts

Frequency	Respondents
Once in a month	38(65.5)
Every two months	8(13.8)
Every six months	8(13.8)
More than six months	4(6.9)
Total	58(100.0)

Only 13 respondents (12.5%) had taken loan from both formal and informal sources.

The sources from which loan was taken by the 6 bank account holders include SHGs (2), banks (2) and money lenders (2) and for the non account holders credit unions (3) and friends and relatives (4). While asked about the reason for taking loan from an informal source while having access to a bank account, the respondents reported that it was difficult to get loan from a bank because of lack of documents, collateral and guarantor. Among the remaining 87.5% of the respondents who had not taken loan from any of the sources, a

majority 86% reported that they did not feel the need of taking loan while the rest 14% said because of cumbersome official procedure and document requirements they were not able to take loan even though they tried to avail.

5.5 Banking Awareness

A majority of the respondents with a bank account (76%) have a very poor knowledge about the banking services while 5% of them completely lack the knowledge. On the other hand out of the 46 respondents who did not have a bank account 89% completely lacked knowledge about the banking services and products whereas 9 percent were very poorly aware. This may be one of the reasons for them not having a bank account. Regarding the banking service charges, internet banking, mobile banking, mortgaging procedure of the banks etc. more than 90% of respondents with a bank account were either very poorly aware or completely unaware. The figure was even higher for the non account holder category with a larger concentration in the unaware category.

Table 8: Banking awareness

Banking Awareness	Respondents	Poorly Aware	Fairly Aware	Very Fairly aware	Do Not Know At all	Total
Banking Products & Services	Bank Account holder	44(75.9)	10(17.2)	1(1.7)	3(5.3)	58(100.0)
	No bank account	4(8.7)	1(2.2)	0	41(89.1)	46(100.0)
	Total	48(46.2)	11(10.6)	1(1.0)	44(42.3)	104(100.0)
Service Charges	Bank Account holder	37(63.8)	9(15.5)	1(1.7)	11(19.0)	58(100.0)
	No bank account	4(8.7)	0	0	42(91.3)	46(100.0)
	Total	41(39.4)	9(8.7)	1(1.0)	53(51.0)	104(100.0)
Internet Banking	Bank Account holder	19(32.8)	1(1.7)	1(1.7)	37(63.8)	58(100.0)
	No bank account	2(4.3)	0	0	44(95.7)	46(100.0)
	Total	21(20.2)	1(1.0)	1(1.0)	81(77.9)	104(100.0)
Mobile Banking	Bank Account holder	19(32.8)	1(1.7)	2(3.4)	36(62.1)	58(100.0)
	No bank account	1(2.2)	0	0	45(97.8)	46(100.0)
	Total	20(19.2)	1(1.0)	2(1.9)	81(77.9)	104(100.0)
Bank Mortgage	Bank Account holder	23(39.7)	1(1.7)	1(1.7)	33(56.9)	58(100.0)
	No bank account	1(2.2)	2(4.3)	0	43(93.5)	46(100.0)
	Total	24(23.1)	3(2.9)	1(1.0)	76(73.1)	104(100.0)

5.6 Reasons for the financial exclusion

The respondents without a bank account gave multiple reasons for not opening an account in a bank. The main reasons given by them are unemployment, lack of regular and sufficient income (around 67% of the total responses). Thirteen responses are for lack of document, and five of them said high cost and low interest rate on savings for which they did not have a bank account. In addition to this two of them have also reported that they are voluntarily excluded as they don't find any advantage in having a bank account. Out of the respondents who did not have a bank account, around 20% were using the account of others such as their friends and relatives when they require. 91% of the respondents reported they feel the need of having a bank account but not able to have because of the reasons cited above.

6. Major Findings

In spite of the availability of all types of banking infrastructure in the vicinity of the tribal community of Jolli Munda Sahi, only 56% of them have access to a savings bank account. Most of the accounts are only three to four months old which are opened under the PMJDY scheme. The most common reason cited by the respondents for holding a bank account is to keep money safe and secure and for meeting their future requirements. Due to lack of literacy and financial awareness, even though they have opened the accounts but the utilisation of the accounts is limited only to deposits and withdrawals. They are ignorant about the banking products, services and the utilisation of these services. Neither any BCs are operating in the community nor there is any financial literacy programme conducted.

More than half of the respondents do not know depositing and withdrawing money from the bank and take the help of others such as friends, relatives and existing staff of the banks. Only 48% use ATM service out of which 36% use by themselves and the rest take the help of friends and relatives for using the card. Lack of income and a regular source of employment are the main reasons for not having a bank account reported by the respondents without having a bank account. All the respondents in a better income group in the community from Rs. 5000 and above have owned a bank account. But much difference is not found in the percentage of respondents with and without a bank account in the lower income groups. Lack of awareness about the banking services may be considered as an important factor here. Around 91% of the financially excluded respondents wanted to have a bank account if they will be provided with all the necessary help in this regard and if get a regular source of income. Some of them were also depending on their relatives and friend's account when feel the need. There is a serious lack of awareness about the banking services and its utilization pattern among the respondents both with and without a bank account.

7. Conclusion and Suggestion

The initiatives for financial inclusion are on rise to include the vast financially excluded sections into the formal banking system. The overall financial inclusion status of the state is improving with a score of 40.6 which lie just above the margin of above average category of 40.1. One of the districts of the state has also placed in the 21st rank in the top 50 financially included districts in the country. But a variation is there across the districts with a poor financial inclusion status in the southern parts of Odisha dominated by tribal communities. More attention should be given in spreading financial awareness and improving banking infrastructure in these areas to achieve a better inclusive financial system in the state. The situation of the tribal communities in the vicinity of an urban area with developed banking infrastructure is also not satisfactory. Though more than fifty percent of the respondents in the study area are having a bank account but the utilisation pattern is limited due to illiteracy and lack of financial awareness among them. Merely having access to a bank account without knowing the use and benefits thereof will not solve the purpose. Hence steps should be taken by the Banks, Govt. and other stakeholders to spread banking awareness in the community ; and BCs should also be appointed who can work from the community by understanding their needs and challenges. The spread of education and a regular source of income coupled with financial literacy programmes for the people will definitely bring a positive change in the status financial inclusion among the tribal households in the community.

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Infrastructure Development and Inequality in Odisha

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Infrastructure provides the services and facilities necessary for an economy to function. Infrastructure yields indirect benefits through the supply chain, land values, small business growth, consumer sales, and social benefits of community development and access to opportunity. They work as intermediate inputs to production, raises productivity and profitability and thereby permit higher levels of output, income and employment. The role played by the infrastructural facilities cannot be overlooked while planning and formulating specific regional policies. The present study established the relationship between widening regional inequalities and distribution of infrastructural facilities across the State of Odisha for a time period of 22 years from 1991 to 2013. In the first part of the paper, three indices of infrastructural set up i.e. Physical Infrastructure Development Index (PIDI), Social Infrastructure Development Index (SIDI), and Financial Infrastructure Development Index (FIDI) are constructed and then their relative rankings at two different points of time are obtained. In the second part we run regression analysis between different infrastructural indices and poverty reduction rate. The major findings of this paper revolve around two things- the specific dimension of infrastructure which is important for the concentration of infrastructural activities in Odisha and infrastructure activities are more significant in explaining the rate of poverty reduction.

Keywords: Physical infrastructure, social infrastructure, financial infrastructure, Infrastructure Index, inequality, poverty.

1. Introduction

Infrastructure provides the services and facilities necessary for an economy to function. It can be generally defined as the set of interconnected structural elements that provide a framework supporting an entire structure of development. Infrastructure yields indirect benefits through the supply chain, land values, small business growth, consumer sales, and social benefits of community development and access to opportunity. Economists in India have viewed that the lack of adequate infrastructure as perhaps the most important supply-side constraint which has been responsible for the country's growth below its productive capacity. But perhaps the most significant impact of these infrastructural

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facilities has centered on worsening of regional inequalities within the state and country. This is a matter of great concern.

Investment in infrastructure is part of the capital accumulation required for economic development and has enormous impact on socioeconomic measures of welfare. The causality of infrastructure and economic growth has always been in debate. In developing nations, expansions in electric grids, roadways, and railways show marked growth in economic development. However, the relationship does not remain in advanced nations who witness more and more low rates of return on such infrastructure investments (Fedderke et al., 2006).

Infrastructure can be broadly divided into two types depending on the nature of input services i.e. physical and social. The former consists of transport (roads, railways, aviation, waterways and ports), electricity irrigation, telecommunication, housing and water supply. The social infrastructure consists of education, health, nutrition, sanitation, child care, recreation and banking and other forms of financial facilities.

There are various reasons as to why both types of infrastructure are very important in an economy. V. K.R.V. RAO opines "the link between infrastructure and development is not a once for all affair, it is a continuous process and progress in development has to be preceded, accompanied and followed by progress in infrastructure, if we are to fulfill our declared objectives of self accelerating process of economic development." So, provision and maintenance of adequate infrastructure facilities are absolutely necessary if rapid economic growth is to be achieved and sustained. Infrastructural facilities both economic and social constitutes are the core of development strategy and efforts. Efficient and affordable infrastructural services are key to the higher productivity and output growth.

The linkage between infrastructure and economic growth is multiple and complex, because not only does it affect production and consumption directly, but it also creates many direct and indirect externalities, and involves large flows of expenditure thereby creating additional employment. Infrastructure affects output in two ways. One is the direct channel where infrastructure increases the output by reducing the cost of intermediate goods. The other channel is through externality effect (Patra and Acharya, 2011). The experience across the world has shown that increase in stock of infrastructure is associated with the increase in output and the quality of life of the people.

In view of the above the crucial role played by the infrastructural facilities cannot be overlooked while planning and formulating specific regional policies and the present paper is an attempt to in this direction to explore the infrastructural facilities and inequality prevailing there off in the state of Odisha.

2. Materials and methods

To study the variation in infrastructural availability we have constructed infrastructure indices for 3 different dimensions i.e. Physical Infrastructure Development Indices (PIDIs) for physical infrastructure, Social Infrastructure Development Indices (SIDIs) for social infrastructure and Financial Infrastructure Development Indices (FIDIs) for financial infrastructure. The variables taken for construction of PIDI are Road length per sq. kms (RL), Rail length per sq. km (Rail) (if it is available), Villages Electrified (VE) as a proportion of total inhabited villages, and Teledensity (TD) (if the figures are available). The social infrastructure is defined into literacy rate of different districts, hospitals per 10,000 persons and General Colleges per 10,000 persons in a district. The purview of financial infrastructure is very large here, we have taken three variables such as Credit-Deposit ratio (CD) of Scheduled Commercial Banks, Bank Offices per 100,000 persons, and Post Offices per 100,000 persons. The Credit-Deposit ratio represents the financial lending operations of the banks in the area and that is why we have included this one under financial infrastructure to access the credit facilities in the area under financial infrastructure.

For the above variables data are collected from secondary sources such as for physical infrastructure data are extracted from Basic Road Statistics, Infrastructure Statistics 2013 published by Ministry of Statistics and Programme Implementation, Railway Year Book, publications of Central Electricity Authority, Statistical abstracts of Ministry of Agriculture, Govt. of India. For social infrastructure data are extracted from Census Survey of India, Ministry of HRD, and Selected Educational Statistics. For Financial infrastructure data are collected from Reserve Bank of Indian website.

Here we analysed infrastructural indices for thirteen undivided districts of Odisha to avoid confusion and unnecessary ambiguity. Because according to the administrative division of 1990 there were 13 districts instead of the present set up of 30 districts. So, in order to avoid confusion, we clubbed of various new districts with their original 13 undivided district-set-up of Odisha to make the comparison between 1991 and 2013 infrastructure facilities ambiguity free.

Three composite indices of infrastructural indicators such as Physical Infrastructural development Index (PIDI), Social Infrastructural Development Index (SIDI), and Financial Infrastructural development Index (SIDI) are constructed with the help of Principal Component Analysis (PCA). We use the Principal Component Analysis to assign weights to each of the variables. It reduces the number of observed variables to a smaller number of principal components which account for most of the variance in the observed variables. PCA is used when the variables are highly correlated. Of the various linear combinations, the first Principal Component, P1 (which we use to calculate our composite index) is the one which accounts for the maximum possible proportion of the variance in the original dataset. It means the first principal component is the linear combination of weighted

facilities which explains the maximum of variance across the observation at a point in time. If there are N variables such as $X_1, X_2, X_3, \dots, X_n$ then $P_1, P_2, P_3, \dots, P_n$ are the N principal components and a_{mn} are the weights. Now the first principal component can be written as a linear combination $P_1 = a_{11}X_1 + a_{12}X_2 + a_{13}X_3 + \dots + a_{1n}X_n$. The rationale behind using PCA is that it helps one to reach an aggregate representation from various individual indicators.

To verify the relationship between infrastructure development and poverty reduction regression analysis has been done at two points of time namely 1991 and 2013 using the following model.

$$PR_{t+1} = f(PIDI_t, SIDI_t, FIDI_t)$$

The model we will be testing for this equation is as follows:

$$Y_{t+1} = \beta_1 + \beta_2 X_{1t} + \beta_3 X_{2t} + \beta_4 X_{3t}$$

Where

Y_{t+1} = refers to Percentage of poverty reduction in the period $t+1$.

X_{1t} = refers to Physical Infrastructure Development Index for the year t .

X_{2t} = refers to Social Infrastructure Development Index for the year t .

X_{3t} = refers to Financial Infrastructure Development Index for the year

2.1. Theoretical Underpinnings for Infrastructural Facilities

Investment on infrastructure increases output by reducing the cost of intermediate goods and also creates positive externality effect. Thus social and economic infrastructure services can make positive and strong impacts on output growth and can reduce the poor performance of different sectors of the economy. There are various channels through which investment in infrastructure can contribute to growth (Fedderke et al 2006). These are

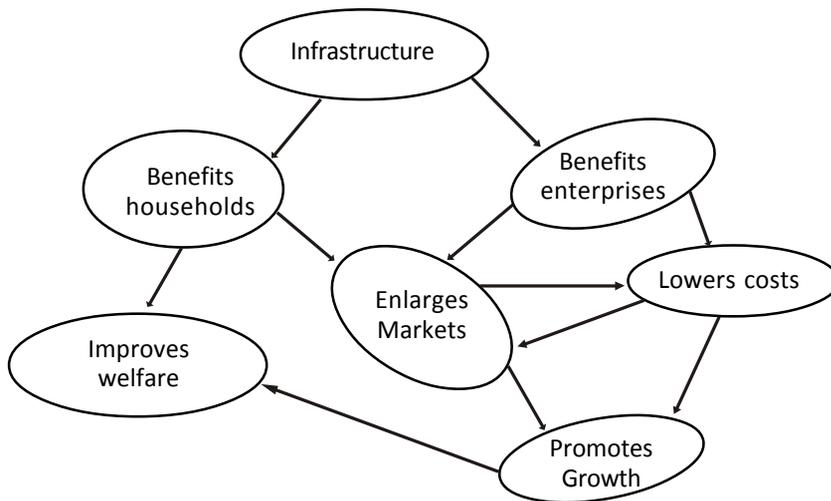
- Reducing transaction costs and facilitating trade flows within and across borders;
- Enabling economic factors individuals, firms, governments to respond to new types of demand in different places;
- Lowering the costs of inputs for entrepreneurs, or making existing businesses more profitable;
- Creating employment, including in public works (both as social protection and as a counter-cyclical policy in times of recession);
- Enhancing human capital, for example by improving access to schools and health

centres

- Improving environmental conditions, which link to improved livelihood
- Better health and reduced vulnerability of the poor.

Thus positive contribution of infrastructure to economic growth and development comes through increases in investment, employment, output, and income in a chain of 'cumulative causation'. Thus, 'economies of agglomeration develop over time leading to further concentration of economic activities in a particular location or region. Empirical evidence suggests that there is a positive relationship between Infrastructure Development Index and Per Capita Net State Domestic Product and negative relationship between Infrastructure Development Index & Poverty (Patra and Acharya, 2011). Figure1 shows the relationship between infrastructure and economic growth. This is clearly spell out how does infrastructure helps economic growth.

Figure - 1: Infrastructure and Economic Growth



Thus investment in infrastructure is part of the capital accumulation required for economic development and has enormous impact on socioeconomic measures of welfare. It is an important parameter or index for judging a country or region's development trajectory. Mody (1997) aptly suggests that in any modern society, infrastructure plays an important role in determining the overall productivity and development of a country's economy, as well as the quality of life of its citizens.

3. Infrastructure Development in Odisha and inter-district disparity

In a state like Odisha Adequacy of infrastructure development is a pre-condition for propelling economic growth process. Energy, transport, communication and science & technology are the key components of infrastructure which drive all the sectoral

development with upward growth contour. Gross adequacies and quality development of these components lead to effectiveness, higher productivity, inclusiveness, competitiveness, wider market accessibility, cost effectiveness and saving potential of functioning of all sectors of the economy.

Given the importance of the infrastructural this section tries to find out the concentration of infrastructural facilities on different districts of Odisha. One of the major problems we faced while studying the infrastructural set-up is the lack of continuous data sets at a disaggregated level. Hence we analyzed the physical, social and financial infrastructure dimensions of Odisha on district basis at two points of time i.e. in 1991 and 2013. For this we have constructed infrastructure indices by the help of Principal component Analysis (PCA). The primary objective of this study is to look at the levels and variation in infrastructural availability in the state of Odisha.

Now we will be constructing composite indices of infrastructural indicators viz. Physical Infrastructural development Index (PIDI), Social Infrastructural Development Index (SIDI), and Financial Infrastructural development Index (SIDI) with the help of Principal Component Analysis (PCA). In the PCA approach, the first principal component is the linear combination of weighted facilities which explains the maximum of variance across the observation at a point in time. The rationale behind using PCA is that it helps one to reach an aggregate representation from various individual indicators.

3.1. Physical Infrastructure Development Indices (PIDI) of Districts of Odisha in 1991 and 2013

We have constructed physical infrastructure indices with the help of PCA. The indices for 1991 and 2013 are as follows.

Districts	1990	
	PIDI	Rank
Sundargarh	14.5	1
Sambalpur	2.9	2
Puri	2.63	3
Koraput	1.0	4
Cuttack	0.7	5
Keonjhar	-0.85	6
Ganjam	-1.4	7
Dhenkanal	-1.4	8
Balasore	-2.4	9
Bolangir	-3.4	10
Mayurbhanj	-3.9	11
Baudh-Phulbani	-4.0	12
Kalahandi	-4.35	13

Districts	2013	
	PIDI	Rank
Cuttack	7.95	1
Balasore	5.65	2
Sundargarh	3.55	3
Keonjhar	3.45	4
Bolangir	3.10	5
Puri	3.00	6
Dhenkanal	-0.25	7
Ganjam	-1.20	8
Sambalpur	-2.35	9
Mayurbhanj	-2.50	10
Koraput	-4.85	11
Kalahandi	-6.30	12
Baudh-Phulbani	-9.25	13

According to the above table the top districts in terms of SIDI for the year 1991 were Cuttack, Puri, Balashore, Sundargarh, and Dhenkanal while the bottom ranked districts were Bolangir, Kalahandi, Baudh-Phulbani, and Koraput. These figures indicate that there have been substantial concentration of health and education facilities in case of coastal districts like Cuttack, Puri and Balashore while the interior KBK districts like Baudh-Phulbani, Koraput and Kalahandi have not seen much social infrastructural facilities. For the year 2013 it is also observed that the coastal districts seem to have been the top districts for both the years while interior districts like Mayurbhanj, Kalahandi, Baudh-Phulbani and Koraput have been consistently ranked at bottom place except a marginal improvement in Bolangir district.

3.2. Financial Infrastructure Development Indices (FIDI) of Districts of Odisha

The financial indices of districts are as follows:

Districts	1991	
	SIDI	Ranks
Cuttack	7.00	1
Puri	5.95	2
Balashore	5.20	3
Sundargarh	2.85	4
Dhenkanal	2.30	5
Sambalpur	2.25	6
Keonjhar	0.65	7
Ganjam	0.00	8
Mayurbhanj	-2.65	9
Bolangir	-2.95	10
Kalahandi	-4.05	11
Baudh-Phulbani	-8.20	12
Koraput	-8.40	13

Districts	2013	
	SIDI	Ranks
Cuttack	7.15	1
Baleshwar	4.55	2
Dhenkanal	4.10	3
Sambalpur	2.60	4
Bolangir	2.25	5
Sundargarh	1.95	6
Puri	-0.15	7
Keonjhar	-0.20	8
Ganjam	-0.30	9
Mayurbhanja	-0.60	10
Kalahandi	-2.45	11
Baudh-Phulbani	-6.90	12
Koraput	-11.9	13

Sources: Calculated by Author

According to the above Table the top districts in terms of FIDI for the year 1991 were Baudh-Phulbani, Mayurbhanj, Puri, Ganjam, and Sundargarh while the bottom ranked districts were Balashore, Bolangir, Kalahandi, and Koraput. It seems from the above figure that the interior districts like Ganjam and Baudh-Phulbani seems to have better

financial infrastructure than many coastal districts. But top districts in terms of FIDI for the year 2013 were Puri , Sambalpur , Sundargarh , Kalahandi , and Cuttack while the bottom ranked districts were Koraput , Ganjam , Keonjhar, Mayurbhanj, and Baudh-Phulbani. The above table suggests that the interior districts of Odisha are much better in terms of financial infrastructure during 1991 but in 2013. It seems the coastal districts have caught up with the interior districts in terms of financial infrastructure.

From the above it is clear that there is wide variation of infrastructural facilities across the state. Hence the pattern of concentration infrastructure requires different mode of spatial and regional policy to develop the lagging districts of Odisha which has experienced cluster level of concentration.

4. Relationship between Infrastructure and Poverty reduction

Infrastructure is a source of positive externalities in the development process. In fact, the absence of infrastructure is positively related to the incidence of poverty. The following table indicates that states which have a higher Index of Infrastructure, comprising economic, social and administrative infrastructure indicators experience lower Head Count Ratio of Poverty with exceptions for few states.

States	Index of Infrastructure	Head Count Ratio Of poverty
Punjab	185.5	9.2
Kerala	178.7	13.3
Tamil Nadu	149.1	22.9
Haryana	137.5	13.6
Gujarat	124.3	19.1
Maharashtra	112.8	29.6
West Bengal	111.3	28.6
Karnataka	104.9	20.9
Andhra Pradesh	103.3	11.2
Uttar Pradesh	101.2	33.4
Bihar	81.3	42.1
Orissa	81.0	46.8
Assam	77.7	22.3
Madhya Pradesh	76.8	36.9
Rajasthan	75.9	18.7

Source: Human Development Report of India (2011)

The above table throws light on the fact that States with higher infrastructure status are developed states and States with low infrastructure index are backward or under developed states e.g., Rajasthan, Bihar, Orissa etc. This strongly supports the fact that there is a strong relationship between infrastructure and economic growth. In the same way States with higher Infrastructure status are having a low head count ratio of poverty. This establishes the fact that there is a strong relationship between infrastructure services availability and poverty alleviation. Higher the infrastructure services availability, lower will be the poverty levels in that country.

Given the nexus between infrastructure and economic growth we run a regression analysis between different infrastructural indices i.e. PIDI, SIDI, and FIDI and rate poverty reduction in the state of Odisha for 1991 and 2013 .This analysis will reveal the nexus between infrastructure facilities and poverty reduction in the state and accordingly a spatial policy measures can be suggested.

The regression analysis has been done 2 points of time namely 1991 and 2013 using the following model.

$$PR_{t+1} = f (PIDI_t, SIDI_t, FIDI_t)$$

The model we will be testing for this equation is as follows:

$$Y_{t+1} = \beta_1 + \beta_2 X_{1t} + \beta_3 X_{2t} + \beta_4 X_{3t}$$

Where

Y_{t+1} = refers to Percentage of poverty reduction in the period t+1.

X_{1t} = refers to Physical Infrastructure Development Index for the year t.

X_{2t} = refers to Social Infrastructure Development Index for the year t.

X_{3t} = refers to Financial Infrastructure Development Index for the year

Regression analysis for the year 1991

$$ER_{1992} = \beta_1 + \beta_2 PIDI_{1991} + \beta_3 SIDI_{1991} + \beta_4 FIDI_{1991}$$

$$ER_{1992} = 1.504 + 1.02 PIDI_{1991} + 0.341 SIDI_{1991} + 0.262 FIDI_{1991}$$

$$R^2 = 0.37$$

$$d = 2.728$$

Regression analysis for the year 2004

$$ER_{2013} = \beta_1 + \beta_2 PIDI_{2012} + \beta_3 SIDI_{2012} + \beta_4 FIDI_{2012}$$

$$ER_{2013} = 0.561 + 0.836 PIDI_{2012} + -0.137 SIDI_{2012} + 0.177 FIDI_{2012}$$

$$R^2 = .512 \quad d = 1.078$$

The results for 1991 show that the explanatory variables account for 37 percent of the variation in the explained variable. The results show that physical infrastructure is the most significant variable of all infrastructural dimensions. The above model for the year 2013 shows that the explanatory variables account for about 51 per cent of the explained variables. Without testing the robustness of the model prima facie it can be said that infrastructure has a role in the reduction of poverty over time. Hence appropriate policy measure for the inclusive development of infrastructure may be initiated by the government to reduce poverty in the state.

5. Conclusion

There is wide variation in the infrastructural development across the state and infrastructure concentration is more biased towards coastal region of the state. The role of infrastructure is well recognized in poverty reduction. An appropriate policy approach is needed to overcome the infrastructural inequality in the state. For this a spatial approach is needed in this direction and the interior districts of Odisha may be given priority while planning for physical, social and financial infrastructure development as these districts are lagging behind on the infrastructure index. Thus Infrastructure across the state requires different mode of spatial and regional policy to develop the lagging districts of Odisha.

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Role of Rural Infrastructure in Crop Diversification: A District Level Analysis of Odisha

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Crop diversification is considered as an important indicator of agricultural development. It signifies farmers' adaptability with market signals, ability to reduce risk and vulnerability, and progress of the farm economy towards self-reliance. There are several key determinants of diversification. The present study aims at examining the role of different items of rural infrastructure, and some other factors in crop diversification in Odisha. For this, district-wise indices have been prepared separately to measure the degree of diversification vis-a-vis the stock of infrastructure. Simple tools like linear multiple regression have been used for the cross-sectional study for the year 2011-12 by using secondary data. The study observes that infrastructure fosters concentration rather than diversification.

JEL Code: N55, Q10, Q15, Q18

Key words: rural infrastructure, crop diversification, Theil index

I. Introduction

Crop diversification is considered as an important indicator of agricultural development. It signifies at least the following four aspects of farm economy. First, farmers' adaptability with market signals. In India, unlike many industrial products, most of the agricultural products are inelastic in supply. This means such products do not much respond to the market signals. In the WTO-led globalised regime, which has already brought agriculture to its ambit, Indian farmers will remain a disadvantaged lot due to lack of adaptability with market signals. Diversification is an indicator showing the degree of such adaptability. Second, farmers' ability to reduce risk and vulnerability. Most of risk, uncertainty and

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vulnerability in farm sector is observed in production and marketing. Crop diversification recedes such risks. Third, progress of the farm economy towards self-reliance. Despite the fact that Indian economy still continues to be an agro-based economy, the country is importing a number of agricultural products like pulses and oil seeds. If agriculture is diversified, then such import dependence can also be arrested. Fourth, diversified farming systems incorporate functional biodiversity at multiple temporal and spatial scales to maintain ecosystem services critical to agricultural production.

A study by Joshi, et al. (2006) has tried to decompose the sources of agricultural growth into area, yield, prices, diversification and interaction effects. It observes that the major contributors to agricultural growth in India are prices and diversification (crop substitution). The study observes that the contribution of prices in total growth has increased from 7.7 percent in 1980s to 35.2 percent in 1990s, whereas the share of diversification has increased from 26.6 percent to 30.7 percent during this period (ibid). Though the decomposition study needs updating in terms of data and methodology, it provides an important indication about the prospect of growth of Indian agriculture, particularly in the context when the sector is confronted with numerous problems.

Agricultural output, especially foodgrain production continues to remain volatile, and sluggish in comparison to growth in secondary and service sectors. As per CSO, 2014, the annual average growth rate (AAGR) of India's agricultural GDP during 2000-01 to 2013-14, at 2004-05 prices, hovers around just 3.8 percent. In states like Odisha, the AAGR in agriculture is just around 2 percent during this period. In fact the annual growth rate of agriculture in the state has been negative in four out of fifteen years since 2000-01.³ Therefore the Odisha Economic Survey (2014-15) has expressed concern that

“There is, therefore, an urgent need to take appropriate measures to raise productivity of the agriculture and allied sectors substantially so that the incomes and employment opportunities of those who depend upon these sectors are enhanced in a sustained manner. It calls for greater diversification and better supply chain linkages to enhance income levels in the firm and allied sector.”

Given the importance of crop diversification, the question arises what are the determinants of diversification, and how do they impact. A survey of existing literature categorises the determinants of diversification as follows⁴: a) Resource related factors covering irrigation, rainfall and soil fertility, b) Technology related factors covering not only seed, fertilizer, and water technologies but also those related to marketing, storage and processing, c)

³ There was negative growth in agricultural SDP in Odisha for years 2000-01, 2002-03, 2011-12, and 2013-14 (Odisha Economic Survey, 2014-15).

⁴ Hazra (2001)

Household related factors covering food and fodder self-sufficiency requirement as well as investment capacity, d) Price related factors covering output and input prices as well as trade policies and other economic policies that affect these prices either directly or indirectly, and e) Institutional and infrastructure related factors covering farm size and tenancy arrangements, research, extension and marketing systems and government regulatory policies.

Out of the factors listed above, rural infrastructure is considered as a critical supply side factor influencing growth and diversification in agriculture. By definition, infrastructure basically includes permanent installation of capital goods which provide long term services to basic economic activities like production and exchange. Installation of these goods smoothens volatilities in prices and products by linking demand and supply, albeit with a time lag. Prima facie, it seems that the effect of infrastructure can be either positive or negative. If infrastructure is developed selectively, say for example sugarcane procurement and marketing network is advanced, then in every likelihood there may be concentration of sugarcane in the locality. On the contrary, if infrastructure in general, viz. road, irrigation, electricity, communications, banking, marketing, etc. all are developed evenly, then that may facilitate diversification.

The present paper attempts to explore if infrastructure, along with other factors, has any significant impact on crop diversification. This is a district level analysis for the state of Odisha, which is still considered as a backward state where about 60 percent of people still depend on agriculture. The remainder of the paper is organised as follows: Section II presents a brief review of literature. In Section III, variables, data and methodology have been detailed. Section IV encompasses results and discussion, and finally Section V concludes.

II. Review of Literature

Although there has been a good number of research on rural infrastructure and agricultural diversification, surprisingly very few have tried to examine the impact of infrastructure on diversification. A few studies who have analysed the impact of rural infrastructure on productivity (Binswanger *et al.*, 1993; Wanmali and Ramasamy, 1995; Bhatia, 1999; Zhang and Fan, 2001; Nayak 2008) have studied the progress and economic effects of rural infrastructure on the growth in agriculture. Some researchers have selectively emphasised on the role of public infrastructure in productivity growth (Aschauer, 1989; Fousekis and Pantzios, 2000; Mamatzakis, 2003).

Pinstrup-Andersen and Shimokawa (2006) have studied the impact of infrastructure on crop diversification in different countries and found the impact as significant. The significance of crop shifts in the process of agricultural transformation can be understood

through the development of rural markets. If all producers choose crops on the principle of comparative advantage and face the same relative prices, land reallocation occurs only when technology or relative prices change. In agriculture, however, the assumption that all producers face the same relative prices is not justifiable because spatial dimensions and transportation costs are important in crop production (Takayama and Judge, 1971; Baulch, 1997).

In the context of India, Chand (1995) argues that it is not the farm size, but infrastructure like access to motorable road, market and irrigation determine the extent, success and profitability of diversification through high paying crops like off-season vegetables. Similarly, a study in West Punjab reports influence of irrigation and road density on crop diversity in two periods. In general, irrigation development makes it technically feasible to grow diverse crops (Kurosaki, 2003). On the contrary, another study observes that the effect of infrastructure on diversification is mixed. While irrigation intensity, the markets and commercial vehicles had positive significant influence on crop diversification, road density had significant negative influence on diversification (Ashok, et al., 2006). De and Chattopadhyay (2010) have added another dimension that marginal and small farmers play a positive role in crop diversification and that has been supported by the growth of various infrastructure.

III. Database and Methodology

Although rural infrastructure can comprise several items covering economic, social and institutional dimensions, this study has emphasised on economic factors like irrigation, rural electrification, transportation, and communication. In addition, some other variables like credit, marketable surplus, fertiliser, and seed type have been selected on the basis of literature and data availability. The details of the selected right hand side variables are presented in table 1. District-wise data pertaining to the variables are collected for the year 2011-12 from Statistical Abstract of Orissa, 2012, Odisha Economic Survey, 2013-14, and Census of India, 2011.

3.1. Normalisation

The variables have been normalised to make themselves unit-free, facilitate comparison and enable algebraic operation across variables. Since, the analysis observed a high degree of correlation between items of infrastructure resulting in multicollinearity problem, the infrastructure items have been combined to be called as Rural Infrastructure Index (INFI) as a remedy.

Table 1. Items in Rural Infrastructure and other Determinants of Diversification

Variable taken	Abbreviation of variables	Variables taken	Data Source
Irrigation	PGIA	Percentage of gross irrigated area to gross cropped area	Odisha Agriculture Statistics 2011-12
Electricity	ELCT	Percentage of rural households with electricity connection	Census, 2011
Transport	RDEN	Density of rural roads per thousand hectare of gross cropped area	Statistical Abstract of Odisha, 2012
Communication	TELC	Percentage of rural household with telephone connection	-do-
Credit	CRDT	Agricultural credit per hectare of gross cropped area	Statistical Abstract of Odisha 2012
Marketable Surplus	MSUR	Total rice production less consumption (tonnes)	Odisha Agriculture Statistics 2011-12
Fertiliser	FERT	NPK (in kg) used per hectare of gross cropped area	-do-
Seed type	HYV	Percentage of gross cropped area under High Yielding Variety paddy	-do-

3.2. Measurement of INFI

The method of Principal Component Analysis (PCA), to be specific the Bartlett scores, have been used for the measurement of rural infrastructure index (INFI).⁵ Two principal components were selected on the basis of eigen value criterion. Furthermore, the present study went by the loadings of the first principal component, which explained about 56.5 percent variation in the selected variables, and satisfied the Bartlett Criterion. The Bartlett scores are derived as follows:

$$INFI_i = \sum_{j=1}^k w^i_j x^i_j$$

5 Bartlett factor scores are computed by multiplying the row vector of observed variables, by the inverse of the diagonal matrix of variances of the unique factor scores, and the factor pattern matrix of loadings. Resulting values are then multiplied by the inverse of the matrix product of the matrices of factor loadings and the inverse of the diagonal matrix of variances of the unique factor scores. One advantage of Bartlett factor scores over the other two refined methods presented here is that this procedure produces unbiased estimates of the true factor scores (Hershberger, 2005). This is because Bartlett scores are produced by using maximum likelihood estimates – a statistical procedure which produces estimates that are the most likely to represent the “true” factor scores.

where INF_i is infrastructure index of the i^{th} district, w_j = weight of the j^{th} factor obtained as Bartlett loadings, and x_j = normalised variables of the j^{th} (ELCT,PGIA,TELC and RDEN) factor for the i^{th} district.

$$INF_i = 0.902 ELCT + 0.719PGIA + 0.954 TELC + (-) 0.129 RDEN.$$

3.3. Measurement of Crop Diversification

Crop Diversification has been measured on the basis of Herfindahl and Theil Entropy Indices.

$H = \sum_{i=1}^n P_i^2$, where P_i = the proportion of area under i^{th} crop in gross cropped area (GCA), n = the number of crops, $0 < H < 1$

$$Hn = H(\text{normalised}) = \frac{H - \frac{1}{n}}{1 - \frac{1}{n}}$$

Herfindahl Diversification Index (CDI^H) = $1 - Hn$,

INF_i

$$\text{Theil Entropy Index}(CDI^T) = \frac{\sum_i^n P_i \log \frac{1}{P_i}}{\log n}$$

$0 < CDI^H, CDI^T < 1$, when $CDI = 0$, there is complete concentration (no diversification), and where $CDI = 1$, there is complete diversification

3.4 Regression Model

The analysis has fitted a linear multiple regression models with CDI as the left hand side variable and the variables explained in table 1 as the right hand side variables.

$$CDI_i = \beta_0 + \beta_1 INF_i + \beta_2 CRDT_i + \beta_3 MSUR_i + \beta_4 FERT_i + \beta_5 HYV_i + \epsilon_i,$$

where $i = 1, 2, \dots, 30$ (no. of districts)

Table 2. Expected Impact on Crop Diversification

S. N.	Variable Name	Expected impact	Reason
1	INFI	↑ or ↓	Holistic development of infrastructure promotes diversification, but selective development promotes concentration.
2	CRDT	↑	Credit enhances investment and risk-taking ability of farmers. So it is expected to have positive impact on diversification.
3	MSUR	↑ or ↓	How is MSUR sourced matters a lot for diversification. If one crop contributes for MSUR, there may be a tendency for concentration. If it is sourced from a number of crops, it promotes further diversification.
4	FERT	↓ or ↑	Fertiliser may increase concentration if it raises productivity of the most responsive crop to fertiliser. Otherwise, if adequate production of the principal staple is ensured by fertiliser, then farmer may look for cash crops and high value crops leading to diversification.
5	HYV	↑ or ↓	If HYV seed is selectively used/available for a single crop, it is likely to promote concentration. On the contrary if these seeds are available for multiple crops, they may lead to diversification.

The model is scrutinised for possible problems like multicollinearity and autocorrelation. The study develops with the hypotheses that the variables explained in table 1 are the determinants of crop diversification, and their impacts are hypothesised a priori as in table 2.

IV. Results and Discussion

4.1. Rural infrastructure in Odisha

An attempt has been made to understand the relative positions of all the thirty districts of Odisha in relation to rural infrastructure. Only physical infrastructure items like road, irrigation, electricity and communication have been included. A similar attempt was made by Nayak (2008) for Census 2001 data, and the study observed that physical infrastructure has greater impact on agriculture than social and financial infrastructure. The present study develops an interest to examine if there has been any relative change in such rankings

in the last decade. The methodology and database for the construction of INFI have remained the same⁶. Categorisation of districts into high, medium and low INFI has also remained the same. The results are stated in table 3. As compared to 2001, only Ganjam and Anugul have slipped from ninth and tenth ranks to 12th and 13th ranks in 2011 respectively. Nayagarh progressed from fifteen to eighth, and Mayurbhanj has witnessed the greatest jump from 22th to tenth position, i.e. high INFI category, during this period.

Table 3. Rural Infrastructure Index of Districts of Odisha in 2011

High INFI			Medium INFI			Low INFI		
Rank	District	INFI	Rank	District	INFI	Rank	District	INFI
1	Jagatsingpur	3.953	11	Baragarh	1.106	21	Nabarangpur	0.024
2	Bhadrak	3.647	12	Ganjam	0.954	22	Sonepur	-0.120
3	Khordha	3.580	13	Anugul	0.564	23	Koraput	-0.195
4	Baleswar	3.153	14	Balangir	0.489	24	Nuapada	-0.389
5	Kendrapara	3.125	15	Dhenkanal	0.425	25	Debagarh	-0.422
6	Cuttack	2.632	16	Sambalpur	0.412	26	Kandhamal	-0.522
7	Jajapur	2.352	17	Jharsuguda	0.352	27	Rayagada	-0.574
8	Nayagarh	2.154	18	Keonjhar	0.291	28	Kalahandi	-0.913
9	Puri	1.717	19	Sundargarh	0.077	29	Baudh	-1.043
10	Mayurbhanj	1.481	20	Malkangiri	0.031	30	Gajapati	-1.281

Souce: Authors' calculation

Similarly, Balangir and Malkangiri, two underdeveloped districts belonging to the KBK region of south-western Odisha have seen progress from low to medium infrastructure category. On the contrary, Sonepur, Boudh and Rayagada have slipped from medium to low infrastructure category. Interestingly, Nabarangpur has jumped from the bottom to the top position in the low infrastructure category.

⁶ In Nayak (2008), the nomenclature used for INFI was physical infrastructure development index (PIDI). Both INFI and PIDI in fact convey the same meaning

It is observable that, despite some minor changes in the rank of many districts, the north-south divide is continuing. Districts from coastal Odisha (north) are in the top and most of the KBK districts (south) are in the low INFI category.

4.2. Crop Diversification

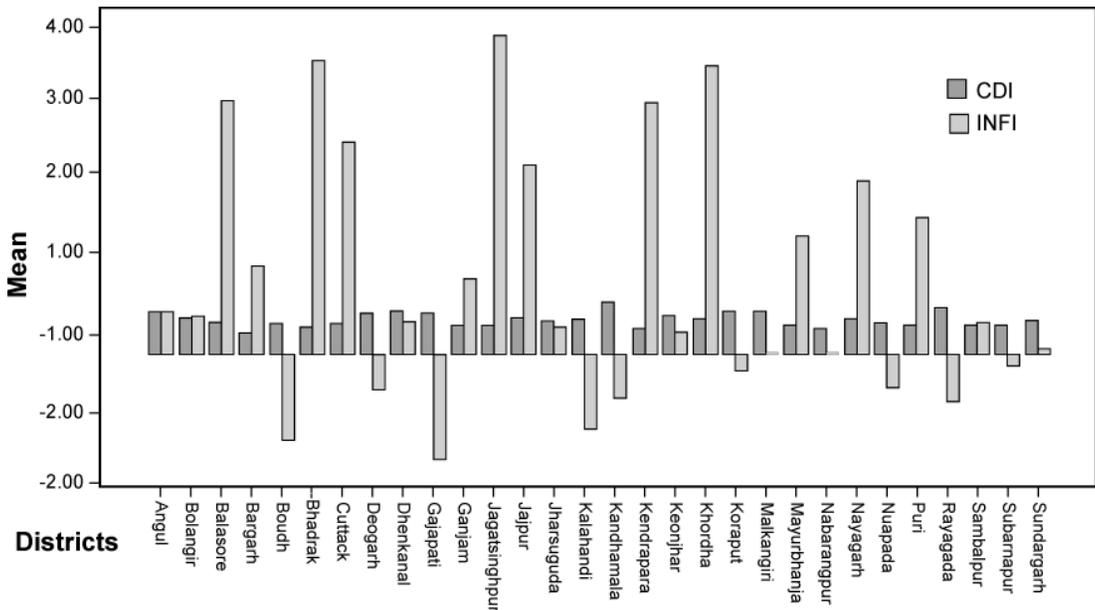
Starting from standard deviation to Atkinson Index, crop diversification can be measured in a number of ways. Some studies have also measured it by the percentage of cropped area under high-valued crops (e.g. Ashok and Balsubramanian 2006). However, the present study utilised Theil and Herfindahl Indexes. The Theil index measures an entropic “distance” the population is away from the “ideal” egalitarian state of everyone having the same value. On the other hand, the Herfindahl index measures the concentration ratio that gives more weight to larger values. It is actually a measure of concentration. But the study has converted it as explained in section III to measure crop diversification. After obtaining both the indexes district-wise, coincidentally the study observed Pearson’s correlation coefficient between CDI^H and CDI^L is 0.99. In addition, the ranks of the districts are exactly the same in both measures. In order to escape from repetition, only has been taken for further scrutiny. The ranking of all the thirty districts of the state on the basis of the indexes has been presented in table 4.

Table 4. Crop Diversification in Odisha 2011-12: Theil Index

High CDI			Medium CDI			Low CDI		
Rank	District	CDI	Rank	District	CDI	Rank	District	CDI
1	Kandhamal	0.673	11	Balangir	0.479	21	Boudh	0.402
2	Rayagada	0.589	12	Nayagarh	0.458	22	Cuttack	0.401
3	Malkangir	0.575	13	Khordha	0.453	23	Mayurbhanj	0.384
4	Koraput	0.552	14	Kalahandi	0.446	24	Ganjam	0.377
5	Dhenkanal	0.548	15	Sundargarh	0.438	25	Puri	0.375
6	Anugul	0.540	16	Jharsuguda	0.432	26	Sonepur	0.369
7	Gajapati	0.537	17	Nuapada	0.414	27	Bhadrak	0.354
8	Debagarh	0.535	18	Baleshwar	0.414	28	Nabarangpur	0.351
9	Keonjhar	0.506	19	Sambalpur	0.406	29	Kendrapara	0.349
10	Jajapur	0.479	20	Jagatsingpur	0.403	30	Baragarh	0.271

Source: Authors' calculation

Graph 1. INFI and CDI of Districts of Odisha in 2011-12



Note: The first bar denotes CDI and the second INFI for each district

From tables 3 and 4, a remarkable observation can be made that some districts placed in High INFI are placed in Medium CDI^T . For example, coastal districts like Khodha, Baleswar, and Jagatsingpur are in High INFI but in Medium CDI categories. Cuttack, Puri, Bhadrak and Kendrapara are in High INFI but Low CDI categories. Please refer figures 1 & 2 for a comparative picture. It may be noted that the abovementioned figures are drawn on the basis of rankings. For a comparison apropos algebraic values, we can refer Graph 1. Analysis with help of the tables, maps and graphs so far give a sketchy picture on the relationship between infrastructure and diversification. When measured correlation coefficient, it was found as negative, i.e.-0.43. This means in Odisha, crop diversification moves inversely vis-a-vis rural physical infrastructure. Apart from infrastructure, the analysis explores some other determinants of crop diversification.

4.3. Regression Results

In order to analyse the impact of the selected variables on crop diversity, a multiple Ordinary Least Squares (OLS) regression has been fitted. The results are as follows:

$$CDI^T = 0.472 - 0.024INFI_i + 0.004CRDT_i - 0.01 MSUR_i + 0.005FERT_i - 0.059 HYV_i + \epsilon_i$$

p-values (0.000) (0.034) (0.810) (0.426) (0.755) (0.002)

$R^2=0.686$, $\bar{R}^2 =0.620$, DW d = 2.006, F=10.47, p-value of F = 0.000

The individual and collective effects of the chosen explanatory variables on crop diversity need to be examined scrupulously. As a measure of goodness of fit, R^2 reveals that about 68.6 percent variation in CDI is explained by all the regressors taken together, and the p-value of F confirms that it is significant. The d statistic shows that there is no autocorrelation problem in the regression. Similarly, we had observed that the Variance Inflating Factor (VIF) of each regressor falls between 2 and 3. This means the regression is not severely affected by multicollinearity problem. The study observed that the explanatory variables, other than HYV and INFI, do not have significant effect on CDI. It is important to observe that both these regressors have negative impact on CDI. This means, high yielding variety seeds and rural infrastructure result in concentration, not diversification, of crops. As regards HYV seeds, this result is as per our expectation a priori. It is quite understandable that, as more and more area is put to high yielding seed of paddy, productivity rises. As a result, farmers do not develop tendency to diversify their farming.

The conventional wisdom is that improved roads, irrigation, electricity and teleconnectivity facilitate diversification because these elements assuage the risk and uncertainty regarding production. But the reverse result of the present analysis provokes to rethink about the conventional wisdom. Possibly, not merely quantity but the functioning and composition of infrastructure matters a lot. For example, irrigation in many places in Odisha is available for the kharif crop, which results in concentration of paddy cultivation. The condition of rural roads, functioning of irrigation and availability of electricity for farm use, warehousing and marketing infrastructure are some of the factors, which could have made a difference in the result. Apart from that it may be noted that paddy is the only major crop of Odisha which has been covered under minimum support price (MSP) system. All these variables could not be incorporated in the present study due to lack of district-wise data. Despite all these, the study draws an inference that farmers prefer those crops which have a less volatile market, as the case of paddy. Better the level of infrastructure, farmers try to adopt better practices to get the optimum output from the crop. Being the predominant staple in the state backed by MSP, farmers in Odisha continue to allocate about 70 percent of gross cropped area. This has remained more or less same over the recent years. How to break the standstill cropping pattern is a subject matter for further research. Drawing any strong inference from a cross section study will be premature.

V. Conclusion

The study concludes that rural infrastructure along with high yielding variety of paddy has helped in crop concentration rather than crop diversification in Odisha. The study argues that since it is the predominant staple in the state backed by MSP, farmers in Odisha continue to allocate a significant proportion of cropped area to the cultivation of paddy. They make use of the stock of existing infrastructure for better yield in paddy cultivation. The study observed that other regressors like credit, marketable surplus and fertiliser use

have no significant impact on crop diversification. The conclusion of a cross-section analysis as such may not be generalised as a claim, but the observations of the study indicate that diversification in agriculture is a broader issue which cannot be ensured simply by the existing infrastructure, and the present practice of agriculture in the state. Further research is required to explore the determinants of diversification in a panel data framework both at macro and micro levels.

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Growth of Rural Economic Infrastructure and Poverty Scenario in Odisha: A Study of Selected Public Services

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Odisha has significantly higher percentage (83) of rural population compared to the national figure(69). It is expected that the quality of life of the people both in rural and urban areas is identical in all respects. But a look at different statistics on the national economy reveals glaring difference between the access to public services by the rural and urban people. The rural infrastructure development mainly focuses on provision of basic amenities, better livelihood and equal opportunities. The objective of this study is to examine availability of rural economic infrastructure in the last 15 years. The rural economic infrastructure activities taken for this purpose are irrigation, housing, electricity and roads. The paper analyses the development in each of these activities in detail and to link the poverty scenario with the availability of economic infrastructure. Rural housing provision is not satisfactory. In rural electrification, the pace appears to be extremely slow due to privatization of the power sector. The worst situation is noticed in rural roads. Instead of increased provision of rural communication, it is declining over the years. The econometric model fitted to the data reveals importance of villages electrified only. At a slightly higher level of significance, irrigated area appears to be significant. The other two explanatory variables i.e. the number of houses under IAY and rural roads fail to qualify the significance test. All these reveal poor state of rural economic infrastructure in Odisha as a result of which the state could not progress much in recent years. The state government should address these issues immediately without further delay.

1. Introduction

Odisha has significantly higher percentage (83) of rural population than that of the national figure(69). In a democratic governance system, it is expected that the quality of life of the people should not be different in different parts of country. But even after sixty five years of our independence, there exists glaring difference in the access to public services by the

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rural and urban people. The impact of so called rural development programmes is extremely marginal on the burning problem of unemployment and poverty. This is probably happening due to inadequate emphasis on creating a robust economic infrastructure in the rural areas of the state . A sound infrastructure base facilitates economies of scale, reduces costs of trade, and is thus central to specialization and efficient production and consumption of goods and services. It is vital for economic growth and development, which is the key to raising the living standards of the population.(Henckel and McKibbin; 2010); The rural economic infrastructure development mainly focuses on provision of basic amenities, better livelihood, equal opportunities and quality infrastructure facilities through innovative programmes of wage and self- employment.

2. Importance of Economic Infrastructure

Having realized the importance of rural economic infrastructure to achieve faster rate of economic growth, the Government of India and the Government of Odisha have ventured into making heavy investment in agricultural infrastructure especially from the first-five year plan onwards. The major focus of infrastructural investment has been on irrigation, transportation, power and housing sector. Provision of adequate and quality infrastructure in rural areas is necessary for increasing the productivity and efficiency of agriculture in the form of improving the credit absorbing capacity, enhancing the productivity of crops and livestock, generating employment and increasing farmers' income and in the process, it makes a direct attack on minimizing the incidence of rural poverty.

The role of infrastructure in economic development is complex and indirect. The theories of economic development focus sufficient attention on this discussion. Hirschman's point of view was that enlarged availability of electric power and transportation facilities is an essential preconditions for economic development. Investments in essential overhead capital are advocated not because of their direct effect on final output, but because they permit, and in fact invite, direct productive activities to come in (Hirschman, 1958). In his theory of 'Stages of Growth', Rostow held similar views and considered social overhead capital, especially in transport and communication as the main pre-conditions for takeoff (Rostow, 1960).

The importance of infrastructure in agriculture and rural development is well documented. It is estimated that 15 percent of crop produce is lost between the farm gate and the consumer because of poor roads and inappropriate storage facilities alone (World Bank, 1997). Strengthening rural infrastructure can help to lower production costs which can further augment agricultural output and income for rural farming community. Rural infrastructure has its impact on attitudes and values of rural households as well. The most

profound effect of infrastructure development could be on the values of rural households. Development of transport and communication infrastructure enhances the mobility of people and information through reduction in cost and time. The resulting increase in interaction contributes to changes in attitudes and human capital development (Ahmad, 1996).

Rural infrastructure plays a key role in reaching the large mass of rural poor. When rural infrastructure has deteriorated or is nonexistent, the cost of marketing farm produce can be prohibitive for poor farmers. Poor rural infrastructure also limits the ability of traders to travel to and communicate with remote farming areas, limiting market access from these areas and eliminating competition for their produce. Construction of rural roads almost inevitably leads to increases in agricultural production and productivity by bringing in new land into cultivation or by intensifying existing land use to take advantage of expanded market opportunities. In addition to facilitating agricultural commercialization and diversification, rural infrastructure, particularly roads, consolidate the links between agricultural and nonagricultural activities within rural areas and between rural and urban areas (IFAD, 1995). Improved infrastructure also facilitates the most economical location for different types of non-farm activity. While many manufacturing and wholesale trading activities tend to concentrate in rural towns, many small-scale manufacturing activities (e.g. cottage industry and milling) and service activities (e.g. retail shops, coffee and tea shops and personal services) expand in villages and rural market centers (Wanmali, 1983).

3. Types of Economic Infrastructure

The term “infrastructure” has been defined by scholars into two distinct categories. These are; i. economic infrastructure and ii. social infrastructure. The distinction between these two is often made on the basis of their differences in the impact on the economy. The 1994 World Development Report stated that economic infrastructure consists of the following items.

1. Public utilities: Power, telecommunications, piped water supply, Sanitation and sewerage, solid waste collection and disposal piped gas.
2. Public works: Roads, major dam and canal weirs for irrigation and drainage
3. Other important sectors: urban and inter urban railways, urban transport, ports, waterways and airports.

Physical infrastructure refers to a set of facilities without which an integrated independent modern economy could not function. The emphasis on physical infrastructure was based on the following characteristics of these facilities

- They involve technological indivisibility and considerable lumpiness in investment.
- The investment projects have long gestation lags.
- They are subject to substantial external economic activities.

Economic infrastructure supports all forms of economic activities, its components being utilities such as agriculture, transport, communication, generation and distribution of power, roads, ports, irrigation, water supply and sanitation.

Economic infrastructure services directly facilitate and are basic to the carrying out of a wide variety of economic activities. These are generally priced low, subject to public control on regulation and investment since these are characterized by lumpiness. The main categories of economic infrastructure activity are investment in rural electrification, rural credit institutions, flood control and drainage, irrigation works, rural roads, rural transport, markets for inputs and outputs, storage structures and warehousing facilities, common property resources and watershed development.

4. Selected Rural Economic Infrastructure

4.1 Irrigation

Irrigation infrastructure is a prerequisite for the adoption of new seed, fertilizer and technology to increase the productivity in agriculture. Irrigation is also crucially important for enhancing agricultural productivity and is required at different critical stages of plant growth of various crops for their optimum production.

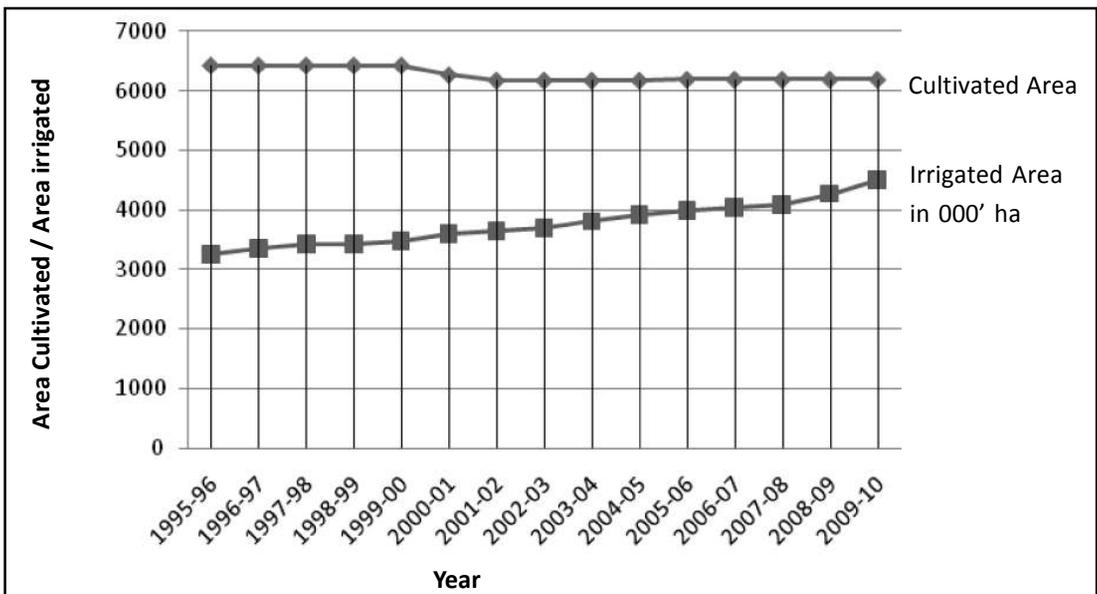
Table-1: Growth of Irrigation in Odisha 1995-2010.

Year	Cultivated Area (in 000' Ha)	Irrigated area (in 000' Ha)	Percentage of Irrigated Area
1995-96	6420	3258.81	50.76
1996-97	6420	3357.87	52.30
1997-98	6420	3426.38	53.37
1998-99	6420	3436.86	53.53
1999-00	6420	3485.33	54.29

2000-01	6259	3599.70	57.51
2001-02	6165	3658.90	59.35
2002-03	6165	3698.29	59.99
2003-04	6165	3815.77	61.89
2004-05	6165	3931.16	63.77
2005-06	6180	3990.35	64.73
2006-07	6180	4040.022	65.37
2007-08	6180	4095.39	66.27
2008-09	6180	4274.19	69.16
2009-10	6180	4513.823	73.04

Source: Directorate of Agriculture & Food Production, Odisha, (different years); Bhubaneswar.

Fig 1: Growth of Irrigation in Odisha 1995-2010.



Irrigation is available to the farmer from three main sources. These are major and medium irrigation, minor irrigation and lift irrigation. In lift irrigation both public and private sector manages the units. The state has cultivated area of 64.20 lakh ha in 1995-96. It has been assessed that 50.76 lakh ha can be brought under irrigation through major, medium and minor (lift and flow) irrigation projects out of the total in that year. By end of 2009-10, the irrigated area increased to 45.13 lakh ha constituting 73 percent of the cultivated area in that year.

4.2 Rural Housing

The major aim of economic development is to raise the levels of living of people in the country, which in turn depends on the level of employment and income and access to basic needs such as food, cloth, and housing. Housing is a basic human need and important constituent of the quality of life. It is an index of the socio-economic progress in a country. Owning a house provides significant socio-economic security and dignity to a citizen in the society. Census of India is the only source of data to assess the condition of rural housing in the country. Data on housing for 2001 census is available for such analysis. It indicates that in India about 39.8 percent of 138.27 million rural households reside in 1 room tenement, 30.2 percent in two room houses, 26.7 percent in three or more rooms and 3-4 million do not have an exclusive living room.

In rural Odisha, out of the total houses, 22.3 percent are in good condition, 67.5 percent in liveable condition and 10.3 percent are in dilapidated condition. Considering the magnitude of the problem the central government announced a national housing and habitat policy which aims at providing "Housing for all" by the end of tenth plan period. Efforts are being made to meet the housing needs of the people belonging to different income groups. Special priority is being given to lower income groups and economically weaker sections. In order to meet the short age of housing in rural areas, various housing programmes such as Indira Awas Yojan (normal and additional) and PMGY (Gramin Awas) are being implemented in the state.

Table 2: Provision of Houses under Indira Awas Yojana in Odisha

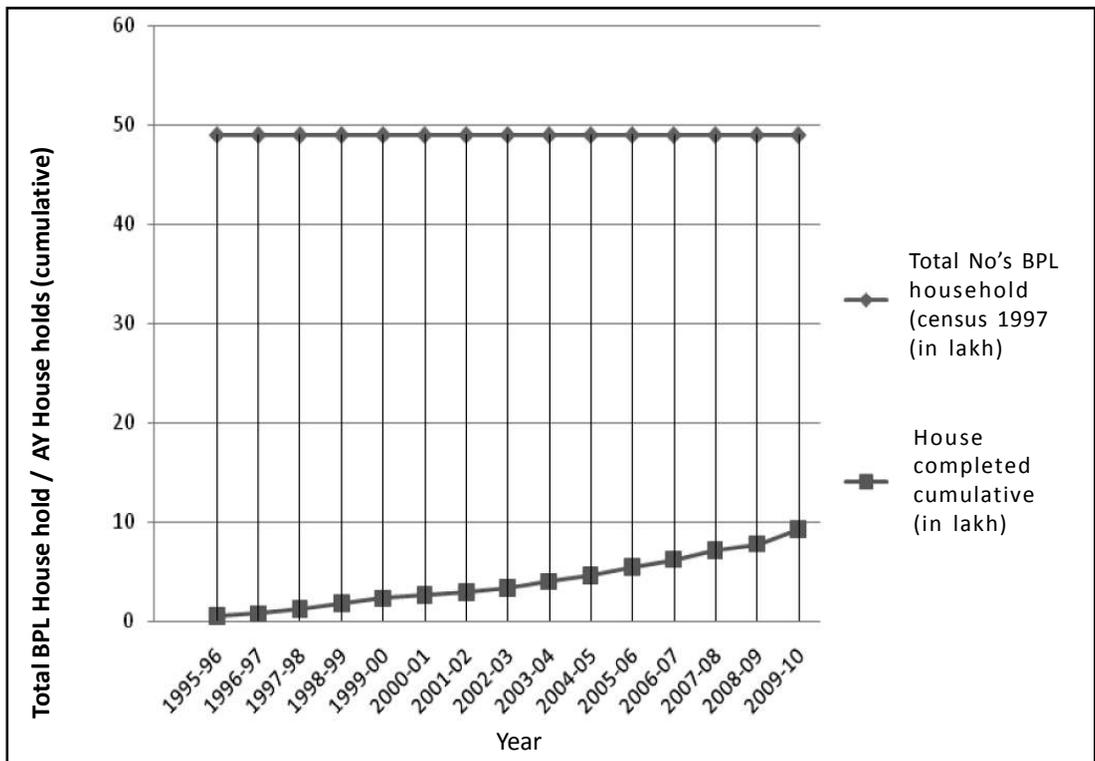
Year	Total No's BPL household (census 1997) (In Lakh)	Houses Completed (No of Units)	Total No's of houses completed (cumulative) (No of Units)	Percentage of houses completed
1	2	3	4	5
1995-96	49	51033	51033	1.04
1996-97	49	24242	75275	1.53
1997-98	49	50023	125298	2.55
1998-99	49	51675	176973	3.61
1999-00	49	53328	230301	4.7
2000-01	49	31859	262160	5.35
2001-02	49	27394	289554	5.9
2002-03	49	48465	338019	6.89
2003-04	49	58996	397015	8.1

2004-05	49	67892	464907	9.48
2005-06	49	77850	542757	11.07
2006-07	49	79668	622425	12.7
2007-08	49	90627	713052	14.55
2008-09	49	61662	774714	15.81
2009-10	49	151234	925948	18.89

Source: Panchayati Raj Department, Government of odisha.

The IAY Scheme is being implemented in the state from the year 1985-86 to provide assistance for construction of dwelling units to the BPL households belonging to SC, ST and freed bonded laborer category. Since 1993-94, the scope of the scheme was extended to cover the all rural BPL households belonging to the non SC and ST poor subject to the condition that the benefits to the SC/ST would not be more than 40% of the total IAY Allocation. The benefits of the scheme have also been extended to the families of ex-service men of the armed and paramilitary forces killed in action. Three percent of the houses are also reserved for physically and mentally handicaps.

Fig 2: Houses Provided under Indira Awas Yojana in Odisha



As per 1997 BPL census, 49 lakh households belong to the BPL category in Odisha. Since then, there is a controversy with regard to BPL survey and there is no survey to identify the exact number of BPL families in the state for the last 16 years. Out of 49 lakh BPL households only 9 lakh households were provided with houses under IAY by the end of 2009-2010. This constitutes 19 percent of the total BPL families. Given the present rate of provisioning it will take at least another 20 years to give housing facilities to all the BPL families

4.3 Rural Electrification

Among the infrastructure facilities, energy plays an important role to achieve economic development. Energy is one of the inputs for a comfortable living. This influences the overall wellbeing of the people. With multiple use of electricity, it became a vital requirement of day to day life. Existence of villages without electricity even after 65 years of independence clearly reveals the failure of our policy priorities. There are about 47 thousand villages in the state out of which electricity is available only to 36 thousand villages. 11 thousand villages have no electricity till now. After power sector reform initiatives in the state, rural electrification was totally neglected which is visible from the table.

Table 3: Number of Village Electrified 1995-2010.

Year	During the year	Number of Village Electrified by the end of the Year (Cumulative)	Percentage of Village Electrified
1995-96	480	32978	70.1
1996-97	737	32825	70.0
1997-98	800	33625	71.56
1998-99	817	34442	73.43
1999-00	748	35190	74.89
2000-01	0	35362	71.26
2001-02	0	35957	73.52
2002-03	0	36552	75.78
2003-04	0	37147	78.04
2004-05	0	37744	80.32
2005-06	300	38044	80.90
2006-07	0	37761	80.2
2007-08	0	37479	79.5
2008-09	0	36914	78.1
2009-10	0	36349	76.7

Source: GRIDCO, Bhubaneswar .

Government of India has a target for electrification of all the villages of the country by March 2007. To achieve this objective, rural electrification was made one of the components of Prime Ministers Gramodaya Yojana (PMGY) from the year 2001-02. Under this Yojana, Government of India provided financial assistance to the states in the form of additional central assistance. A state level monitoring committee has been constituted by the Government of Odisha under the chairmanship of Development Commissioner as per the guidelines issued by Ministry of Power, Government of India to formulate broad policy guidelines regarding the manner in which the rural electrification work shall be carried out and to monitor its' execution. Besides, district level committees have been constituted with Collectors as chairman to identify the villages to be electrified and to tackle the field level issues relating to rural electrification. The Engineer in Chief (Electricity) Odisha has been declared as nodal officer to monitor and review the rural electrification works.

4.4 Rural Transport and Communication

Transport infrastructure plays an important role in the growth process through increasing mobility of human and physical resources. Transport infrastructure saves time and decreases the cost of transportation and thereby helps both the rich and the poor. Transport development in rural areas strengthens linkages between towns and country side. Development of transportation infrastructure is also essential for marketing of agricultural produces and enables farmers to get fair prices. Keeping this in view the State Government has accorded a very high priority for development of transport infrastructure in the state. Good roads improve the accessibility of the people to markets and facilitate better delivery of many public services. Emphasis is being given to provide all weather road communication to inaccessible areas and upgrade the existing road net work. So far, only 40 percent of approximately 47,000 villages in Odisha have all weather connectivity as compared to the national average of 60 percent.

Table-4 below gives the rural road availability per lakh of population in the state over the years.

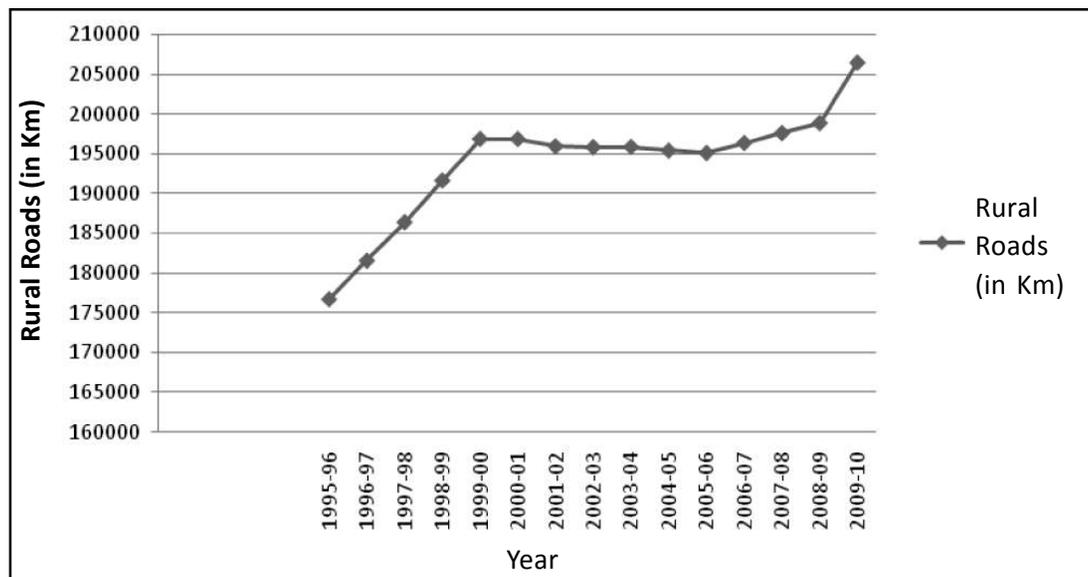
Table 4: Total Rural Roads in Odisha

Year	Total Population (in lakhs)	Rural Roads (in KM)	Rural road (per lakh population)
1	2	3	4
1995-96	291	176707	607
1996-97	293	181563	619.66
1997-98	295	186418	631.19
1998-99	298	191662	643.16
1999-2000	300	196905	565.35

2000-01	305	196897	642.28
2001-02	312	195978	628.13
2002-03	315	195873	621.81
2003-04	319	195898	614.10
2004-05	323	195436	605.06
2005-06	326	195139	598.58
2006-07	330	196392	595.12
2007-08	335	197644	589.98
2008-09	339	198896	586.71
2009-10	346	206507	596.84

Source: Chief Engineer N.H. / Road BIRW P.R Department

Fig 3: Growth of Rural Roads in odisha



The table presents the status of rural roads per lakh population over the years. Rural roads per lakh population have shown increasing trend only in 1999-00. In all other years, it is declining indicating inadequate emphasis of the government on this item.

5. Rural Monthly Average Per Capita Expenditure (RAMPCCE) and Rural Economic Infrastructure-An Econometrics Analysis.

The RAMPCCE is used to calculate the poverty figures for the states by the Planning Commission. Thus to establish a relationship between poverty scenario and the availability

of four rural economic infrastructure, a multiple regression model is fitted by taking RAMPCCE as the dependent variable. The independent variables selected are area irrigated, number of houses completed under the IAY scheme, number of villages electrified and rural roads per lakh population. The statistical data for a 15 year period is collected from different sources. By using Gretl-econometrics software, the OLS regression coefficients are estimated. The structure of the model is;

$$\text{RAMPCCE} = a + b_1(\text{IRRIG}) + b_2(\text{RUHC}) + b_3(\text{RUEL}) + b_4(\text{RURO}) + U_i \text{-----(1)}$$

Where

RAMPCCE = RURAL MONTHLY PER CAPITA EXPEDITURE;

IRRIG = IRRIGATED AREA IN 000' Ha;

RUHC =TOTAL NUMBER OF HOUSES COMPLETED;

RURO = RURAL ROAD PER LAKH POPULATION;

RUEL =TOTAL NUMBER OF VILLAGES ELECTRIFIED

Table 5: Data Base for the Regression Model

Year	Monthly average per capita expenditure	Irrigated area in 000' Ha	Total no's of houses completed (cumulative)	Number of Village Electrified by the end of the Year (Cumulative)	Rural road (per lakh population)
1995-96	243.53	3258.81	51033	32978	607
1996-97	308.55	3357.87	75275	32825	619.66
1997-98	298.48	3426.38	125298	33625	631.19
1998-99	300.88	3436.86	176973	34442	643.16
1999-2000	373.17	3485.33	230301	35190	565.35
2000-01	392.48	3599.70	262160	35362	642.28
2001-02	307.69	3658.90	289554	35957	628.13
2002-03	390.48	3698.29	338019	36552	621.81
2003-04	397.89	3815.77	397015	37147	614.10
2004-05	414.08	3931.16	464907	37744	605.06
2005-06	398.89	3990.35	542757	38044	598.58
2006-07	460.32	4040.022	622425	37761	595.12
2007-08	458.56	4095.39	713052	37479	589.98
2008-09	558.95	4274.19	774714	36914	586.71
2009-10	715.59	4513.823	925948	36349	596.84

Interpreting the Results of the Regression Relationship

	Coefficient	Std. Error	t-ratio	p-value
const	-88.4803	744.259	-0.1189	0.90772
Irrigated area (in000Ha)	0.449379	0.253448	1.7731	0.10662
Total number of houses completed_(cumulative)	-8.11731e-05	0.000347732	-0.2334	0.82013
Number of Village Electrified by the	-0.0263607	0.0092646	-2.8453	0.01739**
Rural road_ Per lakh population_	-0.372056	0.604153	-0.6158	0.55176
R-squared	0.925404			
F-Value (4,10)	31.01367			

- ❖ The regression coefficients indicate positive relationship between area irrigated and negative relationship for the three other variables with the RAMPCCE.
- ❖ It is interesting to note that villages electrified is the only independent variable having significant impact on the dependent variable at 5 percent level of significance in a two-tailed test. At 10 percent level irrigated areas appears to be significant. The other two explanatory variables number of houses under IAY and Rural Roads fail to qualify the significance test.
- ❖ The R-square value is 0.92 indicating good explanation of the variation in the dependent variable by the independent variables.
- ❖ The calculated F-value is 31.01 which is higher than the theoretical value of around 4. This establishes that the combined impact of all the explanatory variables is significant.

6. Conclusions

1. There is need for more intensive irrigation expansion to improve the income of the farming class in the rural areas.
2. Rural housing provision is not much satisfactory as the coverage of BPL families is only 19 percent since 1995 till the end of 2010. Many people live in very sub-standard housing condition which might be affecting their ability to work.
3. In rural electrification, the pace appears to be extremely slow due to privatization of the power sector. Recently, the government has abandoned private distributors and it is expected that rural areas will benefit from this government takeover.
4. The worst situation is noticed in rural roads. Instead of increased provision of rural communication, it is declining over the years. This might be affecting the transportation of farm produce to the markets.

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Water Supply System in Rural Odisha Status, Performances and Problems

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Availability of safe drinking water is one of the most important determinants of community health, well being and health infrastructure in modern civilised world (MDGs). Therefore ensuring drinking water security to the people in general and rural people in particular has been in the agenda of both centre and state governments in India since long. The rural drinking water supply sector started in 1972-73 with the launch of Accelerated Rural Water Supply Programme (ARWSP) by the Government of India followed by Rajiv Gandhi National Drinking Water Mission(1991-92), Swajaladhara (2002) and National Rural Drinking Water Programme(2009).All the national rural water supply programmes have been in operation in Odisha and over the years the RWSS organisation has been providing safe source of drinking water in rural habitations of the state through tube wells and pipe water supply scheme. Present study is based on both primary & secondary data and aims at analysing the status & performance of drinking water supply system along with the problems faced by users in this sector . It is found that Odisha is yet to be covered fully under the safe water net. There are two types of operational models in rural water supply system in Odisha and peoples participatory model is found to be more efficient. Water supply infrastructure in rural area is found in a very poor condition, availability of safe water through water supply scheme falls short of the provision of the NRDWP and requirement of safe water by household too. Insufficient safe water & duration of supply, discrimination, problem of frequent break down & maintenance are common problem of this sector.

Key words: Safe source, habitation, full capacity, spot source, Pipe water supply

1. Introduction

Water is basic to life but safe water is fundamental to health, survival, growth and development (MDGs). Good management of safe water and sanitation is critical to poverty reduction and a pre-condition for inclusive and sustainable development (UNSGAB-2013). Although availability of safe water to all is considered as one of the important determinants

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of community health, wellbeing and health infrastructure in modern civilised world, this basic necessity is still luxury for many of the world's population (Unicef-2011). Again poor or no access to safe water has resulted in many social, economic, health related problems which potentially constraints the process of human resource development and their productivity(Jalan- 2003).Therefore, ensuring water security to all people in general and rural people in particular has found an important place in UN Millennium Development Goals(MDGs).

Providing safe water to more than 833 million(Census 2011) of people of rural India residing in about 1.69 million habitations spreading over 15 diverse ecological regions is a daunting task. Article 47 of India constitution confers the duty of providing clean water and improved public health standard to the state. Accordingly the provision of rural water supply (RWS) has become the primary responsibility of the state government, but the central government contributes a significant part of the programme funds . Rural water supply sector was started in India in the year 1972-73 with the launch of Accelerated Rural Water Supply Programme (ARWSP) by the Central government. The second generation programme was started in 1991-92 as Rajiv Gandhi Drinking Water Mission. With the involvement of community in planning, implementation and management of drinking water supply the sector reform project came up in 1999-2000 as a third generation programme which later turned to Swajaladhara in 2002.And the decentralised approach was introduced in this sector by involving PRI and community organisations in the fourth generation programme in the name of National Rural Drinking Water Programme (NRDWP) in 2009. At present Rural Water Supply and Sanitation (RWSS) organisation has been monitoring the water supply programme at the grassroot level along with PRI to achieve the target of providing 55 lpcd(liters per capita per day) in rural habitations. Maintenance of the project is borne by fund allocated by the Finance Commission and NRDWP. Purpose wise requirement of safe water in rural habitation of India is presented below in Table 1.

Table 1: Purpose wise requirement of water

Purpose	Quantity(lpcd)
Drinking	3
Cooking	5
Bathing	15
Washing utensils & house	10
Ablution/Toilets	10
Washing clothes & other use	12
Total	55

Providing safe water to rural people is the subject of state list in India but central government supplements the effort of state governments by providing financial assistance for the purpose. Plan wise share of central fund and state fund for rural water supply is presented in Table 2. It is observed that initially only state government was funding the rural water supply but from fourth plan central government is providing a lion share for the purpose of rural water supply in India.

Table 2: Plan wise allocation of fund by central government and state government for rural water supply (In crores)

Five year plan periods	Central fund	State fund
First plan(1951-56)	000	3.00
Second plan(1956-61)	000	30.00
Third plan(1961-66)	000	48.00
Fourth plan(1969-74)	34.1	208.00
Fifth plan(1974-79)	157.17	348.00
Sixth plan(1980-85)	895.38	1530.17
Seventh plan(1985-90)	1905.64	2471.53
Eighth plan (1992-1997)	4139.74	5084.44
Ninth plan(1997-2002)	8454.57	10773.11
Tenth plan(2002-07)	16254.42	15102.4
Eleventh plan(2007-12)	40150.00	49000.00

Sources: Ministry of Drinking Water and Sanitation , Govt of India

As per census 2011, total population of Odisha is 4.2 crores out of which 3.49 crores (83.31%) lives in rural area in 1,57,296 number of habitations of 47,127 villages in 6,217 grama panchyats. All the rural water supply programmes of central government have been operational in the state of Odisha from the date of the inception of the sector. At present NRDWP is in operation in the state from 2009 and the RWSS organisation is monitoring the programme and PRI is looking after the management, maintenance and operation of the rural water system at village level in Odisha and in some cases block level staff are also in charge of taking care of the whole system . At present tube well(Spot source) and pipe water system (PWS) are the two important means of providing safe water in rural Odisha. As on 2014, 64.73% of total rural habitations have been covered under safe water net in Odisha.

Different scholars have worked on the status of safe water facilities in rural India. Khurana (2011) found out that rural drinking water system in India has developed a lot but the problem of monitoring, maintenance and operation is still there. Chivate(2010) says safe water facilities increases the health condition as well as income of people in rural but the

rural water infrastructure is of poor condition in India. A study of Rush (2010) questions the efficiency monitoring net work, Das (2012) opines that rural drinking water set up in India is unorganised and formal, Again Das (2008) raises his voice on the aspect of sustainability of drinking water system in rural area and says regarding the poor quality of water. Hutton & Bartram (2008) and Toubkiss (2006) focus on the cost aspect of drinking water supply to the poor, they suggest that the establishment, operational and maintenance cost over a period of time must be included in the project cost.

2. Objectives

In this back drop, the present study is an attempt to analyse the present status of safe water supply system in the rural Odisha with following objectives.

- To study the status of the for rural water supply system in Odisha
- To study the performance of safe water system in rural Odisha
- To find out the problems faced by people in getting the benefit of safe water in rural Odisha
- To give suggestion to overcome the problems in rural water supply system in the state.

3. Methodology

The present study is based on both primary and secondary data. A multi-stage random sampling technique is used for collecting data from the study area. At the first stage Ganjam district of Odisha which consist of 22 numbers of CD block is selected in random. At the second stage, Chhatrapur CD block and Rangeilunda CD block is selected for the purpose of study. Chhatrapur and Rangeilunda CD block is consist of 17 and 24 gram panchayats respectively. At the next stage Laxmipur gram panchayat and Badakustali gram panchayat is finalised among the gram panchayats of selected CD blocks. There are 72 and 79 villages in Laxmipur and Badakustali gramapanchayat. From all the villages of selected gram panchayats, one village from each gram panchayat is selected in randomly. Thus, Laxmipur and Sanakusastali villages is finally selected for the purpose of collecting data for the study which is consisting of 419 and 204 household respectively. All households of these villages are enlisted, 10 % of total households of selected villages are finalized for collecting data. Thus, total 62 households are selected in random for the purpose of study of which 42 households from Laxmipur and 20 households from Sanakusastali. Two sets of structured pre-tested questioners, one for the selected village/habitation and another for the selected household are developed purposefully keeping the objective of the study in centre. Data as required is collected from the head of the habitation and household through field survey method. Officials of RWSS is contacted to get some basic information regarding the system in the study area. Records of RWSS organisation is referred to as per the

requirement. Secondary data are collected from different published and unpublished sources for the purpose of the study. Different types of descriptive statistical tools are used for analysing various dimensions of the issue.

4. Results and Findings of the Study

4.1 Status of the rural water supply system in Odisha

Physical coverage of rural habitation under safe water supply programme is one of the important indicators of status of water supply system . Total habitation covered along with coverage of SC dominated habitation, ST dominated habitation and other habitation covered by the rural water programme in Odishas is presented in Table 3. It is observed that as on 2014, 64.73% of total rural habitation of Odisha is covered by safety water net. State level coverage of SC dominated, ST dominated and other habitation is found to be 67.27%, 64.57% and 64.43% respectively. Among the districts Rayagara tops the list in covering 100 % of habitation and Balangir is found covered only 14.50% of habitation & stands at the bottom in the list of districts covered under rural safe drinking water net. In SC and ST dominated habitations covered by safe drinking water programme Rayagara and Balangir maintains their position except non-SC/ST dominated district. Thus, it is found that the physical coverage of rural habitations in the safe water net is remarkable but for 35.27% habitations of rural Odisha safe drinking water is still a luxury.

Table 3: Physical coverage of water supply in rural Odisha as on 2014

District	Total habitations	Total habitation Covered	SC dominated habitation covered	ST dominated habitation covered	Other habitations covered
ANGUL	6403	4462(69.65)	425(74.3)	822(69.54)	3215(69.11)
BALANGIR	3170	460(14.50)	29(20.42)	79(9.66)	352(15.91)
BALASORE	4953	3023(60.94)	506(61.26)	442(64.43)	2075(60.16)
BARGARH	3245	1790(55.14)	94(51.09)	331 (59.32)	1365(54.51)
BHADRAK	5074	3079(60.54)	570(64.7)	18(85.71)	2491(59.54)
BOUDH	3323	2500(74.78)	327(68.7)	476(75.56)	1697(75.86)
CUTTACK	7826	5196(67.39)	674(71.4)	187(74.21)	4335(65.37)
DEBAGARH	2058	1867(90.72)	143(92.86)	874(88.82)	850(92.39)
DHENKANAL	3692	2397(64.29)	188(61.64)	349(57.12)	1860(67.60)
GAJAPATI	3193	927(28.52)	22(26.19)	740(28.66)	165(28.25)

GANJAM	6547	3272(49.79)	421(51.34)	574(60.42)	2277(47.43)
JAGATSINGHAPUR	5546	3965(71.48)	678(76.52)	2(100)	3285(70.51)
JAJPUR	5736	3818(65.86)	845(69.21)	115(29.64)	2858(68.24)
JHARSUGUDA	1563	873(55.57)	40(55.56)	518(59.82)	315(49.76)
KALAHANDI	4220	2232(52.87)	175(59.93)	893(52.50)	1164(52.22)
KANDHAMAL	8256	5241(63.48)	481(63.88)	3719(61.55)	1041(71.25)
KENDRAPARA	9307	5985(64.22)	794(65.84)	6(60)	5785(63.99)
KENDUJHAR	7742	4018(51.83)	223(71.47)	2294(47.23)	1501(58.04)
KHURDA	5187	3399(65.45)	331(66.73)	199(73.43)	2869(64.82)
KORAPUT	4610	3379(73.23)	156(77.61)	2543(72.91)	680(73.51)
MALKANGIRI	2569	1419(57.37)	197(57.77)	1175(57.46)	107(55.73)
MAYURBHANJ	10733	7569(70.4.)	184(69.17)	5728(70.22)	1657(71.15)
NABARANGAPUR	3275	2122(64.56)	107(67.36)	1704(63.87)	311(6.61)
NAYAGARH	4806	3180(66.10)	298(7.12)	526(67.61)	2356(65.49)
NUAPADA	2784	1988(71.38)	34(72.34)	1027(70.44)	927(72.42)
PURI	8420	6614(78.51)	772(74.30)	2(100)	5840(79.1)
RAYAGADA	4650	4650(100)	394(100)	3589(100)	667(100)
SAMBALPUR	5386	3481(64.36)	223(58.68)	2022(67.33)	1236(61.01)
SUBARNAPUR	2877	1942(67.34)	296(64.97)	128(64.97)	1518(68.26)
SUNDARGARH	10145	7013(69.09)	89(68.72)	6133(68.72)	791(71.78)
Total	157296	101810(64.73)	9707(67.27)	37167(64.57)	54936(64.43)

(Figures in parentheses indicates percentage)

Sources: Ministry of Drinking Water and Saitation, Govt of India.(www..mdws.gov.in)

District wise coverage of water supply in term of rural habitation by Pipw Water supply(PWS) and tube well(spot source) in Odisha is presented in the Table 4. It is revealed from the table that in aggregate at state level 23.7% of habitations are covered under PWS, 40.95 % is covered by tube wells and 35.28% are not yet covered under the rural water supply system in Odisha. Among the districts Nuapada is found to be at the top in PWS covering 48.45% and Dhenkanal is at the poorest condition having only 11.15% habitation covered under the PWS scheme. So far as the coverage of districts by tube well is concerned it is found that Rayagara district tops the list by covering 85.46% and Gajapati district is at the bottom by covering only 11.05% of habitation . In aggregate it is found that Rayagda district is fully covered under rural water supply system and Balangir is found to be the poorest among the district in rural water supply coverage .

Table 4: District wise status of water supply (coverage/scheme) in rural Odisha

District	Total habitation	Habitation covered			Habitation not-covered
		Under PWS	Tube well	Total	
ANGUL	6403	1334(20.83)	3128(48.85)	4462(69.68)	1941(30.32)
BALANGIR	3170	NA	NA	460(14.50)	2710(85.48)
BALASORE	4953	2147(43.34)	876(17.6)	3023(60.94)	1930(39.06)
BARGARH	3245	527(16.24)	1263(38.92)	1790(55.16)	1455(44.83)
BHADRAK	5074	1159(22.84)	1920(37.83)	3079(60.68)	1995(39.31)
BOUDH	3323	500(15.04)	2000(60.18)	2500(75.23)	823(24.77)
CUTTACK	7826	1036(13.23)	4160(53.15)	5196(66.39)	2630(33.61)
DEBAGARH	2058	604(29.34)	1263(61.37)	1867(90.71)	191(9.29)
DHENKANAL	3692	412(11.15)	1985(53.76)	2397(64.92)	1295(35.08)
GAJAPATI	3193	574(17.97)	353(11.05)	927(29.03)	2266(70.97)
GANJAM	6547	2026(30.94)	1246(19.03)	3272(49.97)	3275(50.03)
JAGATSINGHAPUR	5546	2055(37.05)	1910(34.43)	3965(71.49)	1581(28.51)
JAIPUR	5736	869p(15.14)	2949p(51.41)	3818(66.56)	1918(33.44)
JHARSUGUDA	1563	278(17.78)	595(38.06)	873(55.85)	690(44.15)
KALAHANDI	4220	1029(24.38)	1203(28.50)	2232(52.89)	1988(47.11)
KANDHAMAL	8256	1205(14.59)	4036(48.88)	5241(63.48)	3015(36.52)
KENDRAPARA	9307	1230(13.21)	4755(51.09)	5985(64.30)	3322(35.70)
KENDUJHAR	7742	1521(19.64)	2497(32.25)	4018(51.89)	3724(48.11)
KHURDA	5187	1979(38.15)	1420(27.37)	3399(65.52)	1788(34.48)
KORAPUT	4610	1177(25.53)	2202(47.76)	3379(73.29)	1231(26.71)
MALKANGIRI	2569	595(23.07)	824(31.95)	1419(55.02)	1150(44.98)
MAYURBHANJ	10733	2771(25.81)	4798(44.70)	7569(70.53)	3164(29.47)
NABARANGAPUR	3275	475(14.50)	1647(50.29)	2122(64.79)	1153(35.21)
NAYAGARH	4806	982(20.43)	2198(45.73)	3180(66.16)	1626(33.84)
NUAPADA	2784	1349(48.45)	639(22.95)	1988(71.40)	796(28.59)
PURI	8420	3986(47.33)	2628(31.21)	6614(78.54)	1806(21.46)
RAYAGADA	4650	676(14.53)	3974(85.46)	4650(100)	00(00)
SAMBALPUR	5386	908(16.85)	2573(47.77)	3481(64.63)	1905(35.36)
SUBARNAPUR	2877	598(20.78)	1344(46.71)	1942(67.50)	935(32.41)
SUNDARGARH	10145	2402(23.67)	4611(45.45)	7013(69.12)	3132(30.88)
Total	157296	37385(23.76)	64425(40.95)	101810(64.72)	55486(35.28)

(Figures in parentheses indicates percentage)

Sources: Ministry of Drinking Water and Sanitation, GoI (www.mdws.gov.in/NRDWP, 12 th Dec. 2014)

Thus, it is found that Odisha has achieved success in covering a big percentage of habitations under the safety net of rural water supply system through PWS and tube well. But a sizeable population still remains uncovered under rural safe water scheme.

4.2 Performances of safe water system in study area

Performance of rural water supply system in the study area is examined by analysing the aspects like existing operational model of water supply, availability of physical infrastructure, comparing the requirement, provision and availability of safe water and purpose wise use of supply water as a percentage of requirements by rural households in the study area.

4.3 Socio-economic profile of study area

Socio-economic profile of study area is presented in Table 5. Laxmipur and Sanakustali village of Laxmipur and Rangeilunda grama panchayat of Chhtrapur and Rangeilunda C D block of Ganjam district is selected for the study. It is found that there are 419 and 204 households lives in 8 habitations in both the selected villages of which 47.99 % are male, 52.01 % are female, 74.45% people belongs to general category, 25.55% are from SC category, 61.34% are literate and rest 38.66% are illiterate.

Table 5: Socio-economic profile of study area

Particulars		Laxmipur	Sanakusastali	Total
Gram Panchayat		Laxmipur	Rangeilunda	
Habitations		04	04	08
Household		419	204	623
Population	Total	1935(100)	851(100)	2786(100)
Gender	Male	927(47.90)	410(48.17)	1337(47.99)
	Female	1008(52.10)	441(51.83)	1449(52.01)
Social groups	Gen	1674(86.52)	400(47.01)	2074(74.45)
	SC	261(13.48)	451(53.00)	712(25.55)
	ST	00(00)	00(00)	00(00)
Education	Literate	1156(59.74)	553(64.98)	1709(61.34)
	Illiterate	779(40.26)	298(35.02)	1077(38.66)

(Figures in parentheses indicates percentage)

Source: Collected and estimated by the author.

4.4 Operational models of rural water supply system

With an objective to examine the performance of rural water supply system in the study area operational models of water supply system is extensively analysed and data related to types water sources, their functional status, information regarding availability of other water supply infrastructure etc. in the study area is collected and presented in the Table-6. During field survey it was observed that there are two type of operational model of rural water system exist in the study area i.e. Outside Managed System (OMS) and Self Managed System (SMS).

In OMS model of Sanakusasthali village, government staff manages, operates and maintains the system from outside and from distance too. Safe water is provided through selected stand post in the village/habitation at a specific time for a given duration, beneficiary use to go to that stand post to collect the water, maintenance is the responsibility of government staff, reporting for maintenance and maintenance is not accountable to anybody. Electricity bill, maintenance cost and other expenses are borne by government. In this model one mechanic is paid Rs1000/ only per month for providing the maintenance service to the system. All type of maintenance and operational cost is provided by project fund and the whole system is managed by outside from distance.

In SMS model of Laxmipur village, users committee along with Panchayat Raj Institution (PRI) member manages, operates and maintains the system from within. In this model users committee-PRI member has the autonomy to take decision regarding the management of the project. Each user pays a fixed amount for getting connection along with an annually/monthly user fee as decided by the users committee. All beneficiary households are provided with one out-let of safe water at their door step and expenses made for the extension of out-let to the door step from main distribution channel is borne by the user. Water is supplied at given time and for a specific duration which is decided by the user committee. Users committee pays the electricity bill, takes care of the maintenance cost and other expenses of the system from the money collected from the beneficiaries. In this model users committee along with PRI member appoints one self employed mechanic (SEM) preferably from the village and pays a remunerative amount for looking after the system. Minor maintenance cost is provided by user committee and major maintenance cost is borne by project fund.

Thus, it is found that in OMS model beneficiary goes to the water spot where as in SMS model beneficiary gets the water at the door step and saves time & energy. On the other hand, in SMS model beneficiary pays a user fee and takes part in the process of decision making where as in OMS model beneficiary pays nothing and use the system as a user only

having no involvement. In SMS model, one SEM appointed by users committee provides maintenance service to the system immediately in time of need and accountability is also fixed on the SEM. Besides one local unemployed gets employment and a remunerative amount is also given to him, whereas in OMS model the maintenance of the system is in the hand of government staff who stays far away or on a person who is given a non-remunerative amount, as a result maintenance problems are common in OMS model. In SMS model users committee develops a sinking fund by collecting money in form of connection charge and users fee, spent it for different types of expenses of the system and rest amount is used for other developmental purposes of the village with the consent of the user committee-PRI members. Thus, SMS model is participatory in nature where degree of accountability and transparency is relatively more than OMS model.

4.5 Availability of infrastructure of rural water supply system

It is found that there are two types of rural water supply infrastructures available in the study area. The first one is developed by government and the second one by individuals/community in aggregate. With an objective to know status of rural safe water supply infrastructure in the study area, information regarding the project source, private source, connection, stand post, status of the sources, management type etc. are collected and presented in Table 6. It is revealed from the table that in SMS model of Laxmipur village there are 03 PWS, 11 spot sources of which 01(33.34%) PWS and 05(45.46%) spot sources are not functioning. In OMS model of Sanakusastli out of 02 PWS and 11 spot sources, 01(50%) PWS source and 04(36.37%) spot sources are also not functioning. In aggregate it is found that, 42.86% of water sources of Laxmipur village, 38.46% of Sanakusastali village and 37.67% water source in over all is not functioning in the study area. So far as the delivery point of rural water supply system is concerned, it is found that there are 300 connections of PWS and 8 tube well in functional condition for 419 household in SMS model of Laxmipur and there are only 6 stand points of OMS model and 9 tube well for 204 households in OMS model of Sanakusastali. Besides the government sponsored water supply infrastructure, there are also different types of other water sources developed/owned by private individuals in the study area. It is observed that there are also 35 tube wells, 10 wells, 08 ponds, 02 other types of water sources available in study area. When the healthiness of spot sources of water are considered it is found that not a single tube well full filling the criterion of a healthy source i.e. 14ltr yield of water per minute. The degree of healthiness is also found very poor in all type of sources. Official of RWSS reports that excesses extraction of ground water along with non conservation of water are important causes of non functioning and unhealthy of sources.

Table 6: Status of infrastructure of rural water supply system in study area

Particulars	Laxmipur			Sanakusastali			Total		
Project source									
Source type	Funct- Oning	Not- functioning	Total	Functioning	Not- functioning	Total	Functioning	Not- functioning	Total
PWS	02 (66.66)	01 (33.34)	03 (100)	01 (50)	01 (50)	02 (100)	03 (60)	02 (40)	05 (100)
Tubewell (spot source)	06 (54.55)	05 (45.46)	11 (100)	08 (72.73)	04 (36.37)	11 (100)	14 (63.63)	08 (36.37)	22 (100)
Total	08 (57.14)	06 (42.86)	14 (100)	09 (69.23)	05 (38.46)	13 (100)	17 (62.96)	10 (37.04)	27 (100)
No.ofsupply points of PWS	300 (connection)			06(stand post)			306		
Motor	03			02			05		
OHT	01			01			02		
Management type	SMS Model			OMS Model					
Particulars	Laxmipur			Sanakusastali			Total		
Other source									
Tube- well	16			19			35		
Well	06			04			10		
Pond	06			02			08		
Other	01			01			02		
Total	29			26			55		

(Figures in parentheses indicates percentage)

SMS Model: Self Managed Model, OMS Model: Outside Managed Model

Source: Estimated by the author

4.6 Provision, requirement and availability of safe water for rural households

With an objective to study relationship between the provision, requirement and availability of safe water supplied through rural water supply system, data are collected from the users of the study area and presented in the table in form of provision of water as percentage of household requirement, availability of water from different project sources as percentage of household requirement and availability of water from project as percentage

of provision made by the government. As per NRDWP each individual should be provided safe water of 55 lpcd. Accordingly provision, requirement and availability of safe water per household is calculated by considering average family size of sample household in the study area and presented below in Table 7.

It is revealed from the table that in SMS model of Laxmipur provision of safe drinking water covers 59.69% of the requirement, availability of safe water through different project sources meet 56.51% of household requirement and availability of safe water meets only 63.86 % of the provision. Respective share in OMS model of Sanakusasthali is found to be 63.66%,33.05% and 42.16% respectively. In aggregate, it is observed that provision meets 60.74% of rural safe water requirement, availability full fills only 48.93% of safe water requirement and availability meets only 56.85% of provision of safe water requirement of rural household. Thus, it is found that in SMS model of Laxmipur availability of safe water is better in comparison to the OMS model of Sanakusasthali in term of full filling the requirement as well as meeting the provision target too. In aggregate availability of safe drinking water through different project sources remains far away from requirement as well as provision of NRDWP.

Table 7: Requirement, provision and availability of safe water for rural households

Particular	Provision as % of as requirement	Availability as % of requirement	Availability as % of provision
Laxmipur (SMS Model)	59.69	56.51	63.86
Sanakusasthali (OMS Model)	63.66	33.05	42.16
Pooled	60.74	48.93	56.85

Source: Estimated by the author

4.7 Purpose wise use of supply water by rural households

As per the guide lines of NRDWP, an individual should be provided with 55lts of safe water per day which covers drinking(3lts), cooking(5lts), bathing(15lts), washing utensils & house(10lts), ablution /toilet(10lts) and washing clothes & other use(12lts). With an objective to find out the degree accessibility of safe water (purpose wise) of beneficiary household from different project sources , data is collected from the respondents and percentage of purpose wise water used by beneficiary household from project sources to the total household requirement is calculated and presented in Table 8. It is revealed from the table that in SMS model of Laxmipur, rural water supply system satisfies 78.22% of dinking requirement, 68.25% cooking requirement, 20.05% of bathing purpose, 41.89% of washing utensils & house, 20.21% of ablution/toilet and 5.21% of water required for washing

purpose and the figure of same purposes in OMS model of Sanakusasthali is found to be 69.58%, 54.88%, 00%, 12%, 00% and 00% respectively. In aggregate, rural water supply system satisfies only 73.05% of drinking water requirement, 63.93% of water required for cooking, 13.58% of water required for bathing, 32.24% of water required for washing utensil & house, 13.9% water required for ablution/toilet and 30.62% of water for washing clothes & other purposes.

Thus, it is found that neither of the model is able to provide safe water as per the provision. But the SMS model is better in providing safe water to rural household in comparison to OMS model. And in OMS model percentage of household depending on traditional unhygienic sources of water for bathing, washing clothes and toilet purposes is found higher.

Table 8: Purpose wise use of supply water as a percentage of requirement by rural households

Particulars	Drinking	Cooking	Bathing	Washing utensils & house	Ablution /Toilets	Washing clothes & other use
Laxmipur (SMS Model)	78.22	68.25	20.05	41.89	20.21	45.21
Sanakusasthali (OMS Model)	69.58	54.88	00	12	00	00
Pooled	73.05	63.93	13.58	32.24	13.69	30.62

Source: Estimated by the author

4.8 Problems in rural water supply system

Data regarding the problems faced by users in rural water supply system in the study area is collected and presented in Table 9. In SMS model it is found that 71.42% user says quantity of water supplied by the system is insufficient, 61.90% raises voices on the duration of water supply, 28.57% user says the time of water supply is not convenient to them, 35.71% users faces problem because of unequal distribution, 1.90% opines that there is discrimination in water supply, 14.28% user replies that frequent break down is a common problem and 1.76% complains late maintenance as common problem in the system. In OMS model 90% user say water supplied by the system is insufficient, 75% says duration of water supply is short, 60% questions the time of water supply, 55% user faces the problem due to unequal distribution, 30% users face problem because of discrimination in water supply, 70% opines about frequent breakdown, 80% say wastages of time and energy in waiting to get water, 70% raises voice on sanitation problems, 80% user opines irregular

and delayed maintenance is the common problem for them. In both the models water supplied by the rural water supply system is found insufficient, users expects to get water and for more duration. Unequal distribution of water and discrimination is also found in both models, it may be due to the technical problem of distribution channels of water system in SMS model and common stand post OMS model. Frequent break down and late maintenance is also reported by more beneficiaries in OMS model, it may be due to the absence of maintenance mechanism like appointment of SEM of SMS model. Wastages of time & energy and problems of sanitation in OMS model may be due to the common stand post supply system.

Table 9: Problems in rural water supply system

Problems faced	SMS model	OMS model
Insufficient quantity	71.42	90.00
Insufficient duration of supply	61.90	75.00
Time of supply	28.57	60.00
Unequal distribution	35.71	55
Discrimination	1.90	30
Frequent breakdown	14.28	70.00
Wastages of time & energy	..	80
Problem of sanitation	..	70.00
Maintenance problem	1.76	80.00

Source: Estimated by the author

5. Conclusion

Thus, it is concluded that the availability safe water is considered as a healthy indicator in the process of human resource development and the provision safe water for all is an international call. Constitution of India confirm the responsibility on state government to provide safe water to all its citizen. As 70 % of Indians lives in villages, providing safe drinking water to rural area has become a herculean task. The rural drinking water sector was started in India in the year 1972-73 with the launch of Accelerated Rural Water Supply Programme (ARWSP). Presently, National Rural Drinking Water Programme (NRDWP) is in operation throughout rural India for providing safe water and RWSS organisation is monitoring the system at different levels along with PRIs in some areas. In this regard it is observed that central government of India has been funding a major share of developing security net of safe water in rural India. So far as the status of rural water supply system in Odisha is concerned as on 2014, 64.73 % of rural habitations is cover under the safety net of

drinking water which covers 67.27 % ST dominated habitation, 64.57 % SC dominated habitation & 64.4% is other rural area .Thus, it is found that after so many years of the inception of rural drinking water supply system in Odisha , still 35.27% of rural habitations are yet to come under the safety net of rural water system. Again it is observed that there are two types of model i.e. SMS model and OMS model operating in rural area which is managed by users committee & PRI members and government agency respectively. It is revealed that SMS model is operating in a better way in comparison to OMS model. Again it is found that the existing infrastructure of rural water supply system is in very poor condition, a good percentage of spot water source is not functioning, source of PWS and tube well is depleting because of excess extraction of ground water by unrestricted digging of private tube wells in rural area and also due to lack of pro-active steps towards water conservation. It is also found that water quantity supplied by rural water supply system is insufficient to meet the household requirement, the volume of water supply through rural water supply system falls short of the provision made by government and the problem is observed in higher degree in OMS model. Besides, water supplied through the rural water supply system is meeting a big share of drinking water requirement only but a good number of rural household are still depending on traditional, unhygienic, unsafe sources of water for other purpose like cooking, bathing, washing, toilet use etc. Problem of insufficiency of supply water is common in both the model of water supply in rural area but magnitude of insufficiency is found higher OMS model. Unequal distribution, insufficient duration, discrimination in water supply, frequent break down, late maintenance, sanitation, wastages of time & energy in collecting water, are also other major problems in both models of rural water supply system.

The following are the policy implications

- Steps may be taken to bring the uncovered rural area of Odisha to the safety net of safe water supply system,
- Measures may be taken to increase the performance of rural water supply system by increasing the water supply infrastructure along with the increasing the volume of availability of safe water not only for drinking purposes but also for other uses as per the norm of NRDWP in rural Odisha.
- Multi dimensional water conservation programme along with restriction on free use of ground water may be implemented strictly to increase the ground water level which will restrict the depletion of water sources.
- Peoples participatory management system may be encouraged in rural water supply system to overcome the problems faced by beneficiary households in managing and using the system through self generated sources, locally available resources etc.

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Rural Health Infrastructure in Odisha - An Analysis

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Health infrastructure is an indicator of both the mechanism and effectiveness of delivery of healthcare facilities. Its adequacy is assessed by the extent to which it caters to the healthcare need of the people. Due to their illiteracy and poverty, public healthcare facilities are the main support of healthcare need of the rural people. But the inadequacy in infrastructure, manpower and supportive facilities makes these health centres non-functional thus adversely affecting the accessibility to healthcare need of the rural people. This results in their low performance and thus a low health status of the people. This paper analyses the adequacy of rural infrastructure in Odisha and their impact on the health status of the people in rural Odisha.

Keywords: Infrastructure, manpower, health status, HealthCare

1. Introduction

Health Infrastructure of a place is an indicator of not only the mechanism but also the effectiveness of healthcare delivery. Overall it can be classified into the educational and service infrastructure. It is the aspects of 'service infrastructure', which forms the basis of analysis in this paper. The service infrastructure consists of the health delivery units like the hospitals, clinics, dispensaries etc under the different systems of medicine like Allopathy, Ayurveda, Unani, Homeopathy etc. This paper tries to explore the adequacy and effectiveness of healthcare delivery in rural Odisha. For this purpose the paper has been divided into 2 sections. Section 1 analyses the prevailing conditions of the rural health infrastructural facilities in the state of Odisha and section 2 discusses the rural health status and analyse the district wise availability and their impact on performance in healthcare provisions based on certain chosen parameters.

2. Review of Literature

Substantial physical, financial and social barriers to accessibility to rural healthcare exist not in maternal and child care but also in other forms of diseases (Pandey, 2013). These

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issues can only be addressed through a vigorous role played by the health care providers in the field extended by the Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs) who can create awareness at the very grassroot level. Poverty, low/no education, severe shortages of skilled and unskilled manpower mainly due to unwillingness to work in the remote areas and the failure of the government to make them accountable through actual policy implementation have severely affected the overall impact of National Rural Health Mission(NRHM) to make a significant mark in health status of Odisha(Patra and Ramadass,2013).Against the Indian Public Health Standard(IPHS) norm of at least one doctor for every 20,000 people in the rural areas, many health centres are functional without any physicians and specialists in the rural areas of the state. Along with inadequate health centres, the absenteeism of physicians and staff in the existing centres increases the spatial inaccessibility of the rural people. 23 districts of the state were identified as severely lacking in several indices of health infrastructure and the rest 7 with a little higher position with none of the district satisfying the standard norms of minimum physical and manpower infrastructure (Bose and Adhikary, 2008).Even if the rural health infrastructure are available, factors like the dominance and dependence on folk and traditional healers, spatial inaccessibility,non-awareness, low density of population and barriers related to culture language etc make the overall utilisation and thereby the outcome of the health service system somewhat unsatisfactory in the state. It faces acute shortage of doctors more so in specialists of paediatrics, anaesthesia, obstetrics etc due to the limited number of seats in the state run medical institutions. The same situation is faced in case of paramedics' staffs which are insufficient to run the state operated medical institutions (Gupta, 2002).

3. Objectives of The Study

1. To analyse the adequacy of rural health infrastructure in the state of Odisha.
2. To analyse the impact of availability of infrastructure on the health status of the people in the rural areas of the districts of Odisha.

4. Adequacy of Rural Health Infrastructure in Odisha

Rural health infrastructure can be said to be adequate if it caters to the health need of the people. In other words people are able to access it without any physical or financial barriers. In this section we make an in-depth analysis of the primary healthcare facilities in the districts of rural Odisha where more than 83.3% of the population lives (Population Census, 2011). It is worth mentioning here that out of a total area of 155707 sq. km of Odisha, 98.21% i.e., about 152912.87 sq.km is are the rural area with 51313 villages (Population Census, 2011).Being deprived of the economic capacity to access adequate healthcare due to financial barriers, this vulnerable section depends on the public healthcare facilities for their health care need. However mere availability of infrastructure which is non-performing

due to inadequate manpower and logistic support like availability of the required staff, drug supplies, laboratory and other facilities is a serious threat to the healthcare need of the people. Not to speak of the deplorable condition faced by the people where even the infrastructure is lacking. To make an in-depth analysis of these features, some chosen indicators for infrastructure availability and performance are given below.

Infrastructure Indicators

1. Adequacy of the healthcare centres (Sub-Centres (SCs), Primary Health Care (PHCs) and Community Health Care Centres (CHCs) in terms of the prescribed number in the state.
2. Adequacy of these healthcare centres in terms of the availability of staff.
3. Adequacy of these healthcare centres in terms of the availability of the infrastructure facilities like supply of water, electricity, drugs etc.

For this we relied on data available from the Rural Health Statistics in India, 2012, published by the Statistics Division of MOHFW, GOI.

4.1 Adequacy of Healthcare Centres in the State

Table 1: Number of Scs, PHCs and CHCs Functioning in Odisha in 2012

	Sub-Centres	PHCs	CHCs	No. of Districts In the state
India	148366 (8300 per person per SC)**	24049 (5120 person per PHC)**	4833 (254809 person per CHC)**	
Odisha*	6688 (4.5) ¹ (223) ² (6360 person per SC)**	1226 (5.1) ¹ (41) ² (34694 person per PHC)**	377 (7.8) ¹ (13) ² (112824 person per CHC)**	30
Kerala	4575 (3.1) ¹ (327) ² (7656 person per SC)**	809 (3.4) ¹ (58) ² (43297 person per PHC)**	217 (4.5) ¹ (15) ² (161415 person per CHC)**	14

Note: *79 other hospitals are functioning at the level of PHCs according to the state's information.

** Calculation based on projected population of 2012.

1. Percent of the total in India. 2. Average per district in the state.

Source: Compiled from Rural Health Statistics in India, 2012, MOHFW, GOI.

Table 1 shows the number of SCs, PHCs and CHCs in Odisha vis-a-vis India and Kerala which has a developed healthcare delivery system. It shows that Odisha has a higher percentage of these 3 healthcare centres at 4.5, 5.1 and 7.8 respectively of the overall number in the country relative to 3.1, 3.4 and 4.5 respectively in Kerala. But when analysed in terms of the average number of these centres in each district of state, Odisha has 223, 41 and 13 SCs, PHCs and CHCs per district relative to 327, 58 and 15 in Kerala. This shows the relative shortage of the availability of these centres relative to their adequate spread in number in Odisha. However analysing in terms of the number of population per the healthcare centre for the projected population of 2012, Odisha is found to be better placed as the population is 6360,34694 and 112824 per SC,PHC and CHC relative to 7656,43297 and 161415 respectively for these centres in Kerala. Apart from these there are 27 Sub-Divisional hospitals, 32 District Hospitals and 329 Mobile Medical Units (MMUs) functioning in Odisha in 2012 relative to 80, 15 and 17 respectively in Kerala. This clearly points to the importance given to MMUs given in Odisha to reach the inaccessible areas but obviously ill-equipped from its very structure of mobility relative to an equipped healthcare centre.

In 2012, of the total 6688 SCs in Odisha, 56% are in government buildings, 40.5% are still operated in rented buildings while 6.1% are located in rent free panchayat buildings or village society buildings. For PHCs, these numbers are 95%, 2.6% and 2.7% respectively while all the CHCs are located in government buildings. These are an important determinant of the availability of other logistic support. 1344 SCs and 33 PHCs are under construction in 2012 in Odisha which would go to address their shortages in the state.

Considering the prescribed population norms (as given in Table 2) with respect to the overall rural population as well as the population in the hilly and tribal areas, there is a shortfall of 18% in SCs,6% in PHCs and a surplus only in the case of CHCs in Odisha(as shown in Table 3). Even in the tribal areas of Odisha, there is a shortfall of 6% each in the number of prescribed Sub-centres and PHCs each while the surplus exists only in the case of the number of CHCs. Here it is to be worth mentioning that SCs are the first contact between the community and the health care centre and the PHC between the community and the Medical officer, both catering to the very basic healthcare need of the poor villagers. A shortage in this basic infrastructure affects the physical and spatial accessibility of the poor people.

Table 2: Population Norms for Health Centres

Centre	Plain area	Hilly/Tribal/Difficult area
Sub-Centre(SC)	5000	3000
PHC	30000	20,000
CHC	1,20,000	80,000

Source: MHFW (2005), Population norms (Census, 2011),<http://www.mohfw.nin.in>

Table3: Shortfall/Surplus in Health Infrastructure in Odisha and Kerala According to Population Census, 2011

States	Sub-Centres				PHCs				CHCs			
	R	P	S	% Shortfall/surplus	R	P	S	% Shortfall/surplus	R	P	S	% Shortfall/surplus
Odisha	8136	6688	1448	18	1308	1226	82	6	327	377	50	1.56
Kerala	3525	4575	1050	30	586	809	223	38	146	217	71	49

Note: 1. R-Required P-In Position S-Shortfall -Surplus 2. Calculated on a population of 34,951,234 for rural areas and 8,599,849 for hilly/tribal areas in Odisha and 17,455,506 and 259,169 for Kerala respectively (Population census, 2011).

Source: Rural Health Statistics, 2012, MOHFW, GOI.

The average rural area covered is 22.86 sq.km, 124.73 sq.km and 405.60 sq.km respectively by a SC, PHC and a CHC in Odisha as against 7.78 sq.km, 44.02 sq.km and 164.11 sq.km respectively only for these centres in Kerala. This translates into a radial distance of 2.70 km, 6.30 km and 11.36 km for a SC, PHC and CHC's coverage in Odisha relative to only 1.57 km, 3.74 km and 7.83 km respectively in Kerala (Table 4). This is a clear indication of the spatial inaccessibility in need of the people in rural Odisha further aggravated by lack of transport and road connectivity to these centres as analysed later in this paper. Thus it can be seen that though Odisha is better placed than Kerala only in terms of the population covered per these health care centres as shown above, it lags behind in terms of average rural area covered by these centres as well as the radial distance covered per centre which is higher than Kerala. Thus there is spatial inaccessibility to the needed health care facilities in Odisha relative to Kerala.

Table 4: Population, Avg. rural Area (In Sq.km) Covered and the Avg. Radial Distance (in KM) Covered by a SC, PHc, CHC in Odisha and Kerala

	Sub-centre		PHC		CHC	
	ODISHA	KERALA	ODISHA	KERALA	ODISHA	KERALA
Avg. Rural area in sq.km covered	22.86	7.78	124.73	44.02	405.60	164.11
Avg. Radial Distance (in km) covered	2.70	1.57	6.30	3.74	11.36	

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

The actual situation is further reflected in Table 5 which gives the number of hospitals and beds in rural and urban areas of Odisha vis-a-vis Kerala. It shows that though the population per number of government rural hospital is lower in Odisha at 25,639 for the population

projected for 2012, it is much higher in Kerala at 1, 13,724. However when the number of persons per bed is analysed the situation is worse for the state of Odisha with 5992 persons per bed in rural government hospitals against only 2863 in Kerala. This situation is against Odisha relative to Kerala even in case of urban government hospital, with 4,67,413 persons per urban government hospital and 4881 persons per bed in Odisha while it is 2,53,819 and 1775 for Kerala respectively for 2012 projected population. This points towards the high dependency rates and thereby the inaccessibility to the health care facilities.

**Table 5: Number of Govt. Hospitals and Beds in Rural and Urban areas
(Including CHCs) (Provisional)in 2012**

	Rural Hospital (Govt.)		Urban Hospital. (Govt)		Total govt .Hosp		Projected Popln as in the reference period(in '000')
	Number	Beds	Number	Beds	Number	Beds	
	1	2	3	4	5	6	7
India	7347	160862	4146	618664	11993	784940	1231492
Kerala	308 (113724)*	12233 (2863)*	138 (253819)*	19727 (1775)*	446 (78536)*	31960 (1096)*	35027
Odisha	1659 (25639)*	7099 (5992)*	91 (467413)*	8715 (4881)*	1750 (24305)*	15814 (2690)*	42534

Note: Govt. Hospital includes Central govt, State govt and Local Govt. bodies.

*Number of population served per unit of the hospital and hospital bed.

Source: Compiled from Directorate General of State Health Services

4.2 Manpower/Staff Adequacy in the Rural Healthcare Centres in Odisha

Manpower/staff strength, both skilled and unskilled, constitutes the most important component of health infrastructure as mere existence of centres or logistics would not work by themselves to address the healthcare need of the seekers of healthcare. The norm for manpower requirement in these healthcare centres prescribes for one Health Worker (Female)/ANM, one Health Worker (Male) for each sub-centre. In addition the IPHS recommends one additional HW (F) along with these personnel. For each PHC the existing pattern is one HW (F), 2 Health Assistants-one male and a female and one each of a mid-wife nurse, pharmacist, medical officer, Laboratory Technician, Driver, 4 Class IV employee and 2 clerks. In addition to these staff the IPHS recommends 4 additional nurse midwives, 1 practitioner in AYUSH or any ISM and 2 additional medical officer of which one should be female. For each CHC, the IPHS norm prescribes for one general surgeon, physician, obstetrician and gynaecologist, paediatric, Anaesthetist, Public health Manager,

Eye surgeon, Dental surgeon, specialist of AYUSH, General Duty Medical officer(GDMO) of AYUSH and 6 GDMO of Allopathy. Along with these there are other support staffs like ANM, staff nurse, pharmacist, laboratory technicians etc.

Based on these prescribed norms, severe shortages in human infrastructure is seen in rural healthcare centres in Odisha as shown in Tables 6,7 and 8. The number of vacancies refers to the vacant posts against those sanctioned while the shortfall refers to the difference between the required staff (which is one for each health care centre) against those in position. While it was shown earlier that the number of sub-centres, PHCs and CHCs are themselves short of the prescribed number in Odisha based on the population norms, the analysis of the existing manpower reflects that even these existing infrastructures remain unutilised due to lack of manpower. It is seen that except in case of HW (F)/ANM at the sub-centres and PHCs where there is a surplus, there exists vacancies and shortfalls in all other cases. There is a shortfall of 43% in HW (M) at sub-centres, 49% of HA (F)/LHV at PHCs, of 100% in HA (M) at PHCs etc. Not only in these supporting staff, there also exists severe shortfall in clinical/technical staff. This includes shortfall of 13% of doctors in PHCs, 79% of specialists in CHCs, 85% of Radiographers at CHCs, 77% of Laboratory Technicians at PHCs and CHCs etc. 7% of the Sub-centres are operational in Odisha without any HW (F)/ANM, 48% without any HW (M) and 6% without both of these staff. Similarly in the next tier i.e., the PHC, none of it has 3 to 4+ doctors, 41% are with 2 doctors and 51% are with only one doctor while 8% are operational without any doctors. While 11% of the PHCs are without any pharmacists and 8% without a lady doctor, none of the existing PHC has a laboratory technician.

The above analysis clearly reflects that not to speak of the prescribed IPHS norms, the rural health centres in Odisha have failed to meet the minimum staff strength required according to the existing infrastructure thus seriously affecting the accessibility to the needed healthcare of the rural and tribal population.

Table 6: Percentage of Vacancy and Shortfall of Staff/Manpower in Rural Healthcare Centres of Odisha

	% of vacancy	% of shortfall
1 .of HW(F)/ANM at SCs and PHCs	**	**
2. of HW(M) at SCs	19	43
3 .of HA(F) /LHV at PHCs	46	49
4. of HA(M) at PHCs	Nil	100
5 .of Doctors at PHCs	19	13
6. of Specialists in CHCs	65	79
7. of Radiographers at CHCs	10	85
8. of Pharmacists at PHCs and CHCs	17	6
9. of Laboratory Technicians at PHCs and CHCs	22	77
10 .of Nursing staff at PHCs and CHCs	4	77

*surplus Source: Compiled from Rural Health Statistics in India, 2012, MOHFW, GOI

Table 7: Numbers of Sub-centers Functioning without Manpower in Odisha (2012)

Without HW(F)/ANMs	Without HW(M)	Without Both
7%	48%	6%

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

Table 8: Percentages of Phcs without Manpower in Odisha (2012)

With 4+ doctors	With 3 doctors	With 2 doctors	With 1 doctor	Without doctor	Without Lab. Tech	Without Pharmacists	Without lady doctor
NIL	NIL	41	51	8	100	11	9

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

4.3 Supportive Infrastructure Facilities at Rural Healthcare Centres in Odisha

Along with manpower, the physical infrastructure enables the smooth provision of healthcare facilities. This includes the availability of water, electricity, quarters, All-weather motorable roads for connectivity, the labour rooms, Operation Theatres(OTs), bed facilities, computers, X-Ray machines and other test facilities etc. An analysis of these physical infrastructures reflects the reasons for underutilisation of even the existing healthcare facilities. Tables 9, 10 and 11 provide detail of the existing shortfall in these physical infrastructures in rural healthcare centres of Odisha. It is seen that 47% of the sub-centres are without any ANM quarters, 34% without any regular supply of water and 40% without electricity. However only 3% of the villages are found to be without All-Weather motorable road connectivity. The situation is found to be more deplorable in case of PHCs with none of it having the minimum prescribed 4 bed facilities or with an operation theatre. 11.5% and 24.9% of the PHCs are still without any supply of electricity and water respectively. With respect to CHCs, though most of it is seen to be equipped with OTs, Rogi Kalyan Samities (RKS), drug supplies etc, yet it lacks in its most basic amenities. Only 9% of the existing CHCs in Odisha is equipped with the recommended 4 specialists, 1% with a functional stabilisation unit for the new born, only 16% with at least 30 beds according to the prescribed norm for a CHC and 11% with a X-ray machine.

Thus the above analysis clearly reflects the large scale physical inaccessibility to the needed healthcare due to lack of adequate healthcare facilities as well as the needed supportive manpower and physical infrastructure. It is worth mentioning here that none of the PHCs and CHCs in Odisha meets the prescribed IPHS norms. This includes less number of health centres than the required population such that the average number of population per centre is above the prescribed capacity. There is lack of manpower and most of these centres do not meet even the minimum requirement of staff according to the existing infrastructure so as to make them operational. Over this, the lack of physical infrastructure cripples the very provision of rural healthcare in Odisha.

Table 9: Infrastructure Facilities Available at Sub-centres

1. % of Sub-centres with ANM quarter	53%
2. % of Sub-centres without regular supply of water	34%
3. % of Sub-centres without supply of electricity	39.75
4. % of Sub-centres without All-Weather Motorable Approach Road	3%

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

Table 10: Infrastructure Facilities Available at PHCs in Odisha (in 2012)

With Labour Room	82.6%
With at least 4 Beds	0%
With operation theatre	0%
Without Supply of electricity	11.5%
Without supply of water	24.9%
Without All-Weather Motorable Approach Road	0.5%
With Telephone	12.1%
With Computer	NIL
With Referral Transport	5%
With Registered RKS	92%

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

Table 11: Infrastructure Facilities at The CHCs in Odisha (in 2012)

With all 4 specialists	9%
With Functional Laboratory	100%
With Functional OT	78%
With functional Labour room	100%
With functional Stabilisation units for new born	1%
With New born care corner	54%
With at least 30 beds	16%
With functional X-Ray machine	11%
With quarters for specialist doctors	70%
With specialist doctors living in quarters	70%
With Referral Transport available	100%
With registered RKS	100%
Having regular supply of Allopathic Drugs for common ailments	100%
Having Regular supply of AYUSH Drugs for common ailments	83%

Source: Rural Health Statistics in India, 2012, MOHFW, GOI

Thus the overall analysis of the rural health infrastructure in Odisha reflects inadequacy in the required infrastructure, staff as well as the supportive facilities. This is due to the lack of adequate government funding and non-utilisation of the existing allocated funds. Besides the doctors and staff are reluctant to go to the remote areas if posted and remain absent by taking leave for indefinite period so as to continue their illegal practices in the urban areas. Beside the lack of adequate physical infrastructure like transport and communication, educational and stay facilities etc further strengthen their reluctance to work in these areas.

Though the government has taken several reformative steps to tackle the situation since 1990s under the House Committee and Department for International Development (DFID) recommendations, yet its lack of strict implementation has allowed the grim situation to continue. Some of these initiatives taken were like providing direct funds to the medical officers to carry out petty repairing work in the health care unit buildings. Similarly compulsory appointments of the doctors for a year in the selected identified districts before admission into PG courses, compulsory internship training programmes in CHCs under the guidance of the CDMOs and supervised by medical college teachers as well as the medical officers for 'hands on training', exposure in the field were taken to ensure the availability of doctors in the remote areas of the state. The condition arising due to the financial constraints of the government was addressed by measures like multi-skill training of the existing staff, local recruitment of the paramedic staff etc. However the analysis has reflected the insufficiencies in these steps taken to ensure accessibility and utilisation of the healthcare facilities in the state.

5. Impact of Health Infrastructure on Health Outcomes

To analyse the impact of the availability of health infrastructure on the health status as well as some performance indicators which would reflect their actual utilisation we selected some districts based on their health status indicators..

Firstly the districts were ranked based on their health indicators which are CBR, CDR, IMR, NNMR, MMR and Sex Ratio at Birth for 0-4 years (SRB) collected from the Family Welfare statistics of India, 2011. The rank of 1 was assigned to the lowest value of the indicators like CBR, CDR, IMR, NNMR, U5MR and MMR as these values are expected to be smaller for a good health status indicator. Similarly the indicator SRB (0-4) years has been taken as it is an indicator showing the health status of the infant based on gender. In case of SRB (0-4) years the ranking was reversed. A high value for SRB (0-4) years indicates less gender bias at birth. For this purpose the districts having the highest figure in SRB (0-4) years have been ranked 1 showing the best performance and the other districts were accordingly ranked in decreasing order of their performance. The overall rank was obtained for all the 30 districts of Odisha based on these rankings and then 10 districts were selected. The 5

districts with the lowest rank values which included Balasore, Jagatsinghpur, Anugul, Sundargarh and Jharsuguda were the one with a good health status indicator. These are termed as the Better Performing Districts (BPDs). The 5 districts with the worst ranking from the bottom are Dhenkanal, Balangir, Nayagarh, Baudh and Kandhamal. These are termed as the Low Performing Districts.

Table 12: Health Indicators of the Selected Districts of Odisha

	CBR	CDR	IMR	NNMR	U5MR	MMR	SRB(0-4)years
Balasore	19.2	7.1	49	35	58	276	941
Jagatsinghpur	17.6	7.2	56	32	67	276	929
Anugul	18.1	7.3	50	31	60	253	855
Sundargarh	18.2	7.2	55	39	65	253	931
Jharsuguda	17.4	8.4	51	41	58	253	898
AVERAGE	18.1	7.44	52.2	35.6	61.6	262.2	910.8
Dhenkanal	20.6	10.9	76	54	90	253	861
Balangir	21.1	10.5	100	75	115	253	979
Nayagarh	21.2	9.3	67	40	86	276	845
Baudh	29.5	10.6	64	48	89	311	984
Kandhamal	21.4	8.9	88	43	145	311	986
AVERAGE	22.76	10.04	79	52	105	280.8	931

Source: Family Welfare Statistics in India, 2011

Table 12 provides the health status indicators of these selected districts of Odisha. The average values clearly indicate the higher health status of the BPDs. The value is as high as 52.2 and 61.6 for BPDs for IMR and U5MR and is 79 and 105 respectively for the LPDs for these health indicators. Only the SRB (0-4) years is seen to be in favour of the LPDs at 931 while that of the BPDs is 910.8.

With regard to the availability of infrastructure, taking the number of health centres as an indicator, Table 13 clearly reflects the higher infrastructural presence in the BPDs. Though the overall accessibility is influenced by many physical and financial factors, the presence of more number of health care centres clearly increases the spatial accessibility of health facilities to the population. The BPDs shows a higher number of the availability of all the units of health care like SCs, PHCs, CHCs, SDHs and DHs.

Table 13: Availability of Health Centres in these Selected Districts (in numbers)

BPDS	Sub-Centres	PHCs	CHCs	SDH	DH
Balasore	275	68	17	1	1
Jagatsinghpur	189	37	9	0	1
Anugul	166	31	9	3	2
Sundargarh	390	56	20	2	1
Jharsuguda	66	15	6	0	6
Total	1086	207	61	6	6
LPDs	Sub-Centres	PHCs	CHCs	SDH	DH
Dhenkanal	167	32	10	2	1
Balangir	226	42	15	2	1
Nayagarh	166	37	12	0	1
Baudh	67	12	5	0	1
Kandhamal	172	36	14	1	1
Total	798	159	56	5	5

Note: BPDs-Better Performing Districts, LPDs-Low Performing Districts

Source: Compiled from Odisha HMIS Analysis Report 2013

Table 14: Average Populations per Bed in the Healthcare Centres of the Selected Districts

S.N	BPDs	PHC- Avg per Bed	CHC-Avg per Bed	LPDs	PHC-Avg per Bed	CHC-Avg per Bed
1	Balasore	5680	4544	Dhenkanal	6213	3976
2	Jagatsinghpur	5120	4209	Balangir	6542	3663
3	Anugul	6837	4710	Nayagarh	4334	2673
4	Sundargarh	6192	3468	Baudh	6110	2933
5	Jharsuguda	6439	3219	Kandhamal	3389	1743

Source: Compiled from Odisha HMIS Analysis Report.2013

Table 14 throws further light on the worse condition of the availability of healthcare infrastructure in the districts (selected) of Odisha based on the population Census of

2011. For the analysis of the average population per bed in each of the districts, the number of beds for each healthcare centre was found. Then the population of each district was divided by the number of the available beds to find the population per bed in each of these districts. For PHC it is as high as 6837 persons per bed in Anugul and 6542 persons per bed in Balangir. For CHC it is as high as 4710 persons per bed in Anugul and 3976 persons per bed in Dhenkanal. The range for the population per bed in a PHC for BPDS is 1717 while for CHC it is 1491. The corresponding figures for the LPDs are 3153 and 2233 respectively. This reflects a wide variation in the availability of beds in the LPDs relative to the BPDs. This is to be pointed out here that the number of beds for each centre was calculated based on the norms of 6 beds for a PHC and 30 beds for a CHC. But the actual situation is still very worst and these figures are highly inflated. This is because as has been pointed out earlier that only 16% of the CHCs in Odisha has all the 30 bed facilities and none of the PHC in Odisha satisfies the norms of the minimum of even 4 beds facilities. In the absence of data per districts this table highlights the shortage of centres even if beds availability norms would have been met. It is very well mentioning here that none of the Health care centres in Odisha at the primary level satisfies the IPHS norms for the required infrastructure based on availability of manpower, supportive facilities, blood storage and testing centres etc (Rural Health Statistics, 2011).

To assess the actual utilisation of the healthcare facilities given their accessibility, some performance indicators of these selected districts were analysed. This utilisation aspect is interpreted in terms of some selected performance indicators of maternal and infant care like the coverage rate of 100 IFA for ANC, 3rd ANC coverage rate, percentage of delivery by Skill Birth Attendants (SBA) to total home delivery, % of institutional delivery against total ANC registration to measure performance in maternal health. Similarly indicators like percentage of new-born delivered at home paying a visit to health centres within 24 hours for care, low birth weight rate of infants born and full immunisation of infants under 12 months are being taken to assess their performance in case of infants care which are a significant indicator of the infant mortality rate.

Table 15: Some Selected Parameters of Maternal and Infant Care (in %)

Districts	Parameters of maternal care				Parameters of infants care		
	ANC 100 IFA coverage rate	ANC 3 rd visit coverage rate	% of SBA delivery to total home delivery	% of institutional delivery against Total ANC registration	% of home delivery newborn visit rate within 24 hours	Low birth weight rate	Full immunisation under 12 months
Balasore	66	85	7	80	98	12	105
Jagatsinghpur	80	93	30	80	96	9	121

Anugul	78	89	17	74	54	15	120
Sundargarh	74	98	9	82	88	18	108
Jharsuguda	83	89	12	82	99	18	110
Average	76.2	90.8	15	79.6	87	14.4	112.8
Dhenkanal	88	97	44	72	68	19	117
Balangir	56	78	11	83	74	23	94
Nayagarh	81	84	15	67	74	10	125
Baudh	64	91	6	62	75	20	129
Kandhamal	89	90	20	73	65	26	82
Average	75.6	88	19.2	71.4	71.2	19.6	109.4

Source: Odisha HMIS Analysis Report, 2013

Table 15 provides an analysis of the performance of these districts in terms of their coverage of different parameters of maternal and infants care chosen. It is seen that in case of all the chosen parameters of maternal care, the BPDs shows a higher percentage than the LPDs. This is found to be 76.2, 90.8 and 79.6 for the indicators of maternal care like ANC 100 IFA coverage rate, ANC 3rd visit coverage rate and percentage of institutional delivery against the total ANC registration respectively for the BPDs. These figures are 75.6, 88 and 71.4 respectively for the LPDs. Only in case of the percentage of SBA delivery to total home delivery, the average is found to be higher for the LPDs at 19.2 compared to 15 for the BPDs. The average is also higher in the chosen parameters of infants care. For example, the average figures are 87%, 14.4% and 112.8% for percentage of home delivery newborn visit rate within 24 hours, low birth weight rate and full immunisation under 12 months respectively in case BPDs and 71.2, 19.6 and 109.4 for LPDs respectively. These factors highly depends on the available infrastructural facilities like proximity of the health care centres, the available manpower, supportive facilities like drug supplies, electricity, water supply, bed facilities etc. The performance indicators are more biased towards the BPDs because of their superiority in the availability of health care facilities relative to the LPDs.

6. Findings

Thus the study finds the following

1. There exists a severe inter-district variation in the availability of health care infrastructure in the state of Odisha.
2. The lack of infrastructure has a profound adverse impact on the health care accessibility in the rural areas. The districts with inadequate health infrastructure were also found to be lagging behind in the chosen performance indicators relative to the better of districts.

7. Conclusion

The main reasons for the low health status of the people of Odisha is the lack of infrastructure violating the standard norms as well as the underutilisation of the existing health care centres due to the lack of supportive facilities. The large scale absenteeism of doctors and specialists over their shortfall is a significant barrier to health care accessibility of the rural people crumbling the very objective of National and state health policies. The government's apathy towards these problems is further worsening the health situation creating a divide between rural and urban people as well as creating huge inter-district imbalances in health care status and accessibility.

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MGNREGA and Rural Infrastructure for Sustainable Tribal Livelihood: A Study in Keonjhar District of Odisha

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It is quite widely known that even after 66 years of independence and implementation of several policies on development and various schemes adopted for better tribal development in tribal areas by the National and State governments from time to time, the living condition of Tribal Odisha has hardly improved and the state of Odisha continues to occupy the top position in the poverty map of the country. Socio-economic development is the main aim of rural development especially for the tribal people to bring about sustained improvement in their living condition through an increase in their income and access to social goods. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is considered as a "Silver Bullet" for eradicating rural poverty and unemployment by way of generating demand for productive labour force in villages. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty and making village self-sustaining through assets creation such as road construction, cleaning up of water tanks, soil and water conservation work, etc. for which it has been considered as the largest anti-poverty Programme in the world. Thus the present study attempts to critically examine the implementation process of this programmes and its various impact on tribal livelihoods i.e. to what extent MGNREGA has given justice in sustaining the livelihood of poor tribal communities in a tribal dominated block of Banspal in Keonjhar district of Odisha. The study was based on random sample of 50 tribal households of Banspal Block in Keonjhar district.

Key Words: MGNREGA, Tribal Livelihood, Employment

1. Introduction

Rural Infrastructure is considered to be a critical factor for the growth of rural economy. The Indian Rural Infrastructure Report 2003 argues that development of Rural Infrastructure has a fivefold impact on the economy, viz (i) creating better access to employment and providing further earning opportunities, (ii) increasing production efficiency, (iii) creating

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access to previously inaccessible commodities and services, (iv) time saving which can better utilized in productive activities, and (v) better health and physical condition of rural population. Question arises how does rural infrastructure create better access to employment and providing earning opportunities? Looking from the above context MGNREGA becomes an interesting subject to study, because it is not only giving employment to the rural poor, but also creating sustainable and generating demand for productive labour force in villages. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labour, alleviating poverty and making villages self-sustaining through asset creation such as road construction, cleaning up of water tanks, soil and water conservation work etc.

2. Ambitious Journey of Mgnrega

The enactment of Mahatma Gandhi NREGA, 2005 can be viewed as a watershed in the transition from the era of 'state-centric' to 'people centric', i.e., Government driven schemes to that of legally enforceable worker's entitlements in the field of rural and tribal employment. In order to eradicate poverty in rural areas, several anti-poverty programmes like the NREP of 1980-89, Rural Landless Employment Guarantee Programme (RLEGP) of 1983-89, Jawahar Rojagar Yojana (JRY) of 1989-90), Employment Assurance Scheme (EAS) 1993-99, Jawahar Gram Samridhi Yojana (JGSY) 1999-2002, Sampoorna Grameen Rojgar Yojana (SGRY) 2001, National Food For Work Programme (NFFWP) of 2004, etc were launched by the central government in phased manner and implemented through the state governments across the country. Amongst the above NREGA was one of the most popular and successful Programmes which was renamed in 2nd October 2009 as MGNREGA. With the launching of NREGA the ongoing schemes of the Sampoorna Grameen Rojgar Yojana (SGRY) and National Food for Work Programme (NFFWP) were merged with NREGA.

2.1 Time Line of MGNREGA

Table- 1 shows the time line of MGNREGA whereby the scheme got its modifications during the year of its running.

Table 1: The Time Line of MGNREGA

Aug 2005	Feb 2006	Apr 2007	Apr 2008	Oct 2008	16 th Feb 2009	Oct 2009
NREGA Legalized	Came into force in 200 districts	130 more districts included	Universalization of the scheme	Wage transaction through banks/post offices	MOU with the postal dept.	Name changed to MGNREGA

Source: WWW.nrega.nic.in

As table -1 depicts, when the Act got first introduced in 200 most backward districts of the country in Feb 2006, it was proposed to extend to the remaining districts only after 5 years, after seeing the popularity of the Act. But in the next year the Act was extended further to 130 more districts and within a year after, the Act got universalized by bringing the entire country under its horizon with the exception of districts that have a 100% urban population and got soon named after Mahatma Gandhi (in Oct. 2, 2009) to make the Act more reachable to the masses and thus it becomes MGNREGA. In the context of Odisha all the tribal dominated districts were covered from the very beginning.

2.2 Significance of MGNREGA

MGNREGA aims to achieve the objective as enunciated in the Article: 41 of the Indian Constitution “giving citizens the right to work.” The Act is significant due to the following reasons:

- While the earlier wage employment Programme did not provide any guarantee of jobs, this Act provided guarantee job. This guarantee for wage employment is now uniformed all over the country like never before.
- It is a development initiative, chipping in with essential public investment for creation of durable assets, without which the growth process can't be possible in the most backward regions of rural India.
- Almost all the previous programmes were allocation based rather than demand based. NREGA is considered to be unique from this standard point.
- In other wage employment programmes, anyone can be engaged as labourer while in MGNREG only job card holders that apply for employment can be engaged as labourers.

2.3 Goals of MGNREGA

The goals of MGNREGA are to provide strong safety-net for vulnerable groups by providing a fall back employment when alternative employment sources are scarce or inadequate. It acts as a growth engine for sustainable development of agriculture economy and empowerment of rural poor through the process of right-based law and new ways of doing business. It aims to provide a model of governance reform anchored on the principles of transparency and grass-root democracy (MoRD 2008).

Mahatma Gandhi National Rural Employment Guarantee Act aims at enhancing the livelihood security of the rural household by guaranteeing hundred days of wage employment in a financial year, whose adult members volunteer to do unskilled manual work. It creates a right-based framework for wage employment programmes and makes the government legally accountable for providing employment to those who ask for

it.MGNREGA is path breaking legislation entitling the rural poor, guaranteed employment as a means of sustenance averting hunger and distress, ultimately lifting them from the trap of poverty by

- (i) Providing guarantee of gainful employment with a statutory minimum wage.
- (ii) Creation of durable assets and strengthening the livelihood resource base of the rural poor.

The Scheme, however, is a landmark rural anti-poverty scheme, an initiative towards tribal economic empowerment in Odisha. But ironically in tribal pockets of Odisha due to bureaucratic apathy and conspiracy, and lack of political commitment, did not able to harness any potential result in mitigating poverty of the inhabitant tribes of the state. In the above backdrop, the present paper makes a research based attempt to find out the performance of MGNEGA in tribal pockets of Odisha and Banspal block of Keonjhar district in particular.

2.4 The Unique Features of MGNREGA

- 100 days unskilled wage employment to a rural family in a financial year.
- Equal wage for men and women.
- Ban on contractors and labour displacing machines.
- Participatory planning and identification of works through palli sabha.
- Payment of wage on weekly basis but not later than 15 days.
- Unemployment allowance to job seeker if work is not provided to job seeker within 15 days of application.
- Social audit by Palli/Gram Sabha and involvement of Panchayati raj institutions (PRIs) in planning and execution of MGNREGA works.

2.5 The Implementation Structure of MGNREGA

MGNREGA has a five-tier structure of implementation starting from GP at the bottom to the central govt. at the top.

2.5.1 Gram Panchayat (GP)

GP is the noble agency at the bottom level that has the authority to select, design and implement 50% of the works. Selection of works, monitoring and supervision are done by the Gram Sabha (village council). GP has the responsibility to register households, issue job cards, receive application for employment, provide employment and monitor the NREGA works.

2.5.2 Block Panchayat

The rest 50% may be undertaken either by the block panchayat or the district or both. Block panchayat monitors and coordinates the plans and works at the block level.

2.5.3 District Panchayat

District Panchayat, in addition to implementing non-mandatory works, coordinates MGNREGA activities at the district level. Besides, it has the responsibility to prepare both the district annual plan and five year perspective plan. These two plan documents are the base which guides the implementation of MGNREGA at the village level.

2.5.4 State Government

Next in hierarchy is the state govt. which acts as a facilitator in the flow of MGNREGA funds and helping in preparing of manpower. It has the responsibility to set up the State Employment Guarantee Council for monitoring and evaluating the MGNREGA in the state.

2.5.5 Central Government

At the top of the hierarchy comes the central govt. The Ministry of Rural Development, New Delhi is the nodal agency for MGNREGA implementation. It has the responsibility to set up Central Employment Guarantee Council for receiving advice on MGNREGA implementation. It may also undertake independent evaluation and monitoring of the scheme.

3. Decentralized Planning and MGNREGA

MGNREGA is a unique Act which recognizes the legitimate role of Panchayat in addressing their fundamental duty as expressed in the 73rd constitutional amendment of providing “economic development and social justice” in their area. The recognition of PRI as the principal agency of implementation under MGNREGA has opened up enormous opportunities for decentralizing development respecting local solutions to local people.

4. Review of Related Literature

Since the date of implementation of NREGA, various social scientists have made attempt to study the impact of MGNREGs and also its implementation procedures. Sen et al (2009) attempted to measure the outcome of good governance practiced by Gram Panchayats (GPs) of West Medinipur district of West Bengal through the employment generated under NREGA. Data regarding different parameters related to core characteristics of good governance such as participation, transparency, accountability, effectiveness and equity

was taken into consideration in this study. This study mainly gives importance on potential implementation of MGNREGA needs, adequate efficient governing body and motivation.

An evaluation study by Indian Institute of Technology, Madras (2009), in Cuddalore, Dindugal, Kanchipuram, Nagai and Thiruvallar districts of Tamilnadu reveals many positive aspects of the programme. These are:

- Villagers consider NREGA as promising to be a boon for improving rural livelihood.
- Provision of job within the village is very much encouraging to villagers.
- NREGA also ensured gender equality in rural Tamilnadu.
- Involvement of SHG members improves people's NREGAs awareness and this is very important for future NREGA planning.
- Registrations are open throughout the year.
- Most of the respondent perceived that payment were received within a week.

As per the Panchayat and Rural Development Department Report on the performance of NREGA in 2007-08, the average no. of person days created per household in West Bengal was 25, whereas in the study area it was 19 which clearly shows under performance. The average participation rate of 19% with maximum of 40% and minimum of 5% shows a good performance compared to 13.1% state average rate (West Bengal Human Development Report 2004). Accountability is also found to be significant and shows positive relation with the NREGA's performance. This represents efficiency and effectiveness of Govt. and plays a positive role in successful implementation of NREGA's. Thus to conclude this study shown increasing performance of the governing body (here GPs).

Dey and Bedi (2010) studied the functioning of the NREGAs between February 2006 and July 2009 in Birbhum district, West Bengal. Their study reveals that in order to serve as an effective "employer of last resort", the Programme should provide more job days during lean season and wages should be paid in a timely manner. This study shows that in Birbhum, there is universal awareness about the NREGA's, Job cards have been made available to all those who have applied and NREGA's related information is well maintained and relatively accessible.

Mathur (2009) observed that in a social audit undertaken in Andhra Pradesh that in certain villages, some people stated that they had not been paid for the work done. When comparisons were made of the payments as per the pass-book with the payment as per the job card, it was discovered that the job card itself was incomplete.

Nayak, Behera and Mishra (2008) conducted their study in two districts of Odisha, mainly Mayurbhanj and Balasore. Both the districts are reported to have achieved certain goals and failed in others. This study shows that the state as a whole as well as the two sample districts are well in certain physical and financial parameters like provision of employment to those who demand jobs and maintenance of wage and non-wage ratio. However their performance in certain important parameters like utilization of funds and creation of demand for jobs is not very encouraging. While the target is to guarantee 100 days of employment to each household, not many households have achieved this target. According to this report, well thought out effort is necessary to address these problems of NREGA in the state.

Dreze (2007) looks at the corruption in rural employment programs in Odisha and how this has continued in a NREGA as well. However, he believes that there is tremendous potential of NREGA in the survey areas. Where work was available, it was generally found that workers earned close to (and sometimes more than) the statutory minimum wage of Rs 70 per day, and that wages were paid within 15 days or so. This is an unprecedented opportunity for the rural poor. There is the hope among workers that NREGA would enable them to avoid long distance seasonal migration. Further, there is plenty of scope for productive NREGA works in this area, whether it is in the field of water conservation, rural connectivity, regeneration of forest land or improvement of private agricultural land.

Ambastha, Shankar and Shah (2008) based on the field observations of National Consortium of Civil Society Organization (NCCSO) reported some of the lacuna in implementation of MGNREGA such as under staffing or lack of exclusive MGNREGA staff at lower level, top-down approach in planning.

5. Objectives

The present study attempts to critically examine the implementation process of this Programme and its various impacts on tribal livelihood, especially the tribal dominated block of Banspal in Keonjhar district. The study aims to understand the following objectives:

- To find out whether the tribal people are aware about the MGNREGA.
- To find out to what extent MGNREGA has given justice in sustaining the livelihood of poor tribal communities in a tribal dominated block of Banspal in Keonjhar district.
- To assess the implementation and functioning of MGNREGA and to suggest the suitable policy measures to strengthen the scheme.

6. Methodology

The primary data was collected from 5 Gram Panchayats. The sample size was 50 and 10 households from each of the selected Gram Panchayat were chosen.

The study has adopted multi-stage sampling method. In the first stage, district was selected. Block was selected in the second stage. Gram Panchayats (GPs) were selected in the third stage. Households being the ultimate sample are selected in the last stage. The study is the outcome of the analysis of primary data collected from 5 Gram Panchayats. The criterion for selection of Gram Panchayat was to have a minimum of 90% of ST households registered in MGNREGA. The sample size was 50 and 10 households from each of the selected GPs were interviewed. The primary data have been collected through a survey collected by well-structured Questionnaires designed for this purpose. The secondary sources of data/information have been collected from the government offices at Panchayat, block, district and state level.

7. Analysis and Findings

A questionnaire was developed having the components of demographic profile of the respondents, MGNREGA provisions, level of awareness and socio-economic impact. The data were coded and analyzed using the SPSS software, version 15.

The present study which is confined to Banspal block which is the most backward block of the district and inhabited by Juang tribe, one of the most backward, poor and illiterate primitive tribes and findings of this study cannot be generalized in a larger context as the sample size for this study was 50. An analysis of the primary data collected from these households provides the following findings:

7.1 Demographic Data

Table 2: Age Across Sex

Age	Sex		Total
	Male	Female	
18-25	6.0%	4.0%	10.0%
6-35	14.0%	12.0%	26.0%
36-45	26.0%	6.0%	32.0%
46-55	16.0%	12.0%	28.0%
More than 53	2.0%	2.0%	4.0%
Total	64.0%	36.0%	100.0%

Source: Survey Data

It is clear from the above table that the majority of the respondents belong to male category which constitutes of 64% whereas the majority of the age group of 36-45 years which is 32% and it is followed by 46-55 years and 26-35 years.

7.2 Awareness about MGNREGA

This study also found the following findings-

Table 3: Awareness about MGNREGA

Provisions	Aware	Unaware
No. of entitled days in a year	27%	73%
Minimum wages	100%	-
Time-period for the payment of wages	14%	86%
Distance of work place	8%	92%
Facilities at work place	40%	60%
Quota of women workers	12%	88%
Unemployment allowances	-	100%
Compensation for delayed payment	-	100%
Timeline for issued of job cards and amount charged there of	8%	92%
Benefit of social audit	7%	93%

Source: Primary Data Compiled by the Author.

The above table reveals that respondents are only aware about their minimum wages. They are not completely aware about most of the provisions under MGNREGA. This could mean lack of awareness leading to low demand for employment. This implies the need to make them aware of each and every component of MGNREGA.

7.3 Nature of Work

Table 4: Nature of Work

Panchayat	Rural connectivity	Flood control	Water conservation & harvesting	Irrigation canals	Land development	Total
Kuanr	8	0	24	0	2	34
Oriya-Birda	6	0	6	0	0	12
Podang	12	3	4	0	0	19
Gonasika	7	0	2	2	2	13
Kodipasa	8	0	3	0	0	11
Total	41	3	39	2	4	89

The above table explains the nature of works undertaken so far under MGNREGA. As seen the majority of works taken up are rural connectivity and work related to water conservation and harvesting. This is followed by others that include plantations and land development.

While discussing with the households, it is clear that 92 % of the respondents feel that NREGA work has increased the accessibility and communication facility by constructing roads, further 90% respondents feel that wages that they have received under MGNREGA have helped in preventing hunger and massive investment in increasing, increased agricultural productivity. The respondents of Kuanr block pointed out that prior to construction of this road (from upper Panasanasa to Kanjipani) people were facing difficulties to come to Kanjipani market which is 4 km away from their inhabitants through the hilly terrain. Construction of this road will go a long way in boosting the communication infrastructure in the area.

7.4 Source of Information

The major source of information for the villagers regarding MGNREGA is PRIs including Sarpanch, Gram sathi and GPs officials. Around 73.3% villagers claimed that they informed about MGNREGA from GPs offices which indicates that GPs officials playing a significant role in spreading information on MGNREGA.

Table 5: Sources of getting information on MGNREGA

Source of information	Percentage
Gram Panchayat office	71.3%
Media – radio	7%
Neighbour	17%
Any other	4%
NA	7%

Source: Survey Data

7.5 Mismanagement of Job Cards

Majority of households (84.14%) expressed that they got their Job cards without waiting for much time and without visits to GPs office. While 15.80% households claimed that they had to run many times to GPs office even Block office for getting Job cards. It is found that there is faulty design of Job cards. The job card (JC) is to act as an 'employment passbook' a primary document in safeguarding transparency under the act. But the JC is filled by the PEO or Village Level Leader (VLL) and kept with them, even many workers were not able to decipher the card.

7.6 Poor Quality of works

There is no proper execution of works. There was no Gram Sabha meeting regarding the activities of NREGA. It has been seen that there is poor planning and lack of coordination among villagers.

7.7 Payment of Wages

The data from the field reflected that there is huge irregularity in payment of wages. While only 28% of beneficiaries claimed that they received the wages within a month, the rest claimed that there is no certainty in getting wages. While the MGNREGA guideline permits equal wages for equal work, it is not happening in reality. As per the views of few villagers, widow and old woman are receiving lesser wages in comparison to men.

7.8 Unemployment Allowance

It is stated in the act that work would be provided within 15 days of written application. If the work could not be provided within this period then the applicants would get unemployment allowance. However, it is not followed strictly anywhere. It exemplifies that in many cases eligible people have not received their due.

8. Suggestions

- Special package of assistance is required for Juang villages for development of infrastructure; (housing package), Odisha government should devise a special NREGA package for primitive tribes in the state. To provide the livelihood support to these PTG people, livelihood department needs to work in convergence with NREGA.
- The unique number of M/R should be awarded for GPs; preferable alphabets instead of numbers should be used.
- The success of the Programme depends upon its proper implementation. Much of the pitfalls of MGNREGA implementation can be overcome if proper processes and procedures are put in place.
- Efficient utilization of resources under the scheme requires bringing in transparency and accountability. Provision for social audit at the Panchayat level in a regular basis can play a significant role in this regard.
- Government must take immediate steps to stop corruption in its implementation by which it reaches to the workers directly.
- The scheme should make provision of up-gradation of skills of women and men worker. Improvement in worksite management practices should be maintained.
- A follow up visit would be required to assess the state of transparency and accountability in Keonjhar district.

9. Conclusion

Despite many shortcomings in the implementation of the act it has been proved beyond doubt that the MGNREGA is a classic legislation providing guaranteed entitlement to the rural folk. MGNREGA work has started continuing toward the betterment of people's lives and creating durable and useful infrastructure even in the remote villages. We find that the implementation apparatus is inadequate and ill-capacitated. A well implemented MGNREGA could potentially herald a revolution in rural governance through its unprecedented mechanisms for transparency, social audit and e-governance is truly a participatory democracy at the grass roots level.

It was understood that the tribal households in the Keonjhar district have been benefited from MGNREGA in many ways as it has increased their income, resulting multiple impacts in their social and economic life; however there is still a long way to go to fulfil the purpose and objectives of MGNREGA and ensure the livelihood security of the rural and tribal households.

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Rural Road Infrastructure and Odisha's Development

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In Odisha about 84 percent of the population lives in villages. Therefore, rural connectivity is vital to bring about socio-economic change in Odisha which is in the emerging stage of development. The paper has three parts. The first part is an introduction. The second part deals with the development of rural road infrastructure in Odisha. Finally, the paper ends with a conclusion. It has been found that there has been progress of rural road length in Odisha. However, the state is behind many other states. The situation in the tribal areas is far from satisfactory. The inter-district disparity in road development is glaring. There is no gainsaying the fact that a number of programmes have been implemented for road development in Odisha in recent years. But we have failed to cover the targeted number of habitations. There is, therefore, a need to invigorate the implementation of the programmes. If they are properly materialised, there will be phenomenal growth in road development in Odisha.

1. Introduction

Transport is one of the most pervasive activities in any society or economy. Transportation serves along with other productive functions in the production of goods and services in the economy. Production is the creation of utilities. Transportation creates place utility and to some extent also time utility. The key role of transport in economic development has been greatly emphasised by Rostow and Schumpeter. Hunter points out that Industrial Revolution in Europe was successful because of the development of transport technology. (Hunter, 1965) According to Kuznets transport is pivotal to the development of modern industry (Pawson, 1977). Hirschman (1958) has emphasised that the development of transport permits the growth of direct production. That the development of transport widens the market has been emphasised by Adam Smith. This encourages division of labour and hence its growing productive power. Transportation operates to equalise the supply of commodities in a broad area. It thus becomes possible for consumers to enjoy the commodities produced at distant places. Consequently, transportation enhances the productivity of the economy by removing or by diminishing certain market imperfections.

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According to the neo-classical economists division of labour resulting from the expansion of the market will not only be enjoyed by the firms, but they will also provide benefits of internal and external economies of scale.

Industrial activity in a country is severely hampered due to the lack of transport. The fact depends on continuing supplies of fuel, raw material, spare parts and a reliable means of marketing. Inadequate investment on transport reduces the effectiveness of investment elsewhere. (Owen, 1964) Poor transport system is a major factor in widespread hunger in the developing countries. The high cost of transporting farm products and the long delays and consequent damage and loss to perishable commodities have been powerful factors to decreasing food supplies. Products rot on the ground because transport is not available. As a result of these conditions, much of the world's resources remain untouched, because there is no way to reach them. A major proportion of the earth that is suitable for cultivation remains unused. A tremendous wealth of forest and mineral resources that could help in the struggle against poverty makes no contribution, because no one can get to it or make it to where it is needed. Therefore, development of the less developed parts of the world is substantially dependent upon transport. Mobility is a fundamental human activity. Enhanced mobility increases globalisation of the world economy. There are a number of examples where countries have reaped the benefits of 'big push' effects of transport.

2. Development of Rural Roads in Odisha

Among all the transport systems road transport occupies the pivotal one. In the agriculture sector, road development enables the supply of seed, manure, agricultural implements and labour for growing crops and it provides the conveyance for the produced crops. Improvement in road facilities not only increases agricultural production, but makes production and agricultural operation market-oriented. The villages in some parts of India which were growing only cereals have shifted to vegetables, rearing fishes and hens after they were linked with new centres through a new road network. Consumption and living standards of the people are also related to road and communication. It has important social effect. Village development becomes possible due to good transport facilities in many ways. New ideas and education are making headway in the villages. Urban habits and fashions are fast influencing the villagers and superstitions, religious barriers etc are also disappearing. Road development also contributes to the development of a nation in other ways too. It helps to combat sickness and disease. In India, mobile hospital units move over the road to villages that have no local doctor. From the foregoing discussion, it is succinctly clear that road infrastructure is the kingpin of economic development. This is more relevant for a state like Odisha which is in the emerging stage of development. The state is not only making great strides in the field of industrial developments, but also in

agricultural and social development. A number of initiatives are being taken to uplift the lot of the rural people who constitute about 84 percent of the state's population as in 2011. A plethora of schemes and programmes is implemented by the Government of Odisha to uplift the socio-economic condition of tribal people who constitute more than 22 percent of the total population of the state. All efforts are made to bring them to the mainstream of development process. But development of a well-developed road network is a pre-requisite for the development of any sector of the economy. Any kind of programme to improve the all-round development of the tribal people will be nullified in the absence of road transport system in the tribal areas. Rural roads have important role to play in the development of the country. It triggers meaningful socioeconomic transformation and rapidly opens up new markets for business. Studies show that rural roads contribute to poverty alleviation. It has been estimated that an investment of Rs 10 million in roads carries the ability to lift 1650 persons above the poverty line (*Times of India*, 2007). Rural roads promote and sustain agricultural growth and improve access to health, education and communication. Owing to its huge importance this section of the chapter unveils the development of rural roads in Odisha. Therefore, it has been felt pertinent to assess and examine the level of development of road transport in rural Odisha.

About 84 percent of the population of Odisha lives in villages. Therefore, rural connectivity is vital to bring about socio-economic change of the state. The State had 3762 rural roads totalling 28159 kms length by the end of 2011-12 (*Economic Survey*, 2013). From Table 1 it is revealed that development of rural roads did not change much during the period from 2003 to 2008. During this period, the length of rural roads improved from 1,96,133 kms in 2003 to 1,97,255 kms in 2008 and the increase was only 1122 kms. On the other hand, in 2011-12, there was a total length of 28,159 kms of rural roads. From Table 1 it is found that in 2008 there were many states in the country which had higher length of rural roads than Odisha. For instance, when Odisha had a total of 1,97,255 kms of rural roads in 2008, Andhra Pradesh had 3,31,213 kms and Karnataka 231384 kms of rural roads. When Odisha's CAGR in rural road development during this period was 0.11 percent, it was 11.95 percent for Andhra Pradesh, 7.55 percent for Assam, 9.78 percent in Bihar, 5.88 percent for Karnataka, 4.38 percent for Rajasthan and 24.55 percent for West Bengal (Table 1). When we come to the district level in Odisha, there are few districts which have higher length of rural roads, i.e. Mayurbhanj (2258 kms), Sundargarh (1245 kms), Keonjhar (1212 kms), Balasore (1192 kms), Ganjam (2606 kms), etc. On the contrary, there are districts like Boudh, Gajapati, Subarnpur and Nuapada which have rural road length of 480 kms, 472 kms, 437 kms and 264 kms respectively.

Table 1: State-wise Length of Rural Roads in India (in km)

Sl No	States/UTs	2003	2004	2005	2006	2007	2008	CAGR (%)
1	Andhra Pradesh	188374	192604	315672	323222	325231	331213	11.95
2	Arunachal Pradesh	15626	15677	17737	17202	17416	16480	1.07
3	Assam	156110	188710	203140	210133	217725	224587	7.55
4	Bihar	69169	63923	110168	110273	110273	110273	9.78
5	Chhattisgarh	67588	68285	66018	67572	67344	67881	0.09
6	Gujarat	127110	127718	127061	127497	127231	127324	0.03
7	Haryana	23614	23776	23885	24038	24380	24702	0.90
8	Himachal Pradesh	30211	30537	21488	21595	32905	34130	2.47
9	Jammu & Kashmir	19097	19920	20200	20560	20561	20561	1.49
10	Jharkhand	—	—	17725	17742	17758	17218	-0.96
11	Karnataka	173865	173925	191315	193455	231492	231384	5.88
12	Kerala	123992	127897	157973	175110	184808	191468	9.08
13	Madhya Pradesh	149886	150423	149325	150196	150802	151135	0.17
14	Maharashtra	251436	252751	200719	200145	202830	202939	-4.20
15	Odisha	196133	196644	197001	197071	197156	197255	0.11
16	Punjab	31870	37614	38448	37121	37086	37093	3.08
17	Rajasthan	128275	132472	137503	140146	147453	158915	4.38
18	Tamil Nadu	153555	156002	160142	162746	163564	163654	1.28
19	Uttar Pradesh	209207	193721	213864	219505	224194	237225	2.55
20	Uttarakhand	31681	54899	32606	33000	36000	37839	3.62
21	West Bengal	61697	62304	168753	172214	181574	184920	24.55

Source: Government of India. (2010) *Basic Road Statistics of India*, New Delhi: Ministry of Road Transport and Highways.

Of late, road construction and improvement works have been taken up on a massive scale through different programmes such as the Pradhan Mantri Gram Sadak Yojana (PMGSY), Bharat Nirman Yojana (BNY), Rural Infrastructure Development Fund (RIDF), 12th and 13th Finance Commission Grants (FCG) and other programmes funded from the state's own resources. Table 2 shows that, there are a total of 50,101 rural habitations in the state. The population-wise classification of the habitations shows that there are 15,522 habitations with less than 250 people, 12,932 habitations which have 250-499 population, 12,474 habitations with population of 500 - 999, 9173 habitations with a population of 1000 and

above. Since the implementation of the PMGSY in 2000-2001, rural road connectivity has been a policy objective of the Government. The State Government has received funds from the Central Government in order to construct rural roads and increase rural connectivity in Odisha. Table 3 shows that 6,156 rural roads have been completed covering 8,168 habitations. A total length of 23,081 kms of rural roads have been completed under the programmes during the period from 2001-02 to 2011-12 with a total financial expenditure of Rs 8532crore. The PMGSY became a part of Bharat Nirman Yojana in 2005-06 with modified objectives to provide all- weather connectivity to unconnected habitations with a population of 1000 and above in plain areas and 500 and above in hilly and tribal areas. The target that was set up under Bharat Nirman was to connect 5680 unconnected habitations by constructing 29,289 kms of roads by March 2012. During 2012-13, the target was set to connect another 391 unconnected habitations by constructing 3000 kms of additional roads. (*Economic Survey, 2013*)

Table 2: Rural Road Connectivity in Odisha by Village Population

Indicator	Survey Date	1000+	5000-999	250-499	Less than 250	Total
Total Number of Habitations	April 2000	9,173	12,474	12,932	15,522	50,101
Total Number of Connected Habitations	April 2000	5,470	5,759	5,011	4,838	21,078
Total Number of Unconnected Habitations	April 2000	3,703	6,715	7,921	10,684	29,023
Balance Unconnected after PMGSY	Feb. 2007	1,139	5,389	7,174	1,0138	23,840
Balance Unconnected after PMGSY	March 2009	0	3,984	7,193	10,133	21,310
Balance Unconnected after KBK Scheme	March 2009	0	2,976	7,193	10,133	20,302
Balance Unconnected (%)	March 2009	0	24	56	65	41

Source: World Bank (2008). *Orissa in Transition*

Table 3: Progress of PMGSY in Odisha (2000-01 to 2011-12)

Year	Funds Received (Rs in crore)	No of Roads Completed	Habitations Covered	Length Completed (in km)	Expenditure (Rs in crore)
2000-01	179.7	0	0	0	0
2001-02	175	0	0	27.84	36.34
2002-03	170.09	464	260	1090.37	238.58
2003-04	175	403	587	993.87	133.8
2004-05	175	364	589	979.85	267.41
2005-06	305.29	341	604	1494.44	377.37
2006-07	624.57	451	697	2069.87	582.81
2007-08	546.83	423	621	1836.03	677.41
2008-09	1251.4	685	2419	2640	1163.01
2009-10	1594.34	596	985	3838.42	1895.26
2010-11	2245.10	1486	1199	4941.90	1924.25
2011-12	-	934	207	3167.04	1235.78
Total	-	6156	8168	23080.63	8532.01

Source: Government of Odisha (2013). Economic Survey 2012-13

The achievement of the PMGSY in Odisha makes it clear that the state has failed to reach its target (Table 4). The target under this programme was to cover 1,23,232 habitations; but only 8168 habitations could be covered up to 2010-11 (66.28 percent). Of the total 8168 habitations which were covered under the PMGSY programme for the development of rural road connectivity, there were 860 habitations which had less than 250 people, 1119 habitations in the range of 250-499, 2758 habitations with 500-999 population and there were 3431 habitations which had population of 1000 and above. Table 5 depicts rural road connectivity through Bharat Nirman Yojana. From the Table it is seen that a total of 4359 rural habitations were connected by rural roads by constructing 12,415 kms during the period from 2006-07 to 2011-12. In addition to this a total of 11,005 kms of roads were upgraded.

Table 4: Total Habitations Covered under PMGSY

Habitations	Target	Achievement
1000 and above	3604	3431 (95.20)
500-999	4567	2758 (60.39)
250-499	2538	1119 (44.08)
< 250	1614	860 (58.28)
Total	12323	8168 (66.28)

Source: Government of Odisha (2012). Annual Report, 2011-12, Department of Rural Development, Odisha.

Note: Figures in parentheses denote percentages.

Table 5: Rural Connectivity through Bharat Nirman

Item	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Villages Habitations Connected						
a) More than 1000 population	259	250	1768	438	253	78
b) More than 500 population	63	71	437	206	399	137
Total	322	321	2205	644	652	215
New Connectivity (km)	1602	1398	2064	2801	3158	13,924
Upgradation/ renewal	970	1400	2079	2451	2291	1814

Source: Government of Odisha (2013). Economic Survey 2012-13, p.258.

There are other rural road construction projects that have been financed under the Rural Infrastructure Development Fund (RIDF) of NABARD. It is found that under the RIDF project 28, 21, 18 and 6 roads were completed during the periods 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12, respectively. Similarly, during the same 5 years 18, 15, 20, 19 and 21 bridges have been completed in the state. The state Government in 2009 announced that it would improve 10,000 kms stretch of rural roads in the next three years. It was estimated that a total of Rs 3000 crore would be spent for the purpose. The requisite funds for the purpose would be arranged from its own sources as well as by availing loans from NABARD and other financial institutions. Roads, connecting villages with the block headquarters, tourist sites, bazaars, *mandis* and also those roads considered critical from the connectivity point of view would be covered. Odisha has around 30,000 kms of rural roads. The decision of the Government in 2009 is aimed at enhancing rural infrastructure so as to improve the socio-economic condition of rural people. It has also been decided to construct at least 100 bridges in a year. The Panchayat Raj Department has also taken up construction of internal and arterial roads in villages. However, if all the projects will be materialised, the rural road network will witness phenomenal growth.

All these apart, rural connectivity programmes are also undertaken under the Revised Long Term Action Plan (RLTAP), Biju KBK Plan, Gopabandhu Graminna Yojana, Biju Kandhamal and Gajapati Yojana and Backward Regions Grant Fund (BRGF). Under these programmes, construction of rural roads and bridges are developed in the rural areas of the state. The 13th Finance Commission has also provided financial assistance for maintenance of rural roads during the period from 2011-12 to 2014-15. During 2011-12, a total of 223 roads were taken up for maintenance.

3. Conclusion

Notwithstanding all the programmes and projects undertaken in Odisha for the development of rural road connectivity, the progress is far from the requirement. Only 62 percent of villages in the state have all-weather connectivity. Further, in the backward districts such as Kandhamal, Boudh, Malkangiri etc there are many remotely located villages which do not have road connectivity. For example, the district of Kandhamal has about 2500 villages; but 500 villages in this district do not have *pucca* road which stands as a barrier in the economic development of the district and the state as well. Out of 500 unconnected villages, about 250 villages have population of 500 each. There are also some villages whose population is between 500 and 1000 and yet they remain unconnected. Out of these villages, Kutingia, Dodkongia, Melasikikia, Kamberikia, and Angula of Baliguda Block are noteworthy. Similarly, there is no road connectivity to the villages of Alimaha, Kumbharmunda, Sikarmaha, Burungia etc in Daringibadi Block. The Firingia Block has 20 Panchayats and many villages of this block do not have road. For instance, Suberipanga, Jatajari, Batabahal etc are the villages, which have population between 600 and 800, but do not have *pucca* road connectivity. There are also many villages in other blocks of the district which do not have good road connectivity. The district produces abundant ginger and tamarind and the products are exported to other regions of the state. Because of lack of transport communication the tribal people who produce these commodities are forced to sell the products to the middle men at throw away prices. This implies that, lack of road connectivity adversely affects the economic life of the tribal people in Kandhamal district.

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Growth and Problems of Rural Roads in Odisha

Kabita Kumari Sahu¹

The objective of this paper is to analyse the trend, growth and problems of road transport in Odisha with special reference to rural transport. India has one of the largest road networks in the world. The roads consist of (i) national highways (NHs), (ii) State highways (SHs), (iii) major district roads (MDRs), and (iv) RRs that include other district roads and village roads. The road density per 100 Sq KM of land area is 142.68 in India which is very low compared to developed countries of the world. The road density in Odisha is better than India. There is 10.84 percent growth of roads in Odisha in 2011. The paper argues the case for implementing a long term rural road development plan for eradicating poverty and ensuring better quality of life of the rural people.

Key Words: National Highways, PMGSY, Road Density, Rural Roads, Transport

I. Introduction

A well-known and co-ordinated system of transport plays an important role in the sustained economic growth of a country. The present transport system of India comprises several modes of transport including rail, road, coastal shipping, air transport, etc. A good road network is a critical infrastructure requirement for rapid growth. It provides connectivity to remote areas; provides accessibility to markets, schools, and hospitals; and opens up backward regions to trade and investment. Roads also play an important role in inter-modal transport development, establishing links with airports, railway stations and ports. Rural roads contribute significantly to generating increased agricultural incomes and productive employment opportunities alongside promoting access to economic and social services. Rural Roads are the virtual lifelines for the vast multitude residing in rural areas. Transportation in India has recorded a substantial growth over the years both in spread of network and in output of the system. India has one of the largest road networks in the world, aggregating to about 33 lakh kilometers at present. The National Highways, which is the responsibility of Central Government, carries over 40 percent of the total traffic across the length and breadth of the country. Connectivity and mobility are the key to reach out to remote rural communities and open up new opportunities for development. Roads are considered the most important component of infrastructure, to which nation's economy either directly or indirectly connected. Healthy and strengthen road network is essential

for socio-economic development of a country. There must be matching growth between roads, traffic, vehicles and population. Overcrowded, overloaded, poorly funded, poorly constructed, poorly maintained roads cannot be of much use for the development of a country and will create indiscipline and other problems. Transportation in developing countries is of great significance because of its contribution to national and regional economic, industrial, social, and cultural development. However, most developing countries are facing problems related to traffic and transportation. Inadequate transportation facilities retard the process of socioeconomic development in a country. The road length in India has been continuously increasing over time. The growth rate of road was 12.50 percent in 2009 due to significant increase in urban roads.(Table-1). The road density per 100 Sq KM of land area is 142.68 in India. This road density is very less in India compared to developed countries of the world.

Table-1 Road Length in India (in 1000 KM)

Year	Total Road Length	Growth (%)	Total High ways	Growth (%)	Total Urban Roads	Growth (%)	Total Project Roads	Growth (%)	Road Density*
2001	2469.52	--	19.94	--	252.00	--	223.67	--	102.60
2002	2499.91	1.23	20.25	1.59	250.30	-0.68	224.12	0.21	104.24
2003	2601.96	4.08	20.45	0.98	297.26	18.76	259.33	15.71	107.34
2004	2670.00	2.61	21.07	3.02	301.31	1.36	261.63	0.89	110.17
2005	2962.46	10.95	24.16	14.66	286.71	-4.85	259.82	-0.69	115.88
2006	3014.06	1.74	24.60	1.82	291.99	1.84	262.19	0.91	118.05
2007	3119.92	3.51	25.51	3.70	300.58	2.94	268.51	2.41	122.18
2008	3174.62	1.75	26.00	1.93	304.33	1.25	270.19	0.63	125.02
2009	3571.51	12.50	29.21	12.35	373.80	22.83	276.62	2.38	136.03
2010	3682.44	3.11	30.01	2.74	402.45	7.66	278.93	0.84	139.40
2011	3790.34	2.93	30.90	2.96	411.84	2.33	288.54	3.44	142.68

* Road Density=KM of road per 100 Sq Km of Land Area

Source- www.data.worldbank.org(Time series data) accessed on 15th Dec, 2014 and Author's Own calculation
(Growth rate = $(Y_t - Y_{t-1})/Y_{t-1} \times 100$)

II. Road Transport in Odisha

The total length of roads in Odisha is over 237,000 km. Odisha's road density of 168.6 km per 100 square km is higher than the national average of 142.78 km. The total length of national highways passing through the state is 3,704 km; this includes the highway

connecting Kolkata and Chennai, a major transport corridor between east and south India. Under the on-going National Highway Development Programme (NHDP), 444 km of national highways in the state are being converted into 4-6 lane carriage-ways. The National Highway Authority of India (NHAI) has taken up 4-laning of NH-5 from Balasore to Icchapuram and NH-60 from Balasore to Laxmannath. Besides the up-gradation under the Golden Quadrilateral Project, the state government proposes to upgrade 1,505 km of existing state highways to national highways. The state government is also planning to develop a coastal highway along the coastline of Bay of Bengal linking Andhra Pradesh in south and West Bengal in north. The proposed coastline road length is to extend over 674 km from Gopalpur in Odisha to Midnapore in West Bengal and is envisaged to be executed with the assistance from Government of Norway. Within the state, Odisha plans to introduce 80 km long mass rapid transit system (MRTS) to connect Cuttack and Bhubaneswar, the two biggest cities in the state. The road statistics of the state of Odisha are given in Table-2.

Table-2 Total Road Length in Odisha (In 1000 Km)

Year	Total Road Length	Growth (%) of total roads	Urban Roads	Urban Roads as % of Total Roads	Rural Road Length	Rural Roads as % of total	Road density per 100 Sq Km
2003	213.05	--	16.91	7.94	196.13	92.06	136.83
2004	213.82	0.36	17.18	8.03	196.64	91.97	137.32
2005	215.14	0.62	18.14	8.43	197.00	91.57	138.17
2006	215.21	0.03	18.14	8.43	197.07	91.57	138.22
2007	215.30	0.04	18.14	8.43	197.16	91.57	138.27
2008	215.40	0.05	18.14	8.42	197.26	91.58	138.34
2009	229.13	6.37	17.84	7.79	197.45	86.17	138.67
2010	233.52	1.92	17.84	7.64	197.98	84.78	138.92
2011	258.83	10.84	18.61	7.19	198.43	76.66	139.76

Source: www.data.gov.in [Open Government Data Platform India] accessed on 17-12-2015

The urban roads are approximately 8 percent of total roads in the state. There is 10.84 percent growth of roads in Odisha in 2011. The rural roads as percentage of total roads are declining over time and they are 76.66 % in 2011. The road density in Odisha is more than that of India. The road length in Odisha in 2011-12 and 2012-13 are given in table-3.

Table-3 Road Length in Odisha in KM

Type of road	2011-12	2012-13	Percent(2012-13)
National Highways	3594	3593	1.43
Express Highways	38	38	0.02
State Highways	3616	3568	1.42
Urban Roads	18590	18590	7.41
Rural Roads	28158	28158	11.23
Major District Roads	4260	4292	1.71
Other District Roads	7116	7612	3.03
Panchayat Samiti Roads	25702	25702.	10.25
Gram Panchayat Roads	145367	145367	57.95
Forest Roads	7518	7545	3.01
Irrigation Roads	6277	6277	2.50
GRIDCO Roads	88	88	0.04
Total	250328	250835	100.00

Source: Economic Survey, Odisha, 2012-13, 2013-14

Gram panchayat roads are 57.95 % of total roads in Odisha. Rural roads and urban roads are 11.23 percent and 7.41 percent in the state only.

III. Development of Rural Roads in Odisha

Rural connectivity is needed for socio-economic development of the State. Constructing high quality roads of international standard has become a reality in Odisha. The State is connected to other neighboring states like west Bengal, Tamil Nadu, Andhra Pradesh, Chhatisgarh, through all weather high standard roads. Major roads of the state are covered by PradhanMantri Bharat JodoPariYojana (PMBJP). The approaching roads to the main roads have qualitatively improved. In recent years the internal roads connecting villages, hamlets have become R.C.C roads. The roads connecting to Gram Panchayat Road and Taluka (Block) Road have also been constructed through R.C.C. In recent years attempts have been made for constructing roads through Public Private Partnership (PPP).The State had 3,762 rural roads of 28159 km length by the end of 2011-12, of which 17,430 km (61.9%) are blacktopped and 2,365 km (8.4%) are cement concrete roads. Since the inception of PMGSY, Government of India has sanctioned Rs.16,428.56 crore in different phases for construction of 10,861 roads with 42,444.34 km length in the State and released Rs.10,460.71 crore by the end of August, 2013. A sum of Rs.10, 313.62 crore has been utilized for construction of 6,985 roads with 26,223.65 km during the same period. During 2012-13, Rs.1, 203.80 crore have been spent for construction of 2,401.29 km of roads providing connectivity to 605 habitations. It has been programmed to construct 5,000 km of road length with a cost of Rs.1, 600.00 crore

during 2013-14. Till the end of December 2013, 1,534.00 km of road length has been constructed with an expenditure of Rs.985.22 crore. By the end of 2010–11, the State has developed approximately 19,775 km of paved roadway, out of which approximately 17,416 kms consist of asphalt concrete and the rest 2,359 kms consist of cement concrete. These roads were developed under the following State and centrally sponsored road development schemes:

1. PMGSY, funded by GOI;
2. Bharat Nirman Yojana, funded by GOI;
3. Schemes funded by RIDF of NABARD;
4. RLTAAP (Revised Long Term Action Plan) and Backward Regions Grant Fund (BGRF), funded by GOI; and
5. Biju KBK (Kalahandi, Bolangir, Koraput) Plan
6. Gopbandhu Grameen Yojana
7. Biju Kandhamal-O-Gajapati Yojana

But the extent of rural connectivity in Odisha is still far less than the desired level and expectations. Only 62 percent villages possess all-weather connectivity to the existing State Road network system. The State had 3,762 rural roads of 28,159 kilometer length by the end of 2012-13. Of this 17,430 km (61.9 percent) are blacktopped and 2,365 km (8.4 percent) are cement concrete roads. Pradhan Mantri Gram Sadak Yojana (PMGSY), Rural Infrastructure Development Funds (RIDF), Constituency wise Allotment (CWA), Finance Commission Award works (R&B) and Special Repair schemes are the major rural connectivity programmes which are being implemented in the State.

IV. Rural Roads under PMGSY in Odisha

PMGSY was launched on 25 December, 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. Recognising the critical issue of the rural road sector, the Government of India (GOI) planned to give a boost to rural connectivity. In the year 2000, it launched a nationwide program, the Pradhan Mantri Gram Sadak Yojana, (PMGSY- the Prime Minister's Rural Roads Program) under the Ministry of Rural Development (MoRD). The primary objective of the Programme was to provide connectivity by way of All-weather roads to unconnected habitations with population 1000 and above by 2003 and those with population 500 and above by 2007 in rural areas. In respect of hilly/ desert/ tribal areas, the objective is to link habitations with population 250 and above. Up-gradation of selected rural roads to provide full farm to market connectivity is also an objective of the scheme, though not central. This will not only lead to development of the road sector, but also have a cascading effect on the

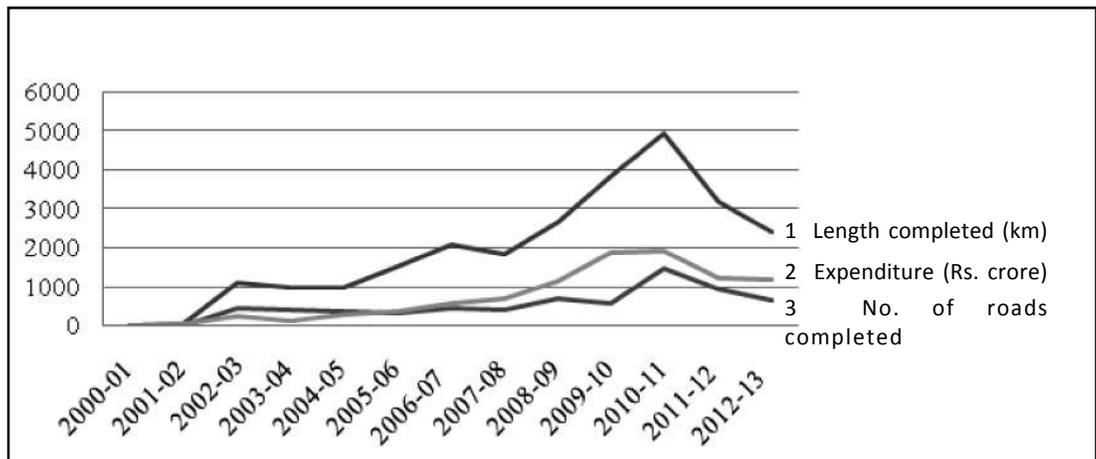
overall development of the State. Since the inception of PMGSY in 2000-01, rural road connectivity has remained a benchmark policy objective. The achievement under PMGSY in Odisha is given in Table-4.

Table 4: Progress of PMGSY in Odisha

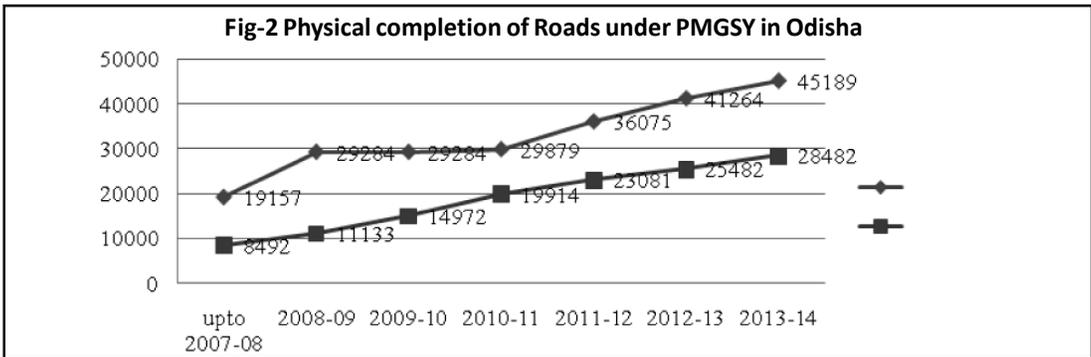
Year	Funds received (Rs. crore)	No. of roads completed	Habitation covered	Length Completed (km)	Expenditure (Rs. crore)
2000-01	179.7	0	0	0	0
2001-02	175	0	0	27.84	36.34
2002-03	170.09	464	260	1090.37	238.58
2003-04	175	403	587	993.87	133.8
2004-05	175	364	589	979.85	267.41
2005-06	305.29	341	604	1494.44	377.37
2006-07	624.57	451	697	2069.87	582.81
2007-08	546.83	432	621	1836.03	677.41
2008-09	1251.4	685	2419	2640.99	1163.01
2009-10	1594.34	596	985	3838.42	1895.26
2010-11	2245.10	1486	1199	4941.90	1924.25
2011-12	NA	934	207	3167.04	1235.78
2012-13	82.25	672	605	2401.29	1203.80

Source : Economic Survey, Government of Odisha, 2013-14

The progress is shown in figure-1. The progress of PMGSY is observed to be the best in 2010-11.

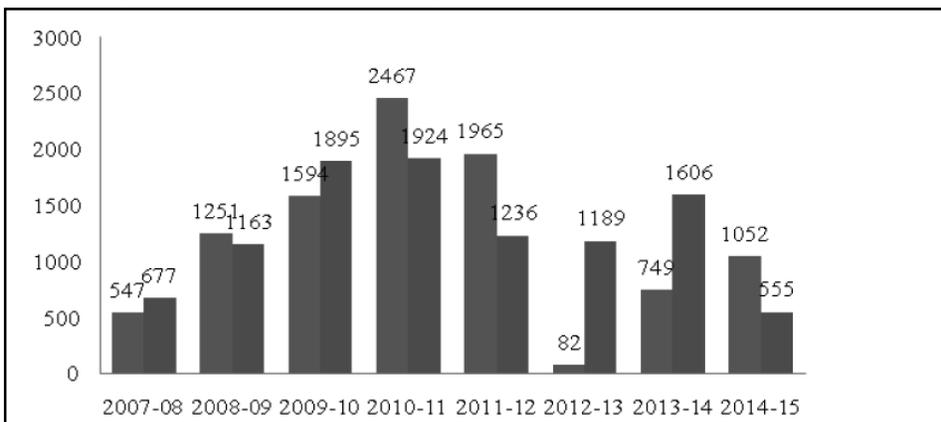


Under PMGSY, out of 9,184 roads of 36,071 km length sanctioned, 6,156 roads that were 23,081 km in length have been completed at an expenditure of Rs.8, 532.01 crores as on 31st March, 2012. Out of 21,398 km of completed roads, 15,841 km were blacktopped and 4,073 km were concrete roads. These roads provided all-weather connectivity to 8,168 habitations. During 2011-12, 934 roads that were 3,167 km in length were completed at an expenditure of Rs.1,235.78crore. Maintenance of PMGSY roads rests with the State Government after creation of assets. The State Government has released Rs.98.75 crore during the last seven years i.e., from 2005-06 to 2011-12, out of which, Rs.65.58 crore have been utilised for maintenance of PMGSY roads of which Rs.27.80 crore have been utilised during 2011-12. Total physical completion of Roads under PMGSY in Odisha is given in Figure-2.



The performance of State Government in implementing Pradhan Mantri Gram Sadak Yojana (PMGSY) has been quoted as dismal by the Central Government’s monitoring method during the last two financial years. Against the target to construct rural roads of 6,373 km and 2,956 km during 2012-13 and 2013-14 financial years respectively under the Central sponsored scheme, the State Government has managed to complete only 2,401 km and 3,063 km (Result Framework Document of Rural Development Department). The Department had conducted surveys for 95 bridge projects on rural development roads in 2012-13 and 64 in 2013-14. The financial progress under PMGSY in Odisha is given in figure-3. It can be seen that in 2010-11, both amount released and expenditure incurred are maximum in Odisha.

Fig-3 Trends of Financial Progress of PMGSY in Odisha (in crores)



V. Performance of PMGSY in the five Left Wing Extremism (LWE) affected Areas

Geographical location of districts is of critical importance. Malkangiri, Rayagada, and Gajapati are at the periphery of the state and surrounded by Andhra Pradesh. They are ranked the lowest in terms of Infrastructure Development indices. District-wise comparison of Infrastructure Development Index (IDI) ranks Malkangiri at 27th place, Rayagada at 23rd, Deogarh at 20th, Gajapati at 19th and Sambalpur at 7th place among the 30 districts of Odisha (Economic Survey, Orissa: 2009-10). Performance of PMGSY in the five Left Wing Extremism (LWE) affected Areas is presented in Table-5.

Table 5: Performance of PMGSY in the five Left Wing Extremism (LWE) affected Areas

District	Sanctioned			Achievements		
	No. of Roads	Length (km)	Cost (crore)	No. of Roads	Length (km)	Cost (crore)
Deograh	40	221.35	74.38	32	197.37	63.56
Gajapati	156	560.78	223.82	74	183.22	75.83
Malkangiri	144	800.25	236.62	27	131.25	46.60
Rayagada	210	1116.05	327.79	95	473.79	172.20
Sambalpur	149	656.73	183.62	107	526.78	147.42

Source: Economic Survey, Government of Orissa, 2009-10

In Malkangiri, the gap between sanctioned number of roads and actual roads constructed is the highest while in Deogarh it is the least. Malkangiri is geographically at the periphery and contains dense forests and inaccessible habitations. It is clear from the table that geographical location is also critical for governments' schemes reaching out to the poor.

VI. Rural Connectivity through Bharat Nirman

PMGSY became a part of "Bharat Nirman" in 2005-06 with modified targets to provide all weather connectivity to unconnected habitations with a population of 1,000 or more in plain areas and 500 or more in hilly and tribal areas. The target under Bharat Nirman was to connect 5,680 un-connected habitations (i.e. 3,604 with 1,000 or more population in plain areas and 2,076 with 500 or more population in hilly and tribal areas) by constructing 29,289.43 kms of road. It was targeted to connect 505 unconnected habitations by constructing 3,000 km roads during 2012-13. Against this target about 4,738 habitations were covered under this programme with 20,896 kms of roads from 2005-06 to 2012-13 (i.e., new connectivity of 14,512 kms and up-gradation of 6384 kms) which shows an achievement of 83 percent connection of village habitations.

Table-6 Rural Connectivity through Bharat Nirman

Item	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Villages habitation Connected							
a) More than 1000 Population	259	251	1768	438	253	139	79
b) More than 500 Population Scheduled area	63	71	437	206	399	249	126
Total	322	322	2205	644	652	388	205
New Connectivity (km.)	1601.93	1398.04	2064.18	2800.62	3158.48	1815.10	1673.31
Upgradation /Renewal	467.96	437.99	576.81	1037.80	1783.42	1351.95	727.98
Total length (Kms)	2069.88	1836.04	2641.00	3838.42	4941.90	3167.04	2401.29

Source: Odisha Economic Survey 2013-14

VII. Rural Connectivity through Rural Infrastructure Development Fund (RIDF) and RLTA

There are other programmes which are designed to improve rural road connectivity. Rural Infrastructure Development Fund (RIDF) of NABARD is an important programme that funds rural infrastructure projects in general and rural road projects in particular. One hundred thirty two roads with project cost of Rs.242.43 crore have been completed by the end of March, 2012, out of which 6 roads of length 54 kms have been completed during 2011-12 with an expenditure of Rs.166.55 crore. In addition, rural connectivity programmes are also funded under RLTA (Revised Long Term Action Plan), Biju KBK Plan, Gopbandhu Grameen Yojana, Biju Kandhamal –O- Gajapati Yojana and Backward Regions Grant Fund (BRGF). The RLTA and BRGF are funded by the Government of India. The Biju KBK Plan, Gopbandhu Grameen Yojana (GGY) and Biju Kandhamal O Gajapati Yojana are funded by the State out of its own resources. Under the 13 Finance Commission (TFC) grant, there is a provision of Rs.395.00 crore for maintenance of rural roads. During 2012-13, 421 projects were taken up and completed by utilizing Rs.91.64 crore under this programme. Besides, out of budget allocation of Rs.362.34 crore, Rs.361.53 crore has been utilised for repair and maintenance of roads and special repair programmes (Odisha Economic Survey 2013-14). The State Panchayati Raj Department has launched Gopabandhu GraminaYojana (GGY) in 2006 for providing additional assistance to districts not covered under the Backward Region Grant Fund (BRGF) where rural connectivity (intra village and inter village) has got top priority with allocation of 60 per cent of the total fund for road sector. The construction of cement and concrete (CC) roads inside the village with drainage facility has been given emphasis and in case there is no need of CC road inside the village, the approach/link road

from the main road can also be developed. In 2007-08, 7344 number of roads was completed and the number has increased to 9537 during 2012-13 (Panchayat Raj Department, Odisha).

VIII. Problems of Rural Road Transport in Odisha

Road transport of the country is facing a number of problems. Some of these problems are given below:

1. Most of the state roads are unsurfaced (42.65 per cent) and are not suitable for use of vehicular traffic. The poor maintenance of the roads aggravates the problem especially in the rainy season.
2. One major problem on the roads is the mixing of traffic. Same road is used by high speed cars, trucks, two wheelers, tractors, animal driven carts, cyclists and even by animals. Even highways are not free from this malady. This increases traffic time, congestion and pollution and road accidents.
3. There are multiple check-posts, toll tax and octroi duties collection points on the roads which bring down the speed of the traffic, waste time and cause irritation to transporters. Rate of road taxes varies from state to state and inter-state permits are difficult to obtain.
4. Way side amenities like repair shops, first aid centers, telephones, clean toilets, restaurants, rest places are lacking along the rural roads. There is very little attention on road safety and traffic laws are wilfully violated.
5. There is very little participation of private sector in road development in rural road because of long gestation period and low-returns. The legislative framework for private investment in roads is also not satisfactory. The road engineering and construction are yet to gear themselves up to meet the challenges of the future.
6. There has been no stability in policy relating to highway development in the state. It has changed with the change of government. There are a number of agencies which look after the construction and maintenance of different types of roads. Since there is no co-ordination between these agencies their decisions are often conflicting and contradictory.
7. There is shortage of funds for the construction and maintenance of roads. Instead of giving high priority to this task the percentage allocation has decreased over the years. In terms of capacity to sustain present traffic volume and load they are of inadequate structural specifications. They are being misused by users and inhabitants. Effective traffic rules and public awareness are not there. There are two reasons, one is insufficient funding for roads and the second is non-availability of effective 'Roads and Road Users Act' and its enforcement.

8. Encroachment on the road land creates a number of problems. It increases the number of accesses and crossing across the road making it unsafe for travel.

IX. Suggestions for Improvement of Rural Road System in Odisha

Following suggestions are put forward for improvement of road transport in Odisha.

- 1) The existing Road System in the state of Odisha has totally failed to cope with the transportation demand of disciplined road users. There is a need of restructuring the present organizations to meet the requirements of modern technology.
- 2) Bus Stands/Stops must be under the control of Road Board. These must be well designed, well-constructed and well maintained. Adequate fee must be levied on each vehicle using them. Parking facilities for such vehicles must also be provided on these stops on rent basis. Use of these facilities must be obligatory for public transport.
- 3) Major District Roads may be renamed as District Highways (DH).
- 4) Absurd and haphazard parking on road and streets create acute traffic problems. There must be a well-defined 'Road Side Parking Act' and nobody should be allowed to use Roads and Streets as his own Garage/Courtyard. The parking system should be licensed with adequate parking fee. There must not be any upper limit of penalty for Road/Street misuses.
- 5) There must be an effective 'Roads and Road Users Act' for effective control of all the activities on highways, roads and streets.
- 6) Maximum allowable load/passengers along with route and permit number must be clearly written on the body of each vehicle.

X. Conclusion

Road transport enables the people reach their houses and enable the commodities and goods to reach near the businessmen. It is known as complementary to other form of transport and helps economic development. Road transport is likely to continue its dominance for the rapid industrialization in a developing country like India. Rural roads are not only important for movement of agricultural and allied products from rural to urban areas but are also equally important for inclusive growth of rural economy. After the construction of PMGSY roads, an improvement in the employment situation in terms of more job opportunities, more avenues for self-employment, etc. were observed. Positive impact was observed with regard to increase in accessibility to health care. Education facilities are also increased because of the PMGSY roads. Construction of the PMGSY roads has led to an increase in frequency of visits by Government officials to monitor implementation of various Government schemes and programs in rural areas. Now with

improved connectivity of roads under PMGSY, mobility has been made easier and parents are no longer hesitant to marry their daughters with boys living in distant villages. Newly connected village roads under PMGSY have assured access to better social infrastructure like banks, post office, hospitals, veterinary hospitals, bus stops and local market. PMGSY is a very strong and effective policy of Central Govt. The progress of this policy can be shown as the construction of rural roads in rural areas. PMGSY has achieved a great success in the field of road construction. The other rural development and employment generating programmes like MGNREGA should be integrated with developing rural roads. Odisha being a poor State with high incidence of poverty of large rural population and large presence of SCs and STs should improve its rural road connectivity. Taking all the advantages of the Central Government schemes and funds of financial institutions, the State Government has to build a comprehensive long-term plan in the light of rural road development plan vision 2015 for Odisha and implement it in true spirit by empowering and fully involving the PRI institutions with finance, power and responsibility. This will contribute to eradicate poverty and ensure improved quality of life of rural people and lead to inclusive development with reducing rural and urban gap in the State.

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Road Infrastructure and Rural Development - An Impact Evaluation Study of Pradhan Mantri Gram Sadak Yojana (PMGSY) in three Districts of Odisha

Dr. Kartik Prasad Jena¹

Among rural infrastructures, rural road connectivity is the key to rural development by providing access to economic and social services and thereby generating increased incomes and productive employment opportunities. Odisha has been identified as one of the most backward states in terms of poor connectivity and the Government of Odisha in its Department of Rural Development has envisaged, a number of roads under PMGSY programme. Till 31st January, 2015, Government of India has released an amount of Rs. 11,942.83 crore to Odisha and along with it an amount of Rs 12,632.48 crores has been utilized by the Govt. of Odisha for constructing 8,083 roads with a length of 30,995.18 kilometers. This paper presents the findings of an informal impact evaluation study of PMGSY in three districts of Odisha. The findings of the field study suggest that income of people of the sample villages from different sources appeared to have increased during post PMGSY road construction period. As an indirect impact, PMGSY road construction, in sample villages, has given rise to creation of physical assets as well as creation of plenty employment opportunities in both farm and non-farm sectors.

Key Words : Rural Infrastructure, Rural Road Connectivity, Habitation, Physical Assets, Employment Opportunity, Non-farm Sector

1. Introduction

Rural infrastructure is not only a key component of rural development but also an important ingredient in ensuring any sustainable poverty reduction programme. Several studies show that infrastructure is indeed co-related to economic growth in rural areas and that low per capita income co-relates with lack of infrastructure. It increases employment, income, efficiency and productivity in rural areas. Studies also show in India, rural infrastructure

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which can be a driver of rural growth is often not adequately available. Among rural infrastructures, road connectivity is the key to rural development by providing access to economic and social services and thereby generating increased incomes and productive employment opportunities. In fact, most of the development programs are not meeting the desired success, primarily due to the poor or no accessibility to the program villages. Even after 67 years of India's Independence, about 40 percent villages (about 3.30 lakh villages/habitations), in the country today, are either not connected by roads and even if connected, the roads are not all weather roads. Realizing this, with a view to redressing the situation, government of India under the Ministry of Rural Development (MORD) have launched the Pradhan Mantri Gram Sadak Yajona (PMGSY) on 25 December, 2000 as a 100 per cent Centrally Sponsored Scheme, to provide good all-weather road connectivity to every hitherto unconnected habitation/village with a population of more than 1000 within 3 years and every habitation with a population of more than 500 by the end of the Tenth Plan. In respect of the Hill States areas, the objective is to connect habitations with a population of 250 persons and above. It is also intended to upgrade the existing roads which are not all-weather in a phased manner. This paper presents the findings of an informal impact evaluation study of PMGSY in three districts of Odisha.

The primary objectives of the present study are : (i) to assess the impact of PMGSY road construction on the socio-economic status and overall quality of life of the rural people as a result of enhanced rural connectivity provided under the programme; (ii) to highlight the status of PMGSY in the State of Orissa; (iii) to identify the bottlenecks in the process of execution of the program if any; (iv) to suggest some risk factors involving in the process of construction and strategies to ensure timely completion of the road.

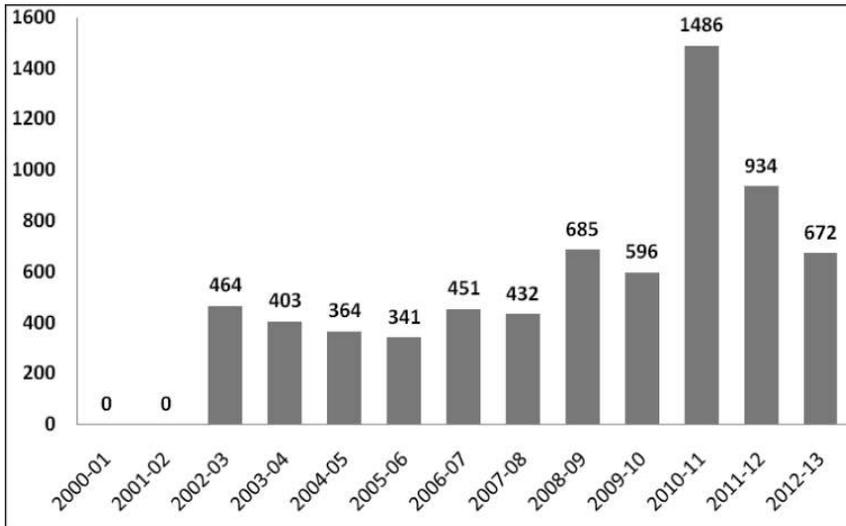
To achieve the aforesaid objectives, in the present study we have adopted two methods: first, a 'multi-stage stratified random sampling method' for collecting primary data from sample households and second a 'Focused Group Discussions (FGD)' method with the people of the sample villages. Secondary data have been collected from the district level offices of the Executive Engineer, Rural Works and R.D. Department of sample districts of Odisha. For this impact assessment study of PMGSY we have used the indicators such as income, agricultural production, land value, cropping pattern, transportation, employment, village/cottage industries, urbanisation, health and education etc.

2. Status of PMGSY in Odisha

Since the inception of PMGSY Programme in Odisha in 2000-01, till 2014-15 (till April, 2014), Government of India has sanctioned Rs 17814.25 crore in different phases for construction of 11,649 all weather roads with a length of 45,190.14 Km in 18,043 villages out

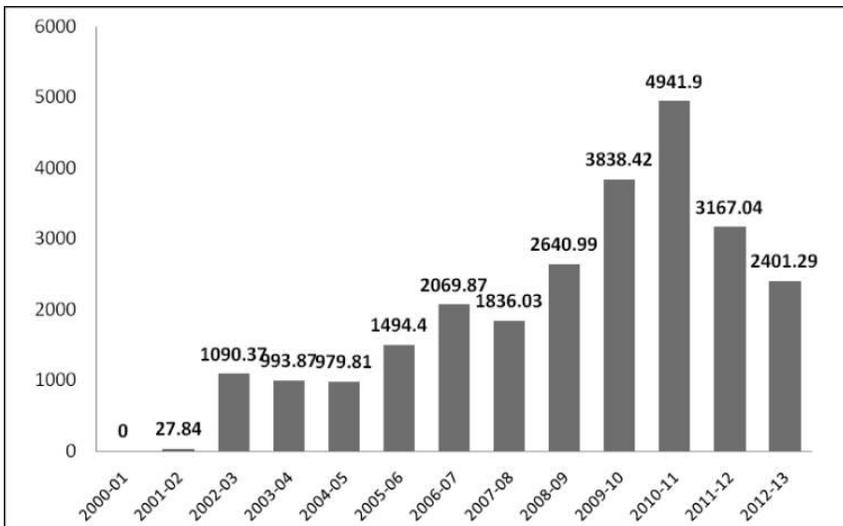
of total 50,098 villages of the State. Till 31th January, 2015, Government of India has released an amount of Rs. 11,942.83 crore and along with it an amount of Rs 12,632.48 crore has been utilized by the State for constructing 8,083 roads with a length of 30,995.18 kilometres. The year-wise number of roads and length of roads completed in Odisha under PMGSY from 2000-01 to 2012-13 are given in chart No-1 and chart No2.

Chart 1: Number of Roads Completed in Odisha under PMGSY, 2000-01 to 2012-13.



Source . Annual Activity Report (2013-14) Govt. of Odisha

Chart-2



Length of Roads Completed Under PMGSY's Between 2000-01 and 2012-13 (In Kms.)

Source . Annual Activity Report (2013-14) Govt. of Odisha

3. Study Area

To know the impact of PMGSY road on socio-economic status and overall quality of life of the people, a field study was conducted in early December, 2014 on a small sample of three districts covering 3 blocks and 6 habitations/villages across 3 selected PMGSY roads. Primary data have been collected from 100 sample households of 6 villages/ habitations. Two villages from each block located in close proximity to each of the 3 selected PMGSY road were selected. The names of each pair of villages and their corresponding PMGSY road to which proximity they are located are: Machhuda and Kusuda sample villages located in close proximity to Irda- Baliapati PMGSY road under Basta Block of Balasore district; Balipatana and Khadipal sample villages located on Pattamundai—Balipatna road under Pattamundai Block of Kendrapara district; and Suhagpur and Teisipur villages located on the sample PMGSY road Mangalpur – Baligaon under Pipili block of Puri district. The detailed profile of the study area and the sample PMGSY roads are given in Table No.1.

Table No.1 : Profile Of Study Area Under Sample PMGSY Roads In Three Districts

District Name	Block Name	Sample Village/ Habitation	Population	No. of Sample Households	Name of the Sample Road	Year of Commencement	Year of Completion	Length of the road (Km)	Project Cost (Rs.in lakh)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Balasore	Basta	Machhuda	1100	15	Irda-Baliapati	2008	2009	3.00	90.50
		Kusuda	1000	15					
Kendrapara	Pattamundai	Balipatna	4000	20	Pattamundai - Balipatna	2010	2011	1.48	199.00
		Khadipal	1100	20					
Puri	Pipli	Suhagpur	1200	15	Mangalpur-Baligaon	2006	2007	2.80	83.77
		Teisipur	2500	15					
TOTAL:	3	6	10900	100	03			7.28	373.27

Source : Primary Data From Field Study In December, 2014

4. Impact of PMGSY Road

The impact of PMGSY on socio-economic status and livelihood of the people of the study villages may be divided into two parts, viz, direct impact and indirect impact. While the direct impact has been analysed with respect to the impact on land value, agricultural yield value, generation of income and employment; the indirect impact has been explained in terms of asset creation, expenditure pattern, savings and perception on various socio-economic services like health and education facilities, urbanisation. This has been explained in the following.

Two methods were used to assess the impact of PMGSY road in study area. In the first method household owner respondents of the sample villages were asked to estimate the current year, 2014, the post PMGSY period value of their agricultural produce and income from other sources. As it takes quite some time for the positive impact to be visible and apparent, asking the respondents to provide data for the year just following the completion of construction of PMGSY road has been avoided. Hence current year data is considered. In the second method, respondents were asked to recall the value of all the crops grown by them and also the value of income from other sources in the year immediately preceding the completion of PMGSY road in their village. They were also asked to estimate and compare their income and asset creation between before and after the completion of the PMGSY road.

4.1 Direct Impact of PMGSY Roads on Income and Livelihood

A comparative data analysis is made between before and after PMGSY period. The field study reveals that the transport facilities have recorded an increase in the study villages due to the construction of PMGSY road enhancing the access to sample villages. Just after the completion of the construction of PMGSY road, the direct impact appeared in terms of rise in land value, increase in the price of agricultural produce, reduction in the price of earth per trip of tractor due to reduction of transportation cost. The findings of field study suggest that PMGSY roads in sample villages have led to an increase in income of village farmers as middlemen were cut out and farmers could transport the produce such as paddy or vegetables directly to the market and sell them at a higher remunerative price rather than at a through-away price, which they were selling before PMGSY road. This has been evinced from column numbers 5 & 6 in Table No-2 where price per quintal of paddy in study villages on an average has increased from Rs.900/- before PMGSY to Rs.1142/- after PMGSY. It has become more prominent in our sample village, Machhada in Balasore District, where it has increased from Rs.900/- before PMGSY to Rs.1200/- per quintal after PMGSY period. As an immediate effect average land value per decimal has also increased from Rs.5,166.7 before PMGSY to Rs.10,833.3 after PMGSY. Similarly, the average cost of earth per tractor trip has reduced from Rs.833.3 to Rs.483.3 due to reduction in transportation cost because of PMGSY road construction as seen from Table-2. In our study to know the impact of PMGSY on the prices of paddy and earth, we have segregated the influence of a rise in the general price level.

Table No 2: Estimate Rate of Immediate Returns on PMGSY

District/block	Village	Land Value per Decimal(in Rs.)		Paddy Price per Quintal (in Rs.)	Earth Per Trip of Tractor (in Rs.)		
		Before PMGSY	After PMGSY	Before PMGSY	After PMGSY	Before PMGSY	After PMGSY
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Balasore/ Basta	Machhada	6,000	15,000	900	1200	800	600
	Kusuda	5,000	13,000	850	1150	800	500
Kendrapara/ Pattamundai	Balipatana	4,500	8,000	900	1000	800	400
	Khadipal	4,000	7,000	900	1100	800	400
Puri/Pipili	Suhagpur	6,000	12,000	900	1200	900	500
	Teispur	5,500	10,000	950	1200	900	500
TOTAL:	AVERAGE	5166.7	10833.3	900	1142	833.3	483.3

Source: Primary Data From Field Study In December, 2014

The analysis of source-wise per household average income during Pre- and post PMGSY period suggests that income of people of sample villages from different sources appeared to be always higher during post PMGSY road construction period. The construction of PMGSY roads in sample villages has led to an increase in income of farmers. As shown in Table No-3, in the sample villages of Kusuda, Khadipal and Teispur in Balasore, Kendrapara and Pur districts respectively, income from agriculture source has increased by 37.29%, 44.81% and 21.57% respectively during post PMGSY road period. The main reason for rise in income is the reduction in the transport cost of fertilizers in the villages due to availability of improved transport to the villages which has brought down the cost of fertilizers in the villages. Use of chemical fertilizers and pesticide with HYV seeds has brought about an increase in agricultural yield and hence, income considerably in the post PMGSY road period. Due to PMGSY road, farmers have got better access to wholesale market and they are getting higher price for their products which they were selling at throwaway price to the traders from the village itself before the construction of the road. As reported, farmers of Teispur village are now directly moving to Bhubaneswar-Cuttack twin cities daily for selling vegetable at a higher price. This has also led to a change in cropping pattern and crop diversification to vegetable and cash crops leading to more income. Earlier perishable crops could not be grown as the transportation time was large. Now these crops could also be added.

As reported in village Machhada of Balasore district, the main reason for rise in income from business is the emergence of some petty & cottage industries such as Saal Leaf plate making units, rope making from *sabai-grass* whose input-raw materials are easily transported from adjacent Mayurbhanj district by big heavy trucks (10-20 wheelers) at lower transportation cost due to free access to the area. The rise in income from other sources in Balipatna and Khadipal villages of Kendrapara district has taken place after setting up of flattened rice (chuda) factory and brick making kiln due to improved road connectivity and reduction in transportation cost of earth on the

bank of the river Brahmani close to the village. Soon after the completion of Balipatana-Pattamundai PMGSY road, for the first time a new passenger-bus started plying from our sample village Balipatana to Cuuttack via Pattamundai. Business of flattened rice has become profitable to the villagers of Balipatna and Khadipal as they sell them directly at higher price in nearby Kendrapara and Cuttack towns by commuting daily in the village bus. Auction of sand from the nearby river-bed of village Balipatna has increased due to PMGSY road connectivity and hence added to village income.

Table No-3: Source-Wise Per Household Income During Pre And Post-PMGSY Road Period (In Rs.)

District / Block	Village	No. of HH	Pre-Post PMGSY	Agriculture	Service	Business	Labour	Remittance	Others	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Balasore/ Basta	Machhada	15	Before	12735.40	14640.20	10560.00	11870.00	16450.50	1250.00	62596.20
			After	14780.00	18560.00	12840.00	12640.00	19430.00	1540.00	74680.00
			% Change	16.05	26.77	21.59	6.49	18.11	23.20	19.30
	Kusuda	15	Before	11530.60	13400.00	12130.00	13920.10	20430.40	1170.00	62681.10
			After	15830.00	16131.00	13650.00	14830.90	22320.60	1450.90	77522.90
			% Change	37.29	20.38	12.53	6.54	9.25	24.01	23.68
Kendrapara/ Pattamundai	Balipatna	20	Before	540.25	25320.20	9540.35	7850.00	11540.60	890.00	60591.30
			After	620.30	27430.00	10780.00	9760.00	14320.00	1120.00	68940.30
			% Change	14.82	8.33	12.99	24.33	24.08	25.84	13.78
	Khadipal	20	Before	670.10	24750.60	8720.65	8720.00	10530.40	999.00	64290.75
			After	970.35	26820.00	9070.35	10110.00	15630.10	1122.00	70413.30
			% Change	44.81	8.36	4.01	15.94	48.43	12.31	9.52
Khorda/ Pipil	Suhagpur	15	Before	14150.25	16478.40	15340.40	5645.00	1540.30	870.00	56024.35
			After	16840.00	19510.00	18720.00	7640.00	2210.00	1080.00	66000.00
			% Change	19.01	18.40	22.03	35.34	43.48	24.14	17.81
	Teisipur	15	Before	15480.75	14830.60	14320.75	7320.40	1170.70	920.00	56043.20
			After	18820.00	17930.00	16820.00	9920.00	1550.10	980.00	67020.20
			% Change	21.57	20.90	17.45	35.51	32.41	6.53	19.59
All	6	100	Before	55107.35	109420.00	70612.15	55325.50	61662.90	6099.00	362226.90
			Average	9184.56	18236.67	11768.69	9220.92	10277.15	1016.50	60371.15
			After	67860.65	126381.00	81880.35	64900.90	75460.80	7293.00	424576.70
			Average	11310.11	21063.50	13646.73	10816.82	12576.80	1215.50	70762.78
			% Change	23.14	15.50	15.96	17.31	22.38	19.58	17.21

Source : Primary Data From Field Study In December, 2014

From the analysis of source-wise income in Table-3; a peculiar finding has cropped up that the income from remittance is much more higher in two sample villages such as Balipatna and Khadipal of Kendrapara district, which has increased to 24.08% and 48.43% respectively as most of the family members of households in these two villages have gone to outside state as well as outside countries especially to Arabian countries as migrants to do the work of plumbing. The main cause of rise in income from remittances, in villages Suhagpur and Teispur to 43.48% and 32.41% respectively, is that a number of persons of these villages have migrated to Kolkata and Chennai for working as cooks and labourers respectively. From Table-4, it is further observed that highest income has been generated from service sector as the peoples are going to outside to generate income as the agricultural production and productivity is being insufficient to mitigate their socio-economic need due to population growth. This has necessitated them to serve in govt., private and corporate companies to generate more income. While calculating the income from various sources we have attempted to segregate the influence of time and inflation during the study period.

4.2 Impact on Employment Generation, Socio-Economic Status And Over Head Capital

Findings from field study suggest that there has been substantial increase in creation of employment opportunities both in the Agricultural and Non Agricultural Sectors in the sample after construction of road under PMGSY. There has been substantial increase in the dairy and poultry production in the villages of Machhada and Suhagpur. It was also observed that many outsiders have purchased land after the road construction with a view to set up industries. In the study villages cottage and tiny rural industries like Bidi making and Saal Leaf Plate making units as narrated earlier in Machhada and Kusuda villages; flattened rice, and brick making kiln in Balipatna and Khadipal villages and knitting and applique units in Suhagpur and Teispur villages close to Pipili have cropped up. Secondly, many small/petty shops like pan & tea stationary, dress shops have come up on the road side, thereby accelerating a process of urbanization.

It was observed that due to the improvement of road, the cost of transportation of earth per trip has gone down from Rs.800/- to Rs.400/- in Balipatna and Khadipal villages in Kendrapara district. As a result the cost of production of brick has reduced. The villagers who are running the brick units are getting a higher profit. This has caused an increase in the ownership and number of assets like heavy vehicles, tractors and trucks in village Suhagpur and Khadipal as shown in Table No -4. Post- PMGSY road period has also given rise to an increase in asset creation of farm machinery and implements construction of concrete house by the people in almost all sample villages. Citing a few example from pre PMGSY road period to post PMGSY road period, we find that a number of tractor asset has

increased from 9 during pre-PMGSY period to 25 during post PMGSY period. Similarly the number of power tillers has increased from 8 to 28; two wheeler from 59 to 136 and concrete house from 137 to 223 during the same period. Availability of more number of Light Commercial Vehicles in the villages round the clock helping the people to carry their products to the market and also going to hospitals during the emergencies at even odd hours. As a peculiar impact in Suhagpur end point at Mangalpur; one English –medium school has come up and The Primary Health Centre has been upgraded to a Community Health Centre. More deliveries are taking place in the hospital and the incidence of delivery at the hands of untrained dais as well as infant mortality have declined. The study reveals that number of visits made by Government functionaries within a fixed period of time has increased in post road period as compared to pre road period. The increase in average number of visits per sample village during a year is significant in case of grass root functionaries like health workers/ANM, Gaon Saathi, VLWs and VAWs, whereas, it is very marginal in case of top officials like BDO, Collector etc.

Table No 4: Asset Position Of Sample Village In Pre- Post PMGSY Period

District/ Block	Village	Pre- Post PMGSY	Tractor	Power Tiller	Harv- ester	Two Wheeler	Four Wheeler (Light)	Heavy vehicle	Concrete House
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Balasore/ Basta	Machhada	Before	1	2	1	5	0	0	35
		After	3	4	1	15	8	2	54
	Kusuda	Before	1	2	0	4	0	0	11
		After	2	6	2	20	7	1	25
Kendrapara/ Pattamundai	Balipatna	Before	3	1	0	15	3	0	45
		After	6	4	0	38	6	1	62
	Khadipal	Before	1	1	0	8	0	0	11
		After	4	4	1	20	4	1	22
Khorda/ Pipil	Suhagpur	Before	2	1	0	17	1	0	20
		After	5	6	1	22	3	1	35
	Teisipur	Before	1	1	0	10	2	0	15
		After	5	4	1	21	6	2	25
All	6	Before	9	8	1	59	6	0	137
		After	25	28	6	136	34	8	223

Source : Primary Data From Field Study In December, 2014

Table No-5: Opinion on the quality of the construction of the PMGSY road

District/ Block	Village	No. of HH	Average	Good	Fair	Excellent	TOTAL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Balasore/ Basta	Machhada	15	2	7	6	15	30
	Kusuda	15					0
Kendrapara/ Pattamundai	Balipatna	20	4	8	10	18	40
	Khadipal	20					0
Khorda/ Pipil	Suhagpur	15	3	5	8	14	30
	Teisipur	15					0
All	6	100	9	20	24	47	100

Source : Primary Data From Field Study In December, 2014

In order to assess the quality of PMGSY road, perception of household-owner respondents has been recorded in Table-5 which shows that 47 % of household respondents has reported that the road condition is excellent, followed by 24 % of respondents who has reported that road condition is fair, 20 % has reported that road condition is good and 9 % respondent has reported that road condition is average.

5. Conclusion

The analysis of source-wise per household average income during Pre- and post PMGSY period suggests that income of people from different sources in the sample villages is reported to have increased during post PMGSY road construction period. The increase in income might be attributed to some other factors to some extent. But the impact of the construction of PMGSY road has gone a long way to influence rise in the income from different sources. As an indirect impact, PMGSY road construction in sample villages has given rise to creation of physical assets as well as creation of a number of employment opportunities in both farm and non-farm sectors. There is, therefore, enough evidence to show that rural road infrastructure does indeed promote economic growth. A good deal of social benefits such as health, education, sanitation, has also increased. Due to the construction of road and availability of transportation facilities in the village, people during health emergency cases, are able to have quick access to the hospitals, located either at the Block or District head quarter and have saved their lives. Incidence of Infant

and Child Mortality has declined considerably because of improved access of the villagers to the health care facilities, the study reveals. The following policy implications may be drawn from the study.

1. The study reveals that due to lack of proper supervision, the quality of the road construction falls short of desired standard. Hence, there should be proper supervision of the construction work by the Officers of the R.D. Department where the work tender is being given to local MLAs and MP. The quality of work done by these public functionaries falls short of the expected standard. Percentage system should be stopped in order to improve the quality of the work.
2. Sometimes the construction of PMGSY is not completed timely. To avoid delay in road construction of the roads may be placed directly with the works department and this will help early and timely release of funds to the contractors, which can ensure timely completion of the roads without slippage of time and cost overrun.
3. Our field experience suggests to carry out the road construction activities through the NGOs, R&D Department being the nodal agency which will not only ensure the local people to get employment opportunity, it will also ensure the road completion with substantially low budgetary requirement and within the time frame without compromising with quality.
4. When old village roads are upgraded to PMGSY road, the area of erstwhile public road encroached upon by the villagers should be free from encroachment and restored for sufficient widening and making provision of drainage system, which will enable their sustainability.
5. Further, funds kept for the maintenance of the roads constructed under PMGSY should be properly utilized to ensure their maintenance, failure of which, accountability will be fixed and drastic actions should be initiated against the erring officials and contractors.
6. Lastly, there should be strong monitoring mechanism and enforcement agency to regulate and check all sorts of corruptions in the programme. Moreover, in the selection of roads, political pressure and muscle power are playing a very crucial role. Even in the Block meeting, those leaders who are shouting more are able to snatch away the roads to their locality. This is resulting in wrong selection of roads. Therefore, some objective criteria should be developed by the MORD Department to prioritise the selection of the roads which will be able to remove the above indicated risks.

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An Economic Analysis of Rural Electrification in Odisha

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Rural electrification is considered as a prerequisite for economic growth and development of a country and lack of access to it has interrelated negative social and economic impacts for the majority of the population. It has been an important part of Government policy since independence. Odisha has experienced a noticeable growth in rural electrification. Out of 4,7529 villages in Odisha, 88 percent villages have been electrified by the end of 31st March, 2013 as against all India figures of 94.4 percent. But, it can be said that, though Odisha has achieved with 88 percent rural electrification still it is lagging behind in the process of village electrification. The serious challenges faced by the Government in achieving the target lie in the problem of allocation and distribution. The literatures on the problem of rural electricity are very scanty and no such study has also been undertaken in this context. The present study can be considered as a moderate attempt in this direction. The present study makes an attempt to provide a theoretical exposition of the access to electricity by the rural people in the Odisha state.

Key Words: Rural Electrification, Economic Growth and Allocation of Electricity

1. Introduction

Rural electrification is considered as a prerequisite for economic growth and development of a country and lack of access to it has interrelated negative social and economic impacts for the majority of the population. It has been an important part of Government policy since independence. According to the International Energy Agency's annual report 1.3 billion people worldwide live without access to electricity. The numbers of electrified villages were very low during the period of independence. But, in recent years, due to the government initiatives the numbers of electrified villages as well as the electrified households have been rapidly increasing. One important thing here is to be mentioned

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that though the overall rate of electrification seems to be high there is a considerable inter-state gap between developed and underdeveloped states. Where, the states like West Bengal, Tamilnadu, Sikkim, Punjab, Kerala, Haryana, Delhi, Goa and Andhra Pradesh have attained 100 percent rural electrification, other states like Meghalaya (86.3%), Mizoram (86.3%), Odisha (88%) and Uttar Pradesh (88.9%) are on the way of progress (Odisha Economic Survey, 2013-14).

Odisha has experienced a noticeable growth in rural electrification. Out of 4, 7529 villages in Odisha, 88 percent villages have been electrified by the end of 31st March, 2013 as against all India figures of 94.4 percent. Nine states have achieved complete village electrification and another five states have achieved 99.9 percent. It can be said that, though Odisha has achieved with 88 percent village electrification still it is lagging behind in the process of village electrification. The serious challenges faced by the Government in achieving the target lie in the problem of allocation and distribution. The literatures on the problem of rural electricity are very scanty and no such study has also been undertaken in this context. The present study can be considered as a moderate attempt in this direction. The present study makes an attempt to provide a theoretical exposition of the access to electricity by the rural people in the state.

The rest of the paper is organised as follows: section-2 deals with review of some selected literatures and section-3 briefly discusses the demand and supply analysis as well as pricing mechanism for providing electricity in order to maximise the revenue and recover the operational cost. Section-4 provides an Overall Status of Rural Electricity Services in India as well as Odisha and section-5 analyses the policy initiatives taken by the Government for rural electrification and some alternative measures suggested to overcome the problems related to the distribution of electricity.

2. Review of Literature

Generally, the concept of rural electrification refers to the electricity supply to areas outside of cities. But different researchers have defined it in their own ways.

Barnes (1988) defines rural electrification as “the availability of electricity for use in rural communities, regardless of the form of generation”. Yaron et al (1994) simply state, “Rural electrification is the process of bringing electricity to rural communities”. From the above two definitions it is clear that there is a clear cut distinction between the electrification in rural as well as urban areas.

Mason (1990) also raises the question as to why there should be a distinction between rural and urban areas for the purpose of power distribution programmes. She argues that, rural distribution projects generally cost more than urban distribution projects per connected household and that government policies are sometimes directed specifically at the rural areas making it necessary to identify rural areas in electrification programmes.

The higher costs of rural electrification will have implications for the financial and economic viability of these projects and this makes it essential that they are separated from general power distribution programmes.

Rural electrification is potentially a desirable investment in many countries (Schramm, 1991) but there has been, and still is, considerable discussion about the socio-economic benefits and the costs of the electrification of these areas in developing countries. For many rural people in the Third World however, electrification of their areas means modernity, progress and, above all, light in the darkness (Foley 1990).

Some researchers have asserted the view that, rural electricity has different benefits to the consumers. During a recent socio-economic impact evaluation in Bangladesh, a villager even appreciated electricity as “freedom” (Schiller 1996). The Independent Evaluation Group has collected data for selected countries for which a range of benefits has been calculated. The benefits include: lighting and TV (domestic uses); health benefits (improved health and reduced fertility); time use (increased leisure); education benefits; and productive uses (increased productivity of home businesses (existing and new businesses) and increased agricultural productivity).

3. Demand and Supply Analysis

The price of any commodity is determined by the market forces. In other words, both demand and supply of commodity play an important role in the determination of prices. Given the supply of a commodity if the demand for that commodity rises, the price of that particular commodity rises. Similar is the case for electricity consumption in Odisha. The successful deployment of rural electrification is contingent on widespread willingness to pay amongst rural households and energy users. Rural households spend around 10 percent of their monthly income on basic fuel and energy services, which are used primarily for cooking, heating and other domestic activities. Their willingness to pay depends upon income, existing energy mix and costs thereof, availability of electricity, quality of supply and appliance ownership.

Table 1: Demand And Availability of Power

Year	Demand (Estimated)	Availability of Power from Different Sources					Installed Capacity	Sold to Other states /UTs
		State Sector	Central Sector	Other Sources	Purchase from captive plants of the State	Total		
2001-02	1334	1271	98	-	54	1423	NA	0
2002-03	1367	869	440	-	62	1371	4695.34	0
2003-04	1500	1269	481	-	76	1826	4815.34	0
2004-05	1578	1459	498	-	69	2025	4845.34	517
2005-06	1649	1275	525	-	62	1862	5073.48	250
2006-07	1760	1543	485	-	92	2120	5178.99	207

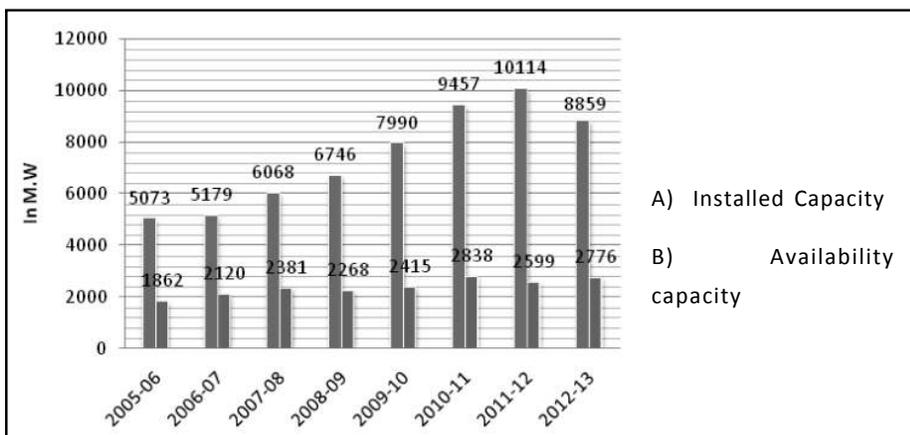
2007-08	1997	1563	736	-	82	2381	6067.90	311
2008-09	2107	1375	763	-	130	2268	6745.75	32
2009-10	2240	1157	773	-	485	2415	7990.25	50
2010-11	2398	1295	814	-	729	2838	9456.60	128
2011-12	2674	1136	1170	68	225	2599	10114.00	49
2012-13	2674	1226	1221	69	239	2776	8859	136

Source: Odisha Power Transmission Corporation Limited

Compared to 2005-06, the total power consumption in the state has increased by 60 percent by the end of 2012-13. But one thing can be mentioned that though the per capita consumption has increased the rural urban disparity in consumption remains high.

Demand of any commodity cannot determine the price itself. Supply also plays an important role in the price determination. The supply of power to a region is measured by installed capacity and availability for consumption. Figure-1 depicts the installed capacity and availability of power from power projects. This is not the same as consumption of power. Consumption is a flow concept and has a time dimension whereas demand for power a stock concept, refers to the consumption of power at a given point of time on an average. It has doubled from 2001-02 to 2012-13. The supply of power to a region is measured by installed capacity and availability for consumption. Figure-1 depicts the time series of installed capacity and availability of power from different power projects. It is heartening to note that the installed capacity of the State has already doubled from 2005-06 to 2012-13, while the availability of power stood far behind the installed capacity. During 2012-13, the availability of power from all sources has increased by 6.8 percent over 2011-12.

Figure-1: Installed Capacity And Availability of Power From Power Projects (In Mw)



Source: Odisha Economic Survey, 2013-14

Having established the relationship between demand and supply of rural electricity, we now characterise technologies available to satisfy the demand and their costs. They can be classified in three approaches. First, centralised conventional thermal generation combined with rural grid extension is an approach favoured by the Ministry of Power. Second, small-scale decentralised distributed generation avoids the bureaucratic complexities for rural communities and hence is widely used to supply electricity from diesel generators by local entrepreneurs. Renewable energy supplied in this manner remains a niche application, although several projects by government and other agencies have demonstrated its distinct advantages (Chakrabarti and Chakrabarti, 2002, pp.33-42). Finally, household level technology such as Solar PV can fulfil electricity needs for lighting and other low consumption activities, with minimal unit investment costs and organisational challenges.

4. Electricity Pricing

The Indian power sector has been passing through the process of reformation and restructuring since 1990s. Before the establishment of State Electricity Regulatory Commissions (SERCs), tariffs were fixed and realized by the State Electricity Boards (SEBs) and electricity departments. But State Governments constantly interfered in this process to provide concessional tariffs to certain sectors particularly agricultural and household sectors. The attempt to recover these losses by raising industrial tariffs has led to increasing migration out of the grid through the captive generation route and with the state government not compensating the SEBs for loss incurred on account of subsidized power, their financial losses continued to mount.

The Electricity Act, 2003 of GoI (EA 03) empowers SERCs to specify the terms and conditions for determining tariffs and ensuring transparency in the tariff-setting processes. SERCs must follow proper measures to allocate revenues in an economically efficient manner by reducing the extent of cross subsidies. Most SERCs have issued regulations for tariff determination and tariff orders rationalizing tariffs, including charges for meter connection and other services. While EA 03 provides the legal framework for tariff determination, policy framework has been provided by the National Tariff Policy (NTP) and the National Electricity Policy (NEP). The NTP recognizes that rational and economic pricing of electricity is an important tool for energy conservation and the sustainable use of groundwater resources. It also refers to EA 03, which states that the appropriate commission shall be guided by the objective that tariffs progressively reflect the efficient and prudent cost of supplying electricity.

5. Overall Status of Rural Electricity Services in India

Planning Commissions strategy for developing rural India as well as the United Nations Millennium Development Goals (MDGs) is inherently dependent upon the integration of electricity services to achieve a set of varied development goals. Viable and reliable

electricity services result in increased productivity in agriculture and labour, improvement in the delivery of health and education, access to communications, improved lighting, and increasing other public activities.

Though the Government has made different policy interventions across the years for the development of electricity, actual performance on rural electricity services continues to be dismal. Table-2 presents an overview of the status of rural electricity in India.

Table 2: Current Status of Electrification at the Village Level Across States*

State	Percentage of Villages Electrified
Andhra Pradesh	100
Assam	96.1
Bihar	94.2
Jharkhand	89.2
Gujarat	99.8
Haryana	100
Himachal Pradesh	99.9
Jammu & Kashmir	98.2
Karnataka	99.9
Kerala	100
Madhya Pradesh	97.6
Maharashtra	99.9
Odisha	88
Punjab	100
Rajasthan	97.5
Tamilnadu	100
Uttar Pradesh	88.9
West Bengal	100

Source: Ministry of Power, GoI

(*by the end of March, 2013)

The above table explains that the states like Andhra Pradesh, Kerala, Tamilnadu, Punjab and West Bengal have achieved 100 percent rural electrification. States like Himachal Pradesh, Gujarat, and Maharashtra are approaching to 100 percent whereas Odisha has achieved 88 percentages which is very low comparable to other states.

6. Overall Status of Rural Electricity Services in Odisha

Like different states the Government of Odisha is also making efforts for achieving 100 percent village electrification. As we have already pointed out of 47,529 villages in Odisha, 88 percent villages have been electrified by the end of 31st March, 2013.

Table 3: District Wise Status of Village Electrification as on 2012-13

Name of the Districts	Total Inhabited Villages(2001 census)	Villages declared electrified as on 31.03.2013	Percentage of villages electrified
Angul	1661	1588	95.6
Cuttack	1856	1830	98.6
Dhenkanal	1076	1047	97.3
Jagatsinghpur	1227	1202	98.0
Jajpur	1575	1528	97.0
Kendrapara	1407	1313	93.3
Khurda	1358	1264	93.1
Nayagarh	1531	1446	94.5
Puri	1591	1574	98.9
Balasore	2587	2563	99.1
Bhadrak	1243	1237	99.5
Keonjhar	2069	2028	98.0
Mayurbhanj	3748	3567	95.2
Bargarh	1180	1095	92.8
Bolangir	1764	1758	99.7
Deogarh	711	648	91.1
Jharsuguda	346	346	100.0
Kalahandi	2099	1368	65.2
Nuapada	648	648	100.0
Sambalpur	1238	1137	91.8
Sonpur	829	828	99.9
Sundargarh	1723	1297	75.3
Baudh	1115	697	62.5
Koraput	1922	1156	60.1
Rayagada	2467	1778	72.1
Gajapati	1512	1310	86.6
Ganjam	2812	2528	89.9
Kandhamal	2379	1753	73.7
Malkangiri	979	639	65.3
Nabarangapur	876	663	75.7
Odisha	47529	41836	88.0

The above table explains that, Odisha, with 88 percent village electrification is lagging behind in village electrification. Two districts viz. Jharsuguda and Nuapada have achieved 100 percent village electrification, while four districts viz. Kalahandi, Boudh, Koraput & Malkanagiri have remained among lowest achieving districts (60-70 percent). Table-3 shows the district-wise percentage of villages electrified by the end of 2012-13.

Table 4: Households by Different Sources Of Lighting

Area	No. Of Households	Electricity	Solar Energy	Kerosine	Other Oil	Any Other	No Lighting
Rural	81,44,012	28,95,252	31,870	51,13,827	8,464	8,696	85,903
Urban	15,17,073	12,60,634	2,346	2,31,743	1,617	1,982	18,751
Total	96,61,085	41,55,886	34,216	53,45,570	10,081	10,678	1,04,654

Source: Census of India, 2011

According to census, 2011 different sources of lighting in Odisha are given above. From table-4, it is clear that renewable sources have become the main source of providing electricity in rural as well as urban areas. Peoples are still depending upon kerosene instead of electricity which is considered to be great pollutant to the environment. The demand for energy particularly in rural Odisha consists mainly of energy for cooking, lighting and other domestic purposes. Improving and extending access to energy services is one of the most urgent task that lies ahead as majority of the rural population in the state has no access to electricity until now and some are still depending upon traditional biomass as their principal household fuel.

7. Per capita Consumption

The per capita consumption of electricity in Odisha is 1146 kWh. The consumption is very high in Dadra & Nagar Haveli which is 13767 kWh following Daman & Diu. In Daman & Diu the per capita consumption of electricity is 7785 kWh. The average per capita consumption in all India case is 884 kWh. Bihar is the lowest in per capita consumption of electricity, that is 134 kWh.

8. Policy Interventions

Both the Government of India and the State Government have stressed the urgent need for expeditious electrification in rural areas. As per the MoU signed with GoI, the State Government is committed to electrify each household by the end of 12th five year plan. A state level monitoring committee has also been constituted for the purpose. Following schemes have been launched by the Central as well as state Governments for enhancing the access to rural electricity.

8.1 Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)

The Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was launched in April 2005 by the Central Government as a flagship programme to provide electricity to all villages which have a population of 100 and more in five years. It was started by merging all ongoing schemes at that time aimed at providing access to electricity to rural households. The schemes merged to launch RGGVY are:

- Minimum Needs Programme: 1974-1979
- Kutir Jyoti Scheme Initiation: 1988-89
- Pradhan Mantri Gramodaya Yojana: 2001-02
- Accelerated Rural Electrification Programme: 2003-04
- Accelerated Electrification of one lakh villages and ten million households: 2004-05

The programme envisages 90 percent as capital subsidy and 10 percent as loan to the State Government. The scheme has been executed in Odisha by Central PSUs such as NTPC, NHPC and PGCIL. By the end of the year 2011, Govt. of India released a sum of Rs.3, 308.64 crore through REC in favour of CPSUs, of which an amount of Rs.2, 934.59 crore has been utilised. The target of RGGVY is to electrify 14,697 unelectrified/de-electrified villages, 29,420 partly electrified villages and 32, 27,152 BPL households in all the districts. Against these 38,692 villages 28, 02, 007 numbers of BPL kits have been installed and 10, 65, 039 BPL houses have been electrified up to this period.

8.2 Biju Gram Jyoti Yojana (BGJY)

In order to ensure Electricity to All, the State Government has launched the **Biju Gram Jyoti Yojana (BGJY)** as a flagship scheme in 2007-08 with a target to cover during the 11th Plan period, 10,000 habitations with population less than 100 and BPL households in these habitations, which are not covered under the RGGVY scheme. Against this target 10,778 habitations have been electrified and electrification works in 2,752 habitations are in progress.

8.3 Remote Village Electrification Programme (RVEP)

This programme targets electrification by non-conventional energy sources of those un-electrified remote villages and un-electrified hamlets of electrified villages where grid connectivity is neither feasible nor cost effective. Financial assistance is provided by both the Central and the State Government for this programme. As the data shows 1509 villages have been covered under this programme.

8.4 Renewable and Alternative Energy

While thermal and hydro based energy is the mainstay of the State's power supply, several schemes are in operation to tap alternative energy sources. The Odisha Renewable Energy

Development Agency (OREDA) is the apex agency under the Department of Science and Technology, Government of Odisha. It looks after renewable and alternative energy projects.

9. Conclusion

Access to electricity is highly desired by the rural communities. It has different developmental benefits and priority should be given for its expansion. Government of Odisha is facing serious challenges in the process of rural electrification. In rural areas though BPL holders are getting electricity for free usage, the supply of electricity provided to them is not sufficient. Lack of high level of voltage is another problem. Progressive payment system should be made compulsory for those who are using the electricity and getting benefits from it. As compared to rural areas urban people are using more. It is clear from the analysis that renewable sources have become the main source for providing electricity in rural as well as urban areas. A target should be fixed for facilitating a large coverage of basic lighting and supplies of electricity by higher power systems for areas with high potential demand.

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Infrastructural Variation in Odisha: A District Wise Analysis

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India is a country of villages and about 50% of the villages have very poor socio-economic condition. Since independence many efforts have been made to improve the living standards of rural masses in five year plans. Rural development is an integrated concept of growth and poverty elimination has been of paramount concern in all the consequent five year plans. Rural infrastructure involves the very socio-economic climate created by some special categories of rural facilities, which contribute the development of the rural economy both by increasing productivity, growth and reducing poverty, inequalities and unit cost of production. Public private partnership (PPP) is also highly essential for infrastructural development for a developing country. This paper mainly focuses on inter district variation in infrastructure development among the 30 districts of Odisha.

Key Words: Development, infrastructure, productivity, growth, poverty

1. Introduction

Disparities in economic and social development across the regions and intra-regional disparities among different segments of India have been the major planks for adopting planning process in India since independence. Apart from massive investments in backward regions, various public policies directed at encouraging private investments in such regions have been pursued during the first three decades of planned development. While efforts to reduce regional disparities were not lacking, achievements were not often commensurate with these efforts.

The Odisha Development Report 2011 analyses in detail the social and economic problems of the State and remarks that Odisha is considered as one of the poorest States of the country ranking **19** in Human Development Index (HDI) and **17** in Inequality Adjusted Human Development (IHDI) by UNDP in 2011. It starts focusing attention on growth of different sectors, sections and regions along with their problems and constraints. It mainly

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focuses on the reforms initiated in some of the sectors and emerging challenges of these reforms. The Report particularly gives stress on poverty and poor living conditions of the people, measures taken so far to improve the economic situation and pending challenges that have to be faced in coming decades to enhance growth and ensure equity.

2. Review of Literature

Patra and Acharya (2011) in their paper “Regional Disparity, Infrastructure Development and Economic Growth: An Inter-State Analysis” examined the spatial disparities in infrastructural facilities across 16 major states in India and in turn analysed its impact on regional economic growth. Empirical evidence suggests that there is a positive relationship between Infrastructure Development Index & Per Capita Net State Domestic Product and negative relationship between Infrastructure Development Index & Poverty. The relationship between the availability of social and economic infrastructure and the ratio of poverty positively correlates with providing social and economic infrastructure. This establishes the fact that there is a strong relationship between infrastructure services availability and poverty alleviation. Higher the infrastructure services availability, lower will be the poverty levels in that country.

Tripathy and Mishra (2011) argue that instead of having adequate natural resources in the state, there is uneven agricultural development in Odisha due to wastage of resources, increase in public cost, lack of credit facilities to farmers etc. They mention that the state is having with only 32.17% of Net Area Sown irrigated, compared 42.42% at the all India level. apart from that the state has registered the lowest yield rate in food grains at 13.49% q/ha in 2005-2006 among the major states to 17.15q/ha for the country which is much lower than the developed states like Punjab, Haryana and west Bengal. They also point out that high proportion of population staying in rural areas and high proportion of workers dependent on agriculture result in the slow progress of agricultural sector in Orissa. Thus in the context of development disparities in agriculture across the districts in Orissa, growth process cannot be boosted without reducing disparities which can be effective through particularistic policies prepared by the policy makers.

Agarwalla (2011) in her paper “Estimating the Contribution of Infrastructure in Regional Productivity Growth in India” attempts at studying the interactions between regional development and infrastructure availability at state level for India. There exists substantial and significant positive association between levels of development and levels of infrastructure. Transport and power infrastructure are significant contributors, and a decline in the magnitude of coefficients indicates towards their limiting role. Regarding education she finds out that number of primary schools per 10,000 people has gone down in the

country as a whole, and across all the regions, which is a serious drawback. Southern states have achieved high economic growth, especially Tamilnadu and Karnataka. Similarly, western states of Gujarat and Goa have been high growth states. However, it is surprising to note that in spite of having the largest share of country's natural resources, eastern, and central regions do not have high installed capacity in Power Sector though the Western region has achieved highest growth over the years.

3. Objectives

The main objectives of the study are as follows.

1. To assess the relative position of Odisha compared to other states through analysis of inter-state development disparity in the country.
2. To examine the level of development disparity within the state across the districts.

4. Data Base and Methodology

For analysing the pattern of Sectoral disparity and development in Odisha, the data are secondary in nature and have been collected from Orissa Statistical Abstract of Odisha, Odisha Agriculture statistics and Economic Survey of different years. The following indicators have been applied for the assessment of the Sectoral variation and development in Odisha.

1. Telephone connections per lakh of population
2. Percentage of households with safe drinking water
3. Number of Commercial Banks per lakh of population
4. Per capita Bank Credit
5. Percentage of Villages electrified
6. Railways length per hundred square kilometre
7. Road length per hundred square kilometre
8. No. of Vehicles per lakh of Population

The proposed methodology consists of Sudarshan Iyenger method along with Beta distribution for objective classification of thirty districts of Odisha into four groups such as Very backward, Backward, Developing and Developed.

Composite index using Sudershan Iyenger Methodology and Beta variate values computed for different sectors and thus the overall position are presented below. The districts can be categorized into four categories (i) Developed (ii) Developing (iii) Backward (iv) Very Backward according to the values of Beta variate.

Category	Level of Development	Value of Beta Distribution
A	Very Backward	0 to 0.25
B	Backward	0.25 to 0.50
C	Developing	0.50 to 0.75
D	Developed	0.75 to 1

5. Infrastructure Development

The Infrastructural Development can be measured by taking the indicators of Vehicle/lakh of Population, % of surfaced road '00 square kilometre, Villages electrified and Road length/square kilometre that show a moderate level of infrastructure development in the state. Table-1 shows indicators of Infrastructural Development for major states.

Table 1: Indicators of Infrastructural Development for Major States

State	Vehicle/lakh of Population, 2011	% of surfaced road '00 sq k.m. 2011	Villages electrified, 2011	Road length/square k.m. 2011
Andhra Pradesh	7505	61.10	99.80	71.32
Bihar	904	43.20	51.30	80.78
Jharkhand	4516	24.73	31.50	14.41
Gujarat	13988	90.32	98.70	70.20
Haryana	12053	93.29	100.00	63.79
Karnataka	7524	68.31	98.10	79.57
Kerala	8769	33.25	100.00	388.16
Madhya Pradesh	6302	48.66	96.30	52.13
Chhattisgarh	5837	69.20	76.60	26.16
Maharashtra	9258	78.35	86.50	86.92
Odisha	4143	22.04	55.20	152.23
Punjab	14487	85.73	100.00	122.18
Rajasthan	6784	62.24	63.90	38.71
Tamil Nadu	13740	75.81	94.90	127.68
Uttar Pradesh	3887	67.07	58.20	103.13
Uttarakhand	6078	31.98	92.20	62.72
West Bengal	3178	53.81	84.80	103.69
All India	11716.15	53.98	93.8	76.79

Source: Statistical year Book, India, 2015

The State of Odisha recorded a share of 4143 numbers of Vehicle/lakh of Population whereas in all India level the number is 11716.15. The highest number of Vehicle/lakh of Population was found in the state of Punjab (14487) and the lowest in the state of Bihar (904). The % of Surfaced road per '00 square kilometre recorded for the State of Odisha was at 22.04 % during 2011 comparing 53.98% all India level. The share of high level surfaced road was seen in the State of Haryana (93.29%) in contrast to Jharkhand (24.73%) in 2011.

The village electrification pattern in the State of Odisha reveals that the percentage of Villages electrified during 2011-12 was 55.20% against 93.8% in all India level. The States which level achieved 100% electrification in the villages during the period were Haryana, Kerala and Punjab and the poorest in this category was Jharkhand (31.50%). The Road length/square kilometre during 2011 for the State of Odisha was recorded as 152.23% against only 76.79% at all India level that shows a tremendous achievement in this category. However the highest % of Road length/square kilometre was found in the State of Kerala (388.16%) as against only 14.41% for the State Jharkhand.

6. Infrastructure Variation in Odisha

The variation in infrastructure development in the state can be seen in terms of number of commercial banks per lakh of population, per capita Bank Credit, percentage of Villages electrified, Railways length per hundred square Kilo meters, Number of Vehicles per lakh of Population, % of households with safe drinking water and telephone connection per lakh of population as shown in Table-2.

There are 4195 telephone line connections per one lakh population. The highest number of connected area is Deogarh (14412) and the lowest connected area is Koraput (133). The % of households with safe drinking water during 2011 stood at a rate of 100%. Thus the household getting 100% safe drinking water in the districts are Baragarh, Bhadrak, Bolangir, Boudh, Deogarh, Gajapati, Jagatshingpur, Kalahandi, Kendrapara, Keonjhar, Koraput, Mayurbhanj, Nayagarh, Nuapara, Nawarangpur, Sonapur and Puri. In this case all most all the districts are getting nearer to the case of achieving complete 100% safe drinking water. There are 7 banks per lakh of population in the state during 2012-13. However there exists huge variation across the districts. The districts with highest number of commercial banks per lakh of population are Khurda (9) and the lowest districts are Malkangiri and Nawarangpur (3 each).

Table 2: Indicators of Infrastructure development in Odisha

Name of the District	Tele/lakh 2011-12	% of households with safe drinking water, 2011	Com per lakh of population, 2011	Per capita Bank Credit, 2011	% of Villages electrified, 2011-12	Railways length per 00' sq. kms, 2010-11	Road length/ 00' sq. km., 2011-12	No. of Vehicles per lakh of Population, 2011-12
Angul	2251	99.62	9	10072.06	94.5	1.0551	82.79	6873.26
Balasore	2372	99.33	6	9540.93	98.8	1.0769	75.97	8213.60
Baragarh	5861	100.00	6	6521.50	92.8	0.5433	78.6	7279.30
Bhadrak	3654	100.00	6	5496.78	99.5	0.3582	67.76	3817.47
Bolangir	1362	100.00	5	5603.41	99.7	1.7657	35.85	5424.75
Boudh	3429	100.00	5	3876.13	46.9	0	57	840.96
Cuttack	6247	97.87	9	17020.58	98.3	1.1137	64.95	16679.18
Deogarh	14482	100.00	8	3935.75	91.1	0	45.72	683.16
Dhenkanal	2403	99.64	7	6011.01	97.1	0.506	54.24	9186.03
Ganjam	1241	99.82	7	7296.62	83.2	0.8564	136	7042.16
Gajapati	7582	100.00	6	2976.72	80.8	0.54	64.11	1763.53
Jajpur	11011	99.93	6	6512.73	96.6	1.3166	60.92	7326.60
Jagatshingpur	8989	100.00	9	6710.81	97.6	0.6812	35.72	4270.12
Jharsuguda	7810	98.94	10	11958.48	100	0.5238	45.37	9931.75
Kalahandi	1022	100.00	6	5701.17	64.9	0.3843	146.05	5094.46
Kendrapara	7095	100.00	6	4297.53	89.6	0	47.56	791.47
Keonjhar	1532	100.00	8	9440.91	93	1.6482	63.38	7786.84
Koraput	133	100.00	6	5537.65	46.9	2.81	89.41	6063.51
Kandhamal	2063	99.99	7	3846.63	63.3	0	92.73	2921.39
Khurda	7762	99.07	15	99028.59	92.4	1.1739	63.49	32848.78
Mayurbhanj	1148	100.00	7	5611.69	91.6	1.121	139.71	4543.92
Malkangiri	299	99.89	3	2103.75	24.9	0	52.99	641.40
Nayagarh	13075	100.00	7	5536.00	93	0	50.9	3325.65
Nuapara	2639	100.00	6	4521.76	100	0.3167	65.52	2502.20
Nawarangpur	2417	100.00	3	2792.92	42.8	0	62.12	2012.54
Puri	7411	100.00	8	6940.48	97.3	0.4256	109.47	5040.88
rayagada	4354	99.92	7	4804.16	54	1.54	79.68	3626.06
Sambalpur	4347	99.69	10	13034.30	91.8	1.674	108.96	15113.26
Sonepur	3681	100.00	6	4801.84	99.9	0.1213	39.56	911.04
Sundargarh	1560	98.79	8	20363.64	74.4	2.62	136.41	15237.38
ODISHA	4159	100.00	7	12842.41	82.8	24.1719	2252.94	8229.90

Source: Statistical Abstracts of Odisha, 2012-13

Similarly there exists huge variations regarding per capita bank credit in the districts during 2011. The highest Per capita Bank Credit is shown by the district Khurda (Rs.99028.59) and the lowest by the district of Malkangiri (2103.75). However the districts show more than total rate of per capita bank credit are Khurda, Angul, Cuttack, Jharsuguda, Sambalpur and Sundargarh and the lowest in Khurda, Angul, Cuttack, Jharsuguda, Sambalpur and Sundargarh. The rural electrification side shows 82.2% of total villages' electrification during the year 2011-12. It is found that the highest in all most all the districts are Jharsuguda and Nuapara (100%) each and the lowest in the districts of Kalahandi, Malkangiri, Nawarangpur and Rayagada.

There is 1.674 % square kilometre of railway length per hundred square kilometres in Odisha in 2012. The districts having highest number of railway length is found in the district of Koraput (2.81) and the lowest in Sonapur (0.1213). The total percentage of road length in Odisha is found at the rate of 2252.94 per 100 sq km. The highest percentage of road length is found in the district of Kalahandi (146.05) and the lowest in Jagatsinghpur (35.72). The number of vehicles per lakh of population stood at the rate of 8229.90 during the year 2011-2012. The highest is observed in the districts of Khurda (32848.78) and the smallest in the district of Deogarh (683.16).

7. Measurement of Infrastructural disparity in the state of Odisha

We can analyze the position of districts in different sectors & in overall by ranking the districts. In Table-3 we observe the following ranking patterns of districts. In the following an attempt has been made to present the Variations in development among districts in different sectors separately.

Table 3: Beta values of Districts of Odisha

Districts	Infrastructure	Districts	Infrastructure
Angul	0.608603	Kendrapara	0.288502
Balasore	0.445194	Keonjhar	0.660436
Baragarh	0.571128	Koraput	0.478834
Bhadrak	0.404651	Kondhamal	0.235276
Bolangir	0.438245	Khurda	0.999809
Boudh	0.073214	Mayurbhanj	0.689667
Cuttack	0.526535	Malkangiri	0.003488
Deogarh	0.598562	Nayagarh	0.575303
Dhenkanal	0.382677	Nuapara	0.334595
Ganjam	0.648244	Nawarangpur	0.032816
Gajapati	0.410789	Puri	0.741513
Jajpur	0.758589	Rayagada	0.408617
Jagatshingpur	0.64506	Sambalpur	0.914403
Jharsuguda	0.578445	Sonapur	0.249426
Kalahandi	0.45098	Sundargarh	0.826428

8. Summary and Conclusion

In terms of Infrastructure Development districts which are coming under the category of very backward category are Malkangiri, Nawarangpur, Sonapur, Boudh and Kondhamal. The districts which come under backward categories are Balasore, Bhadrak, Bolangir, Dhenkanal, Gajapati, Kendrapara, Kalahandi, Koraput, Rayagada and Nuapara. The districts which categorised as developing districts are Angul, Baragarh ,Cuttack, Deogarh, Ganjam, Jagatshingpur, Jharsuguda, Nayagarh, Puri, keonjhar and Maurbhanj. The developed districts are Jajpur, Sundargarh, Sambalpur and Khurda.

Table 4: Status of Different Districts of Odisha

Very Backward	Backward	Developing	Developed
Malkangiri, Nawarangpur Sonapur, Boudh, Kondhamal	Balasore, Bhadrak Bolangir, Dhenkanal Gajapati, Kendrapara Kalahandi Koraput, Rayagada, Nuapara	Angul, Baragarh Cuttack Deogarh, Ganjam Jagatshingpur Jharsuguda Keonjhar Mayurbhanj Nayagarh, Puri	Jajpur Sundargarh Sambalpur Khurda

The unevenness in development profile for Odisha may be explained through historical factors as well the nature of development process which has accentuated the unevenness further. The development process has two aspects one the market driven force which has an inherent tendency to accentuate inequality and disparity as capital investment gravitates towards developed regions with higher level of infrastructural development.

The other aspect is public investment which generally is expected to play the role of equaliser and contribute towards the reduction of regional inequalities. But the development process initiated after 90's in particular has not only been emphasising on norms of efficiency which adversely affects backward regions but also is associated with the declining flow of public investment into such regions. In such a context the development profile of Odisha with continuing underdevelopment of the tribal Odisha with low level of development necessitates a new direction for the public investment to flow into these regions till there is adequate development of economic and social infrastructure and self sustaining inclusive growth process.

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Translating words into actions.

An insider view of NABARD's National Seminar on Rural Finance.

National Bank for Agriculture and Rural Development (NABARD), India's apex development financial institution, organised a National Seminar on Rural Finance at Vigyan Bhavan, New Delhi. Inaugurating the seminar on July 24, 2014, Union Finance Minister, Shri Arun Jaitley, lauded NABARD's "32 useful and productive years" spent in nurturing agriculture and rural development in the country.

Dr. Harsh Kumar Bhanwala, Chairman, NABARD, in his



Shri Arun Jaitley, Union Finance Minister, inaugurating the seminar. Also seen are Dr. Arvind Mayaram: IAS, Finance Secretary, Govt. of India; Dr. G. S. Sandhu: IAS, Secretary, Dept. of Financial Services, Govt. of India; Dr. Deepali Pant Joshi, Executive Director, RBI; Dr. Harsh Kumar Bhanwala: Chairman, NABARD.

inaugural session outlined the role played by NABARD over the last 32 years and more importantly for project financing, development of SHG-Bank Linkage Programme, wadi, watershed, rural infrastructure and Kisan Credit Cards.

The participants, which included illustrious names from the world of banking & finance, deliberated upon three major themes and arrived at the following key decisions:

Session 1: Capital Formation and Rural Infrastructure

In Chair: Smt. Arundhati Bhattacharya, Chairman, State Bank of India
Co-Chair: Dr. Ashok Gulati, Chair Professor, Agriculture, ICRIER, New Delhi

- Declining share of public investment in total capital formation needs to be reversed
- Immediate thrust is required to raise share of investment credit, which is the main driver of capital formation in the total agriculture credit
- Micro infrastructure needs to be adequately addressed both in planning and funding by Government adopting a PPP approach
- Long Term perspective plan for rural infrastructure needs to be given a policy trust
- Sector-wise master plans by State Governments to facilitate implementation of rural infrastructure projects under emerging areas like 'Rurban'

Session 2: Rural Finance - State of the Sector

In Chair: Dr. Deepali Pant Joshi, Executive Director, RBI
Co-Chair: Shri S. R. Bansal, CMD, Corporation Bank

- Clear and definite need for real sector policies and risk mitigation mechanisms to protect farmers
- Focus on viability, productivity and profitability of agriculture
- Value chain approaches to agri-finance need to be strengthened – restoration of project based lending disciplines in agriculture
- Access to markets and fair market practice to farmers

Session 3: Microfinance and Livelihood Approaches

In Chair: Padmashri Shri Aloysius Fernandez, Chairman, NABFINS
Co-Chair: Smt. Aruna Sharma, IAS Additional Chief Secretary, Govt. of MP

- Identification of livelihood opportunities, motivating micro-entrepreneurs, business and technical training, establishing market linkages, common infrastructure etc.
- Resource-less poor may be offered micro-credit along with insurance products covering life, health, crop and livestock
- Self-Help Groups (SHGs) have to take their rightful role in financial inclusion
- All eligible rural households have to be covered under SHG programme by the end of the 12th Five Year Plan