Vol. 37 • Number 2 • April-June 2018

iassi Quarterly

Contributions to Indian Social Science

Articles

Book Review

Journal of the Indian Association of Social Science Institutions

IASSI QUARTERLY:

CONTRIBUTIONS TO INDIAN SOCIAL SCIENCE
JOURNAL OF INDIAN ASSOCIATION OF SOCIAL SCIENCE INSTITUTIONS (IASSI)

Volume 37 **Number 2** **April-June 2018**

Contents

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The Indian Association of Social Science Institutions (IASSI) gratefully acknowledges the grant received from the Indian Council of Social Science Research (ICSSR), New Delhi towards the publication of the journal *"IASSI Quarterly: Contributions to Indian Social Science"* Designations employed, presentation of the materials and opinions expressed in the papers in this publication do not necessarily represent the views of IASSI or ICSSR.

IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

Schooling and Learning Outcomes in Andhra Pradesh: An Evidence from Young Lives – A Longitudinal Study

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Human capital must be trained from an young age toward self-reliance through schooling, the powerful instrument for reducing multi-dimensional poverty while promoting sustained, human development-led growth[1]. To avoid dropouts preventing India achieving her true human capital potential, schooling and compulsory education under Right to Education (RTE) Act (2010), besides other initiatives by the Union and state governments, has led to substantial progress in the elementary and secondary school enrolment. However, quality of education remains a point of contention as access to education, proved by increasing enrolment, must change focus to better learning outcomes proved by performance in class. This study is a look into the Young Lives, a longitudinal study, made in elementary and secondary schools in Andhra Pradesh[2], where 1950 children were divided into 2 groups of cohorts (separated by 7 years between cohorts as being the same age group 'then' and 'now') in 13 mandals (Tehsils) spread over 4 districts. There is a need to balance at two stages: (i) increase in overall school enrolment vis-à-vis equality within the socio-economic groups regards numbers enrolled; and (ii)improvement in overall learning outcomes, irrespective of the type of school, vis-à-vis equality across different groups regarding performance. The study also recommends teacher's training, mentoring and monitoring of students, establishing schools in 'mandal' headquarters for accountability, and extending transport facilities to children to prevent frequent changing of schools.

Keywords: *School education, Learning outcomes, Inequalities in enrolment, Inequalities in learnings*

I. INTRODUCTION

Gopal Krishna Gokhale, in pre-Independence India,who made a plea to the Imperial Legislative Council of British India for free and compulsory education for all, and followed it up with the Private Members Bill (rejected), took the first step to draw the attention of Indians and world toward the languishing education system perpetuating poverty in the lives of an illiterate and ignorant nation. He was supported in his conviction for free and compulsory education for all Indians by the belief that such a stalemate in a nation's vital internal affairs can never lead the nation to any real,

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singular progress toward its goals, economic or political; and,it will fall back in the race of Life. In other words, he seemed to be saying that human capital is an important resource for the economic development of a country while strengthening the democratic values its people breathe in. It'sa palpable truth that"*schooling is one of the most powerful instruments for reducing poverty, unemployment and inequality; improving health and nutrition; and promoting sustained, human development-led growth*" (Deolalikar, 2004).However, with drop-outs in schools being a regular phenomenon, it is sad that any dropout leads to preventing the country reaching its true potential human capital;loss of financial efficiency as funds invested in school infrastructure, including pay and allowances of teachers,are not matched with potential return – in enhanced growth, making all expenses a waste; and, highlighting of system deficiency, like, the ugly socio-economic condition of the poor students who come to study and drop-out from financial constraints. The Indian Constitution, post-independence, started out by making provisions for education for all children till age 14 in the Directive Principle of State Policy, and appointing commissions and committees from time to time to suggest ways to improve education,but it was the emergence of National Policy on Education (NPE) in 1968 that marked a significant step in solving the problem of children dropping out of school. NFE (Non Formal Education) programme was launched by NPE in 1986 to combat the biggest challenge in the path of Universalisation of Elementary Education (UEE), that is,a substantial improvement in the quality of education, so as to retain and educate children who reach the age of 11 by 1990 to have had attained 5 years of schooling, or its equivalent, by the non-formal stream. Recognizing that the goals of UEE will be achieved only if there are literate adults within the age group of 15-45, the government accordingly launched National Literacy Mission (NLM) in 1988 with special emphasis on Scheduled Castes (SC), Scheduled Tribes (ST) and Educationally Backward Minorities (EBM).Compulsory education under Right To Education (RTE) Act, 2010,has made enormous progresses towards achieving universal elementary education (Grades 1–8)resulting in large numbers of children successfully completing elementary education and transitioning into secondary education (Grades 9–10). Another attempt to universalising education is Rashtriya Madhyamik Shiksha Abhiyan (RMSA), a centrally sponsored scheme, with the aim of reaching near universal enrolment at secondary level that has yielded substantial results in progressing enrolment towards the target. In-spite of the little achievements, the progress is not uniform but uneven if we take account of the fact of success of universal enrolment being checkmated by failure of universal retention. The inequalities that exist among socio-economic groups making up the secondary school enrolment scene (Galab and Reddy, 2017)is a cesspool of fruitless achievements hampering the goals of universal education, as each drop-out of the socio-economically deprived group is another setback to universal enrolment, and inclusivity of society,

as only prosperity became synonymous with success. Thus, the real challenge in universalising education has to do with reaching out to those excluded, or those who might consider education a folly on an empty stomach,and to convince them to taking up learning so as to ensure inclusive and equitable quality education to achieve the sustainable development goal.[1]

A child's future can depend a lot on the type of education she/he receives at the secondary level. Apart from preparing the ground for the roots of education of a child to take hold on his mind, secondary education can be instrumental in shaping his future and directing him/her toward self-reliance, not to mention vigour in thought and imagination of spirit. Some of the schemes/programmes initiated by the governments like: Girls Hostel Scheme, ICT at Schools, Scheme for Vocational Education, Model Schools Scheme, National Means-cum Merit Scholarship Scheme and National Incentive to Girls may shape the secondary education to achieve the contemplated objectives of quality secondary schooling. There are strong views within the government as well as among other stakeholders in the education scene on the need of public-private partnership modes in secondary education, and also in skill development and training[3].

II. GROWTH OF PRIVATE SCHOOLS

A study covering all major states in India (drawing together evidence from a variety of sources, including raw National Sample Survey (NSS) data for 2014-15 (71st Round NSS 2015), ASER data (various years), DISE data (2015), and data in studies carried out by individual scholars) made it clear that there wasa rapid migration of students from government/private aided schools towards low fee,private unaided schools which run on low fees – or low per-student-cost compared to government-managed schools (see Kingdon, Geeta Gandhi, (2017). At an all India level, around 30 per cent of the children aged between 6-18 years read in private unaided schools (where, 42 per cent are in urban and 21 per cent in rural areas) as on 2014-15. Interestingly, in India's rural areas, the enrolments in private schools increase with the age group, in contrast to urban areas where enrolments are more in younger age groups. The figures are higher for the new state of Andhra Pradesh (AP), that is excluding Telangana, which is a full-fledged state of the Indian Union since June 2014, whence we found that out of the total students in private unaided schools in India, 48 per cent fall in the share of AP (65 per cent in urban and 32 per cent in rural areas). Surprisingly, and following the all-India trend of rising enrolment vis-à-vis age in private schools in rural areas, in AP too, around 52 per cent children in the age group of 15-18 years who live in rural areas (for urban areas, the share was 68 per cent) read in private schools, which shows up as much higher compared to lower age groups. But in terms of percentage of schools by management type, AP hasa resounding share of 74 per cent of schools run by Government and 22 per cent of schools as private unaided schools[4]. In other

words, if we take the state of AP, then from all schools run by different management types,a tiny one-fourth or 22 per cent are private unaided schools and they have a responsibility of teaching almost a half (48 per cent)of all children in AP. Against this scenario, government schools forming the giant portion of schools in AP, about 74 per cent,are responsible for teaching the remaining half, or 50 per cent of children in AP. In terms per school strength,on an average, there are 73 children in a government school compared to 196 in private unaided school in AP as on 2015-16. It, therefore, appears that government are slowly withdrawing from the education sector and leaving it to the private players. These results also suggest that a public- private partnership (PPP) model would be useful, whereby with the public sector funds the private sector imparts education. However, in the overall interest of students, there is a need to have some controls on private unaided schools.

Against this backdrop, the present study envisages to assess the enrolment in schools by type of management, grade progression, learning outcomes, whether the size of the school influences the learning outcomes, and to end with some reflections on school infrastructure and teachers, as these aspects of education also play a vital role in the learning outcomes. The study also discusses the education levels of the parents' vis-à-vis children to see the inter-generational progress of education. All these are examined based on the young lives longitudinal study and its sub-studies in schools.

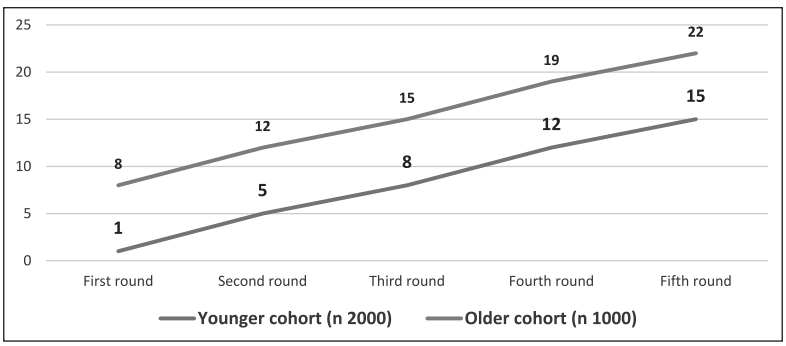
III. SCHOOL ENROLMENT

In Young Lives study,we have a unique opportunity to examine the enrolment status in the pre-primary, primary and secondary schools for the children who have passed significant time since enrolling at the school and are now at different ages[5]. The study also facilitates comparison of the important indicators of progress of children since enrolment (where an old cohort and a young cohort are selected in a group for study such that the old cohort was at the same age, say, 8 year old in 2002, as the young cohort, say, 8 year old in 2009,but 7 years before to see how progress happens from 'then' to 'now'.) so as to link performance to policy initiatives. For example, the panel study enables us to compare the school enrolment scenario by tracking time from an older cohort who is 8 years old in 2002 to the time of an younger but 8 year old cohortin 2009 and see the changes that had happened in the span of difference of 7 years. Similarly, we can compare various indicators at 12-year old and 15-year old age groups. The figure below titled "Young Lives Study – Structure of Panel" gives a clear picture on the structure and progress of the study (Figure-1). The sub-studies on schools i.e. primary schools conducted in the academic year 2010-11 and secondary schools in the year 2016-17 have added to our understanding on the schooling appropriate to the age of the younger cohort of our sample children.

IV. COHORT WISE ENROLMENT

India has made huge progress in providing elementary level education to children across the length and breadth of the country, including Andhra Pradesh. The Young Lives data also reveal that there has been an improvement in enrolment at all levels of education. For instance, 87 per cent of the younger cohort children have undergone some type of pre-school education i.e. either Anganwadi or in private pre-schools; and 99.2 per cent were enrolled in schools at the age 8 in the year 2009. This is substantial improvement in enrolment if we compare the jump from 94.5 per cent at the time the older cohort was enrolled and he was the same age group, 8 years, but 7 years before in 2002.

Figure 1
Young Lives Study – Structure of Panel (Age in years)

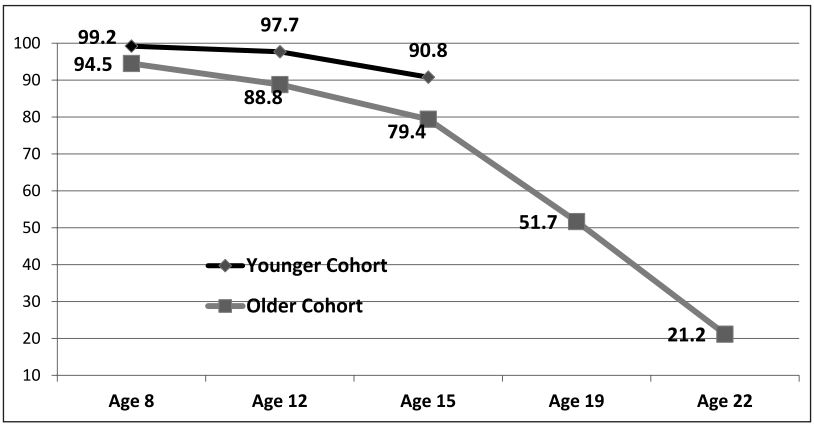


Source: Young lives panel study in Telugu States (see website "Young Lives" for more details

The trend of higher enrolment in schools between 7 years having passed continued its upward movement in other age groups also. Thus, 97.7 per cent of the younger cohort children attended school at the age of 12 in 2013, only fractionally lower than the enrolment at the age 8 (99.2%) in 2009. This is indeed good news, since we find around 2 per cent of children having dropped out between primary and upper primary levels (Fig-1). And no major gaps in enrolment are found vis-à-vis its demographic determinants, that is, gender, caste, mother's education, household socio-economic status or urban/rural location, which means family and socio-economic background are not to blame for drop-outs. On the other hand, if we look at the enrolment status of the older cohort at the same age i.e. 12 in the year 2006 as against 12 year in 2013, there is a substantial change in enrolled children from 2009 to 2013, that is, 88.8 per cent of children enrolled who were 12 in 2006 to 97.7 per cent of children enrolled who were 12 in 2013. This upward trend continued for age 15 i.e. 90.8 per cent enrolled of younger cohort who were 15 in the year 2016 compared to 79.4 per cent enrolled of older cohort who were 15 in 2009 (Fig-2). If we take a look at the older cohort alone, we find that at the age 19 (Round 4 survey conducted in 2013),the enrolment in educational institutions

in Andhra Pradesh declined from 79.4 per cent in 2009 when they were 15 year-olds to 51.7 per cent in 2013 when they were 19. Gender discrimination in enrolment is clearly visible at this age i.e. 59 per cent of males are in schools as against 45 per cent of females. More girls dropped out from school than boys in 2013 compared to 2009 when they are 15-year olds. We also noticed substantial variation in enrollment between social groups in 2013. Little over one third of SCs, around fifty percent of STs and Backward Castes (BCs), and 69 per cent of Other Backward Castes (OCs) are in schools at the age of 19 years. The decline in the enrolment in 2013 over 2009 hovered around 30 percentage points in SCs, STs, and BCs as against 20 percentage points in OCs.

Figure 2
Cohort Wise School Enrolment at Different Ages



Source: CESS - Young Lives study - different rounds

Further, enrolment is positively related to the economic status of the households. More rural people dropped out of school at the age 19 years compared to those in urban areas, i.e. nearly 60 per cent of urban and 49 per cent of rural children are in school in 2013 and of those continuing their education perceived as those transitioning to higher classes from lower ones, 15 per cent are combining work and studies[6].

21.2 per cent alone are enrolled in educational institutions at the age 22, a substantial decline compared to enrolment at age 19 i.e. 51.7 per cent. Gender disparity is clearly discernible i.e. 26 per cent of male and 16 per cent of female alone are in education, with accompanying disparity noted among socio-economic groups but with negligible difference noted between enrolment in rural and urban category[7]. It is heartening to note that everyone has some formal education: 7 per cent completed primary, 9 per cent upper primary, 48 per cent secondary, and 36 per cent completed post-secondary education. We also noticed considerable socio-economic differences in the completion of grades at every stage. Around 26 per cent of those completing their higher-

secondary studies have undergone training to get some form of employment, while 11 per cent alone of those completing studies who are 22 years old received training with certificate; while 54 per cent of this age group are skilled in driving at least one type of vehicle. On the other hand, 79 per cent of the 22-year-olds were no longer enrolled in any educational programs; and those who have completed higher education are counted as those who may alone have better options in the labour market. It is also important to note that among those continuing education (21 per cent), nearly half of them were combining work and studies.

It is pertinent to mention that the educational status of parents of older cohorts – as we have seen in literature reviewed as well as in the Young Lives study – as having had a positive influence on the children's' educational achievements. For instance, fathers of 39 per cent of children who are older cohorts and mothers of 53 per cent of them did not attend formal schools, and around one third of the children's parents have just completed primary education. Thus, half of the older cohort children are first generation learners.

V. PRIVATE SCHOOLING

Our analysis shows how private school enrolment is increasing for 12-year olds (from 26 per cent in 2006 to 37 per cent in 2013). Increase of private school enrolment continued for younger cohort even at the age 15 i.e. 37 per cent in 2013 to 43 per cent in 2015 (Table-1). However, for STs, inter-cohort analysis shows a decline in private enrolment at age 12 and 15 i.e. from 21 per cent in 2006 (older cohort at age 12) to 14 per cent in 2012 (younger cohort at age 12). Similarly, for 15-year olds private enrolment for STs declined from 22 per cent in 2009 to 16 per cent in 2016. This could be due to the fact that more ST children are accommodated in government residential schools in their respective native areas.

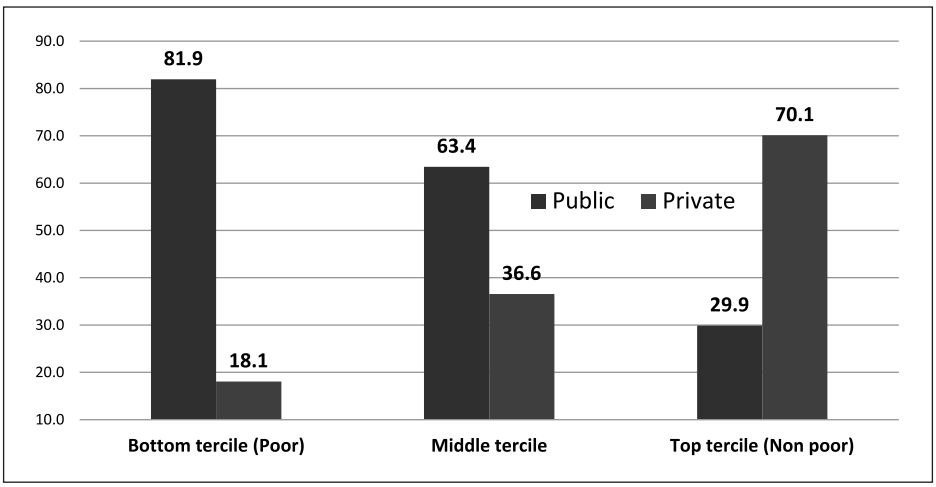
Table 1
Private School Enrolment by Cohort in Andhra Pradesh

Category	*Younger Cohort*		*Older Cohort*	
VI.	*Age 12 in 2013*	*Age 15 in 2016*	*Age 12 in 2006*	*Age 15 in 2009*
SC	19.3	24.2	11.1	25.0
ST	13.6	15.5	20.8	21.9
BC	37.3	44.3	22.0	32.7
OC	67.7	68.9	45.7	60.9
Male	43.8	46.8	30.6	41.8
Female	30.2	37.9	21.1	31.9
All	37.2	42.5	25.7	36.8
Rural	23.0	28.6	18.0	31.0
Urban	61.0	61.0	53.0	57.0

Source: CESS Young Lives study – different rounds

Private schooling is clearly biased towards boys, socially advantaged groups, and urban children and, more importantly, biased towards economically advantaged groups (Fig-3). Young Lives results also clearly indicate that vast majority of the economically poor are dependent upon the government schools and there is a need to pay more attention to rejuvenate the government schools. Over the years, children opting for private schools while enrolling increased in all the social groups except STs, and inequalities in accessing private schools continued among social groups. It is also observed that the percentage of girl children enrolled in private schools also increased over a 7-year difference.

Figure 3
Per cent of 15 Year-olds Enrolled by Type of School and by Economic Status in 2016



Source: CESS Young Lives study - different rounds

Student strength per class and per school is much higher in private school despite the government teachers being well paid and more qualified compared to private schools[8]. It is apt to recall the findings of a study which also clearly showed the emptying of public schools. For instance, during the period 2010-11 and 2014-15, 3883 government schools closed down and 4280 private schools were opened, respectively, in Andhra Pradesh[9]. The same study shows that in the state of Andhra Pradesh, during the same period, 533694 students exited government schools and 346443 students entered private schools. All these indicate that the state is slowly withdrawing investing in education paving the way for the private sector to play a more responsible role in the education of children. If this trend continued, the ones who would suffer the most will be socially and economically marginalised groups.

VI. GRADE PROGRESSION

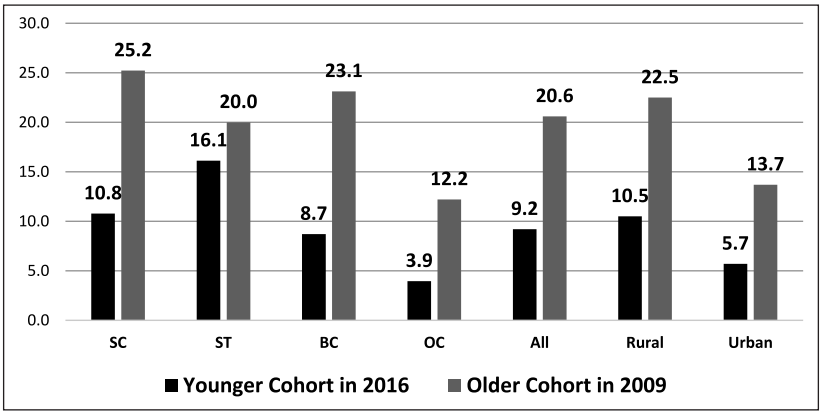
The Young Lives cohort data also enables us to analyse how children are performing in schools, and to investigate the scenario of schools with over-age children (i.e. children who may have repeated a class). Despite there being a 'no detention policy' or automatic progression to the next grade being followed in all elementary schools, it is perplexing to notice, that overall, in 2016, around 7 per cent of 15-year-olds are over-aged for the grade in which they study, an increase of 2 percentage points from that of 15-year-olds who are over-aged for their grade of study in 2009.

Within the social groups, 17 per cent of STs are over-aged for their grade compared to 5 per cent of socially advantaged groups who are over-aged for their grade of study, and this phenomenon of being over-aged for their grade of study is noticed in both private and public schools. It is imminent to reduce the phenomenon of over-aged children in schools in the context of utilising the resources optimally,especially, public resources that being limited owes it to schools being funded and to the public that there is frugality and impartiality being ensured while distributing money. Our field experience shows that school mobility is also one of the factors for the increasing trend of over-age children to grade, and it is worth examining, separately,whether the school mobility is caused by economic condition of children or quality of teaching.

VII. IDENTIFYING DROP-OUTS

Young Lives longitudinal data reveal that there is a universal enrolment in primary schools and almost universal enrolment in case of upper primary, but there is considerable percentage of children who are not completing their allotted educational level though they would enrol for it, like, in case of secondary level education which is theleast that a child must have had succeeded to get some form of employment. Young Lives study also provides the status of dropouts at the age 15 years in 2009 vis-à-vis 15-year-olds in 2016. For instance, if we compare the situation 7 years apart, there is substantial reduction in the school dropouts as, overall, 21 per cent dropped out of school at the age 15 years in 2009 compared to 9 per cent of those dropping out who are 15 years in 2016 (Fig-3). The question arises as to the identity of dropouts at the age 15 years i.e. to ascertain and point out children who are not even completing secondary education given that they are dropping out even while reaching the point of taking their secondary school examinations. We found that children from socially marginalised groups and children located in rural areas are dropping out without completing secondary education (Fig 4).

Figure 4
Per cent of School Dropouts at Age 15 in A P



Source: CESS Young Lives study – different rounds

Within the social groups, 16 per cent of STs, 11 per cent of SCs and 9 per cent of BCs are dropping out at age 15 compared to 4 per cent of OC category children dropping out who are at age 15. Interestingly, there is little gender difference noted among the 15-year-old dropouts i.e. 10 per cent of girls dropped out as against 8 per cent of boys. Our analysis reveals that marriage, long absence from school, domestic work, paid work, truancy, inability to pay school fees, and family issues (in that order) are the major reasons for dropout.

VIII. COMPLETED SECONDARY EDUCATION

A few of our Young Lives team members have analysed the association between what compels children to consider completing secondary school certificate vis-a-vis the determinants of success that lead a child toward completion of the secondary education. By using the united state of Andhra Pradesh i.e. Telangana and Andhra Pradesh together, such that the trends of these results may not vary even if the analysis extended to the new state of Andhra Pradesh[10], we found that the more a child is born towards the beginning rather than the end of the timeline of the parents having children the more is the positive influence on secondary education completion. i.e. a first born has higher chances of completion of their secondary education compared to the second, third and fourth-born, and any more who follow in that order. In other words, the farther away in the timeline for being born to parents from the time of the first born, the lesser the chances of completion of secondary education. It is also noticed that children who did paid work at age 12 are less likely to complete the secondary education. Dercon and Singh (2013) using Young Lives data estimated that the children who have high self-efficacy[11] index at age 12 (1.6 times); who were able to

read a full sentence at age 8 (1.7 times), and who were able to write a sentence without an error at age 8 (3.3 times) are more likely to progress through secondary education.

IX. LEARNING OUTCOMES

The longitudinal panel allows us to compare 15-year old enrolment scene with older and younger cohorts, as well as learning patterns amongst older cohort in 2009 and younger cohort in 2016. As we have seen earlier, in Andhra Pradesh, enrolment increased from 79 per cent in 2009 to 91 per cent in 2016, which is consistent with goals of the Sarva Shiksha Abhiyan (SSA)[12] and RMSA. When there is substantial improvement in enrolment, the question remains whether there is improvement in learning outcomes along with enrolment. A set of math questions were put before the older and younger cohort children at the age 15, and comparison of performance reveals whether the learning improved over a period of time.

When we look in detail at how different groups of 15-year-olds are doing in terms of these tests, we see slight difference between boys and girls, but large differences between SC and ST, and children belonging to OC Children from wealthier households those enrolled in private schools and located in urban areas fared slightly better than other children (Table-2). While among older cohorts at age 15 in 2009, only 11.9 per cent of the children answered all comparable math questions correctly, it is unchanged at 11.6 per cent among 15-year old younger cohorts in 2016, indicating no improvement in learning,which is alarming. Given that, in 2009 and 2016, only 1 out of nine children answered the questions accurately, it was children from rural areas, from poorest households, SCs and STs, girls and those whose mothers had no formal education who fared the worstin 2009 than did their peers in 2016. While children in private schools continued to score better than the students in government schools in the comparable maths questions (see Table-2), the decline in performance amongst those enrolled in private schools is more pronounced (6 per cent points) while the performance in government schools has slightly increased (2 per cent points). We have also analysed the percentage of children who did not answer any comparable questions correctly which indicates private schools[13] are faring worse in 2016 from 2009 – from 9 per cent who couldn't answer to 10.5 per cent who couldn't answer any comparable mathematics questions.

There is no dearth of studies when it comes to proving that the true indicator of economic development in a country is the education and wellbeing of its people. Although, India has made rapid economic progress over the last three decades, there is one area that has been overlooked, and that is the quality of primary and secondary education. It would be apt to recall the observations of a Vice-Chancellor that a large majority of students in the university were unemployable because of their inability to

apply their knowledge in real-life situations. This is because of the students having had no proper foundation in schools, where the emphasis is more on rote learning, rather than testing a student's creative skills.

Table 2
Learning Outcomes for 15-year-olds in Andhra Pradesh

	Answered common maths questions correctly (per cent)								*Did not answer any comparable maths questions correctly (%)*	
	9.81+7.62		*Reading a pie chart*		*Approximating annual sales from weekly data*		*Answered all comparable maths questions correctly (%)*			
	2009	*2016*	*2009*	*2016*	*2009*	*2016*	*2009*	*2016*	*2009*	*2016*
					Gender					
Male	58.89	63.80	43.70	40.50	35.93	31.57	17.41	13.06	22.59	21.65
Female	52.90	63.60	36.52	40.38	25.26	26.86	6.83	10.05	27.65	20.97
					Caste					
SC	46.46	58.25	29.29	33.50	32.32	25.24	7.07	7.77	28.28	22.82
ST	46.75	46.28	23.38	39.36	27.27	24.47	5.19	6.91	37.66	28.72
BC	54.09	67.36	42.41	40.42	26.85	29.03	10.89	12.14	27.24	21.82
OC	71.54	73.18	53.08	46.74	37.69	36.40	21.54	16.86	11.54	13.79
					Wealth Index					
Poorest	47.54	53.93	32.79	35.86	26.78	24.35	6.01	7.59	31.15	28.53
Middle	55.85	63.03	39.89	40.69	30.32	28.04	13.30	11.41	26.06	21.84
Not poor	63.54	73.72	46.88	44.90	33.85	35.20	16.15	15.82	18.75	14.03
					Location					
Urban	58.68	74.90	49.59	44.11	31.40	32.32	14.05	14.83	20.66	15.59
Rural	54.98	60.50	37.33	39.39	30.09	28.40	11.31	10.66	26.47	22.96
					Type of school attended					
Public	55.97	60.91	35.49	40.72	27.65	26.87	8.87	10.91	22.53	22.31
Private	75.00	78.82	59.52	47.18	42.86	35.92	22.02	16.35	8.93	10.72
All	55.77	63.71	39.96	40.44	30.37	29.27	11.90	11.59	25.22	21.32
Sample	563	1182	563	1182	563	1182	563	1182	563	1182

Source: CESS Young Lives study - different rounds

X. DISCUSSION AND RESULTS

In this context, it is relevant to discuss the results of Young Lives sub-studies on primary and secondary school surveys. *Primary school survey* results depict that Government primary schools are better placed than private schools when it comes to availability of textbooks and maintaining the library, while encouraging innovation programmes. Private schools have an edge in terms of infrastructure, with a room for Head Master to officiate in alone, staff room, availability of facilities like internet, drinking water, sanitary facilities and cleanliness. Private schools spend huge amounts of money on infrastructure development, though community involvement is negligible in both the types of schools. Post Graduates are more visible as principals in private schools but

government schools are more likely to have trained faculty. Overall, teachers working in government schools are better qualified. Education officers observed that regular monitoring by an officer, hired exclusively to look into various aspects of quality of education, will improve the situation. All the officers interviewed are unanimous on the establishment of government schools in 'mandal' headquarters for better accountability of staff and for improving quality of education, but to make things easier for the children they should be provided with transport facility. They further observed, that teachers should not be entrusted with non-academic work and opined that publicity of achievements of children in government schools will enhance the strength and performance of government schools. Most of the views and perceptions of the Education Officers are reflected in our empirical study results[14].

XI. SECONDARY SCHOOL SURVEY

A sub-study aimed to assess the effectiveness of schools vis-a-vis the performance of the students in an academic year i.e. `value added' in one year of schooling. To assess this, we conducted tests in Maths and English for the 9th grade students, once to be taken at the beginning of the academic year of 2016 – 2017 and once at the ending of the academic year. The study was conducted in the state of Andhra Pradesh, where the Head teacher, teachers and students were included in the study. The survey was conducted in 121 secondary schools in AP which include: state government schools, tribal/social welfare schools, private aided schools and private unaided schools. These schools are located both in rural and urban areas with a mix of English medium schools and Telugu medium schools, including schools that are pedagogying in both the media. The study covered 5548 students studying in the 9th grade, 121 Head Teachers and 316 teachers[15].

The important findings of the secondary school survey reveal that gaps in test performance appear to be widening over the course of the school year. For instance, the least poor students make an average of 44 points of progress, while the poorest students make 22 points i.e. falling further behind. Value-added analysis reveals that Private Unaided schools are 'adding more value' in the course of one year of schooling in English and Mathematics. When we control for differences in student background, the gaps between school types narrow slightly, in particular we can see Tribal/Social Welfare schools are performing better i.e.value addition in tribal welfare schools is over and above the overall average value-addition. But even controlling for student background, there are still significant differences between private unaided schools and all other types of schools. It is clear that smaller schools i.e. those with fewer sections– groups for targeted study in Class 9, add less value for both Mathematics and English than larger schools. The same pattern is seen in both private unaided and State Government schools and in both Mathematics and English. If we look at different

school types which are teaching in English medium, we can see that State Government schools add nearly as much value at section level as Private Aided or Private Unaided.

XII. CONCLUSIONS

A child's future depends to a great extent on the type of education she/he receives at the secondary level. Apart from the roots of education of a child taking firm hold on his mind, secondary education can be instrumental in shaping and directing the child to a bright future. There are strong views within the government, as well as among other stakeholders in the education scene, on the need of public-private partnership modes while imparting education at the secondary level and also while ups killing students and giving training to them. A majority of studies clearly indicated a rapid migration of students towards low-fee private unaided schools which are able to run on low fee – or low per-student-cost compared to govt. schools. The present study envisaged to assess the enrolment status in schools vis-a-vis type of management, and the learning outcomes observed reflecting on the factors that influence the learning outcomes in the state of Andhra Pradesh.

There has been considerable progress made in addressing access inequalities in secondary school enrolment in the past few years especially bridging the gender gap. Though, overall, enrolment had risen for secondary school examinees from 2009 to 2016, as depicted by the Young Lives study, inequalities related to segregation of the poorest children into studying in government schools showed up incongruously beside children from the least poorest households, for children from poorest household are more likely to be in government schools vis-à-vis children from the least poor households..Another socio-economic group who showed poorly vis-à-vis other groups are the SC and the ST faring the worst with low levels of achievements in mathematics across both private and government schools, which is a real cause of concern. This finds resonance in the National Achievement Survey (NCERT 2015) of students in Grade 10, which found that children from SC scored significantly lower than that of other students. It is a concern to note that while on one hand, the enrolment in private schools is increasing; yet,on the other hand, the student's performance in these schools is declining faster than their peers in government schools. Firstly, we need to make concerted efforts to ensure that the focus moves from education 'access' to 'learning outcomes' at all levels. As a secondary outcome to this goal, that is, to make sure that equity is clearly linked with quality, we must target our efforts on girls' education as well as that of other marginalised children, particularly in rural areas, from the disadvantaged social groups and those from poorest households. We recommend, to achieve this baseline of quality from where all other parameters of educational parity be measured, to focus on both pre-service and in-service training of teachers at all levels, as well as mentoring and monitoring of secondary schools to ensure that children

are provided equitable, quality learning opportunities. Given that government primary schools are in a better position to impart quality education than are private schools, it's pertinent to note here that when it comes to availability of textbooks and maintaining library and having innovation programmes government schools are far ahead of private schools, but private schools have an edge over government schools in other infrastructure facilities. Another question that faced education officers was how to ensure impartial and accountable education which brought into focus the need to have regular monitoring of schools. Thus, they recommended an officer should be brought into the picture who exclusively looks into the quality aspects of schools which will improve the quality of education and functioning of cluster schools at 'mandal' headquarters, though by ensuring that children have transport facilities which may go a long way in improving the learning outcomes of students. Lastly, as far as value-addition in a year of schooling across a cross-section of school types divided by management types is concerned, private unaided schools are 'adding more value' in the course of one year of schooling in English and Mathematics, while tribal welfare residential schools are also providing more value addition compared to overall average value addition. Further, the size of the school is influencing the value addition i.e. smaller the school size, lesser the value addition in a school year.

Notes

1. Sustainable Development Goal-4 (SDG), i.e. "*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"* is expected to be achieved in India by 2030.
2. See Anil B. Deolalikar (2004), "Attaining the Millennium Development Goals in India: Role of Public Policy and Service Delivery", Human Development Unit, South Asia Region, World Bank.
3. Young Lives, a longitudinal study in CESS is tracking 1950 children in Andhra Pradesh (with two age groups) since 2002 and 5th round of survey was completed in 2016. The survey covered children in 13 mandals (Tehsils) spread over in 4 districts. As part of the main survey, two school surveys have been conducted – one on primary schools in 2010 and the other on secondary schools in 2016. For more details including methodology log on young lives website.
4. See Approach to Education in 12th five year plan, by Jandhyala BG Tilak)
5. ibid
6. See young lives website for sampling design and for more details on school related sub-studies
7. See young lives round-4 fact sheets 2014, on education and youth employment vetted by the authors available in the young lives website.
8. Young Lives round-5 fact sheets, 2017 forthcoming vetted by the authors.
9. See Galab et al., Primary schooling in Andhra Pradesh – a monograph published by CESS for more details
10. See Geeta Gandhi Kingdon, "The Emptying of Public Schools and growth of Private Schools in India"

11. See Renu Singh, October 2017, PPT on "Education – Young Lives Longitudinal Evidence", Young Lives India website.
12. Young Lives asked some questions that enable us to measure his/her level of self-esteem and self-efficacy. Self-esteem reflects a person's overall self-evaluation of his/her own worth. Someone who has a high level of self-efficacy feels that s/he has a high level of control over life.
13. Universalisation of elementary education
14. It is apt to recall that in their book *An Uncertain Glory: India and its Contradictions,* Amartya Sen and Jean Dreze, quoting from an ASER survey conducted in 2011 in rural areas, commented that only 58 percent of children enrolled in classes three to five could read a class one text. Less than half (47 percent) were able to do simple two-digit subtraction. And only half of the children in classes five to eight could use a calendar. They were not found proficient in even basic skills; about two-thirds of the students in class four could not master the measurement of the length of the pencil with a ruler.
15. See Galab et al., (2013) CESS monograph - 31 on Primary schools
16. See Rhiannon Moore et al (2017) for more details

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IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

Status of School Education in the Pre-Telengana Andhra Pradesh: A Critical Analysis with Reference to Right to Education Act

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This article examines the implementation of the Right to Education Act (RTEA) since 1st April 2010, in the state of Andhra Pradesh (AP) in particular and the nation in general. In addition, this article after critically examining the situation in the government and private schools provides policy options for realizing the goals of the RTEA. The study covers several government and private schools in the state of AP and India to assess the implementation of RTEA in letter and spirit. The study critically examines the physical, human, financial resources available at the government and private schools in the selected areas of the study and suggested several measures to be undertaken up for better results.

Keywords: *School education, Right to education, Infrastructure, Results*

I. OBJECTIVES OF THE STUDY AND RESEARCH DESIGN

An attempt has been made in this study to examine the ground realities in implementing the Right to Education Act (RTEA) in the undivided state of Andhra Pradesh (AP) and in India that takes stock of the progress made since its promulgation, given that a sufficient time – five years after the commencement of the said Act – has elapsed to gather information about its effects on the society. A five-year period cannot be considered as a small one in a fast changing society undergoing the effects of rapidly developing technologies.

Prior to the start of the fieldwork, contacts were established with all the stakeholders of the education of children: the school management committees, teachers, students and parents (represented by the Associations of School Management, Teacher's Association, Student Association and Parents' Association).Interaction with these associations and researchers working in the similar areas gave us an overview of the situation prevailing in the state. 36 schools were visited, with 24 schools selected for an in-depth study, in each of private (un-aided) and government management schools, in all the three regions of the state. Field research was conducted during January and February, 2014. Both quantitative and qualitative research techniques were employed to collect the relevant data/information for the study. Qualitative Research Techniques, like

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Participatory Rural Appraisal (PRA), Focus Group Discussions (FGDs) and personal interviews were conducted with important stakeholders (school managements, teachers, student leaders, parents, researchers and respective associations) to acquire relevant information. While urban area includes the twin cities of Hyderabad and Secunderabad, the rural areas are represented by Mahabubnagar district in Telangana, Prakasam District in Coastal Andhra and Anantapur district in Rayalaseema region, all three districts considered the most backward districts of Andhra Pradesh.

II. FIELD REFLECTIONS

Infrastructure

Three types of infrastructure are referred here:

i) Physical Resources, ii) Human Resources and iii) Financial Resources

The study examines various issues concerning infrastructural facilities within the educational system in the areas under study wherein a critical analysis has been made, based on the field reflections, and thereafter, conclusions drawn:

i) Physical Resources

Given that the RTEA affirms that the buildings of all the schools should be weather-proof, with the schools having the basic facilities of drinking water, playground and barrier-free entries for children in the schools, the study gives a detailed account of the conditions under which the schools function in the state of AP. All the data in the tables which follow relate to the year, 2013-14.

Table 1
Management-wise Count of Schools across Regions in AP

Region	*CG*	*SG*	*MPP/ZPP*	*MPL*	*PA*	*PUA*	*Total*
Coastal Andhra	44	2915	26010	1475	1916	7905	40265
	(0.11)	(7.24)	(64.60)	(3.66)	(4.76)	(19.63)	(100.0)
Rayalaseema	18	578	13974	649	431	4145	19795
	(0.09)	(2.92)	(70.59)	(3.28)	(2.18)	(20.94)	(100.0)
Telangana	51	4494	24706	0	790	13252	43293
	(0.12)	(10.38)	(57.07)	(0.00)	(1.82)	(30.61)	(100.0)
AP	113	7987	64690	2124	3137	25302	103353
	(0.11)	(7.73)	(62.59)	(2.06)	(3.04)	(24.48)	(100.0)

Source: 1. Commissioner & Director of School Education, Andhra Pradesh (2014), Educational Statistics 2013-14(Andhra Pradesh 13 Districts), State Project Director, Rajiv Vidya Mission (SSA), Andhra Pradesh, Hyderabad; and

2. Commissioner & Director of School Education, Andhra Pradesh (2014), Educational Statistics 2013-14(Telangana 10 Districts), State Project Director, Rajiv Vidya Mission (SSA), Andhra Pradesh, Hyderabad

Note: Figures in the parenthesis indicate the percentages to the total; CG-Central Govt., SG-State Govt., MPP/ZPP-Mandal PrajaParishad/ZillaPrajaParishad, MPL- Municipal, PA-Private Aided, PUA-Private Un-Aided.

In terms of funding and management, there are six categories of schools in the state. They are run by CG, SG, MPP/ZPP, MPL, PA and PUA.

In the year 2013-14, there were in all 103353 schools in the state of AP of which 40265 were in Coastal Andhra , 19795 in Rayalaseema and 43293 in Telangana regions. In Andhra Pradesh, across the categories of schools divided by management type, close to two-thirds (62.59%) of the schools were found in the MPP/ZPP category followed by PUA comprising 24.48 per cent of the total. Thus, both together make up an overwhelming 87 per cent of the total schools fostered by students. Schools under private management, PA (3.04 %) and PUA (24.48%), together formed over one-fourth (27.52 %) of the total number of schools in the state.

Region-wise Telangana had the largest number of schools (43293). However, the MPP/ZPP-run schools in Telangana was the lowest (57.07 %) compared to that in coastal Andhra Pradesh (64.60%) and Rayalaseema (70.59%). As far as the PUA schools in the state are concerned, there is a total of 25302 schools, of which Telangana region claimed the largest number (13252) and Rayalaseema the lowest (4145). Telangana's large share (PUA) may be, to a large extent, due to the presence of the metropolitan city of Hyderabad in this region.

Substantial number of schools were run by MPP/ZPP in AP. Figures say that more than two-thirds (64.60%) of schools in coastal Andhra Pradesh, close to three-fourths (70.59) in Rayalaseema and 57.07 per cent in Telangana were run by MPP/ZPP. For the state, this figure was close to 63 per cent.

Data on the conditions of the classrooms in schools are given in *Appendix Table 1*. Close to 84.22 per cent of the class rooms in the schools were found to be in good condition. Whereas 9.78 per cent of the schools had classrooms that needed minor repairs, those where major repairs were required were found to be 6 per cent of the schools in the year 2013-14. Significantly, of the classrooms in primary schools, about one-fifth (21.09%) of the schools needed either minor or major repairs. During the rainy season, these schools cease to function for most of the time due to the leakages, dampness, seepage and water-logging with water gushing into schools. Nearly 40 per cent of the PUA schools were functioning under make-shift sheds, and it was a shock to note that certain abandoned poultry farms functioned as school buildings. During the hot summer months, students have to sit throughout the day in these sheds with asbestos roofs causing heat to soar when the sun would be in mid-sky. One can imagine the plight of these students (*Appendix Table 1*).

Table 2 of Appendix gives information on the percentage distribution of schools having single classrooms, across school management types in the year 2013-14. Compared to other states in India, AP's record is rather poor in this respect. AP has as many as 26.69 per cent of the total primary schools being run in the single classrooms

mode. Thus, these are schools run with an insufficient number of class-rooms. At times, different classes are clubbed into one, asking the students belonging to different classes to sit side by side. Thus, the teacher has to teach parallel classes in one class room! No wonder, with such space constraints, the quality of teaching suffers heavily and it is a painstaking job for the teachers to fulfill, as well.

Appendix Table 3 gives information on the percentage of schools – whether these are schools for boys or that for girls only, or co-educational –having toilet facilities for students, viewed across school management types. In this respect, the record of AP is poor again. In nearly half of the primary schools for girls, there were no sanitary facilities. The situation was slightly better in primary schools for boys, as only 16 per cent of the schools had no sanitary facilities. Across all managements and all schools, imparting education from primary up to higher secondary levels, in as many as 43 per cent of the schools for girls and over 13 per cent for that of boys, children lacked access to sanitary facilities.

In most of the schools run under government management, even drinking water facility was denied to the children. And where this facility was available, water was not hygienic, tantamount to the school's neglecting to clean the water at regular intervals, leading to children's health problems, including jaundice and related gastroenteritis. The corporate schools do have drinking water facilities, but the managements do not take adequate care for replacing candles in water purifiers or cleaning the containers (*Appendix, Table 4*) at regular intervals.

As for access to playgrounds for children to play in, it was observed during the field visits that in more than half of the primary school sand nearly one-third of the primary and upper primary schools, playgrounds didn't exist. Although most of the schools in urban areas do not have play grounds, still theirs being recognised as proper schools by the concerned authorities is not wanting. Even citizens are becoming indifferent to children's need for playgrounds (*Appendix Table 5*). It's the author's viewpoint that school inspection authorities' violating laws lower the bar of good schools making it easy for anyone who has been granted permission to open and run the schools to do so without paying attention to infrastructure and related facilities.

Security of children and school premises are left to the doldrums as more than 49.36 per cent of the primary schools and 25.42 per cent of the Primary/Upper Primary schools in AP do not have boundary walls. Across all schools having differing management, close to 39 per cent did not have the boundary walls (*Appendix Table 6*).

It is also perplexing why most of the schools function not on the ground floors but on floors above. And, why 90 per cent of the schools do not have watchmen. This facilitates the misuse of the school premises by the anti-social elements1 (Reddy, 2014:

91-113, Rao, 2009), including incidents of thefts in schools2 (Reddy: 2014:91-113, Rao, 2009).

Given that school surroundings should be congenial, with institutions located in places undisturbed from the hue and cry of human habitat, it is found that the bars and wine shops are located in the same premises or close to the schools. In addition to this, there are cinema halls which are located adjacent to many schools3 (Reddy, 2014: 91-113, Rao, 2009). Matters do not stop here, as business establishments, like noisy welding shops and other sound-producing small-scale industries, function nearby. How can one imagine meaningful teaching–learning processes to take place in such schools? The crux of the problem, under these circumstances, lies with the concerned government departments. But ultimately the victims are the school-going children. The quality of education would naturally suffer under those conditions.

In spite of schools' facilities for sound teaching and learning practices being inadequate, the donations and fee collections are exorbitant in comparison. It's therefore a question why insufficient funds are generally given as a reason for all such problems. In a nutshell, the managements of schools are motivated by profit only that decides to run schools in a commercial vein where big corporate managements, with all the drawbacks and earning crores, are in a position to dictate terms to the government. Such a situation can only be corrected or checked with organized agitations by the citizens moved by the need to bring changes in the education system. It's a satisfying observation that most of the Christian Missionary schools do not suffer from such problems, given that it's the missionary zeal for imparting instruction that moves them and not money. That is the reason why the citizens prefer such schools for their children.

As per children's access to libraries in the school premises, more than one-third of them had no libraries with well-stocked array of newspapers and magazines (*Annexure Table No. 7*).

Quality of education: is also a matter of concern, though a significant more of teachers in AP are found to have higher education than those who don't have it: about 12.52 per cent of the teachers across all schools in AP had academic qualifications either equal to or less than higher secondary levels. Thus, an overwhelming majority of them are either graduates (54.91%) or post-graduates (close to 31.72%). In this respect schools in AP are far ahead of other schools in the country, where only 39.11 per cent and 27.39 per cent of schools had graduates and Post-graduates as teachers respectively (*Appendix Table 8*).

Appendix Table 9 gives information on single teacher schools and average number of teachers per school across managements by school categories for the year 2013-14.

As far as teacher's volume of duties defrayed versus pay-scale is concerned, a dismal picture meets the eye. It is in the Primary, Upper Primary, and Secondary/Higher Secondary category of schools, run both by government and private management, that one notices relatively not so significant a percentage of schools (1.65) with single teachers. But there are single teachers in as many as almost two-fifths (39.50%) run by private managements (*Appendix Table 9*). Therefore, the reasons behind the teachers lack of seriousness in work is the inhuman workload they are expected to handle, mainly, when they handle the whole school singlehandedly, over and above, being underpaid. To make matters worse, there are two registers of pay disbursements maintained in private schools. This fact is difficult to establish, but the interview with the teachers is the best technique adapted to ascertain the facts pertaining to the salaries being paid to the teachers and others. The teachers bow to pressure, out of fear of removal from service, and maintain silence to keep the line of management in good humour. One of the pay registers is official, which is shown to the inspecting authorities where pay is as per government scales; and, the other register that has 'actual salary' being paid which is kept confidential. Contrarily, teachers in the government schools (being qualified) are well-paid.

There is a vast difference between the private and government schools in this regard. It is the viewpoint of the author that the provisions of the RTEA for good and qualified teachers should be implemented in the private sector, and this is the responsibility of the Department of School Education in all the States and Union Territories of India.

Further, where the quality of instruction is found wanting, primarily where it was found during the field visits that the teaching aids are rarely used, because the private management do not spend a single paisa on the library and for procuring the teaching aids, it is the view of the author to abolish such schools whether in government or private management. Several un-trained teachers work in the schools, not to mention rampant indiscipline among the wards in such schools.

Over 99 per cent of the "Regular Teachers", both in Government and Private–Aided schools, have turned out to be "Qualified Teachers". The figures for "PUA schools" and 'Un recognized schools" are 92.93 per cent and 81.36 per cent, respectively. In the "Contractual Teachers" category almost 89.47 per cent of the teachers are qualified. In the category of 'government schools', there are qualified teachers in about 97 per cent of the schools. But for the contractual teachers, in all-Aided and all Un-Aided schools, figures of qualified teachers are as high as 97.80 and 100 percentages respectively. But in the category of "un-recognized schools" more than one-fourth of the teachers are found to be not qualified (*Appendix Table 10*).

ii) Human Resources

The human resources in schools under private and government management are:

1. Head Master/Mistress;
2. Teachers (trained and un-trained);
3. Office staff (non-teaching); and
4. Class IV employees.

Though there are a few schools which exist only to impart education and which are managed not on commercial lines attracting well-qualified teachers who help to maintain the decorum of the school, it's the sad fact that in the majority of cases the Teacher's Associations remain silent on issues troubling them, including keeping the inspecting authorities in darkness about meager-payment. They raise their voice against such practices a few times and keep quiet thereafter. Apart from low pay and the injustice of corrupt practices in school administration, the teachers have to work all the six periods and no leisure is allowed. The teachers are supposed to avail 'one day' leave in a month and there is no other provision of any leave being provided either to them or other employees. If they remain absent for more than one day, then they face salary deductions. Further, a long absence may even invite dismissal from service. The iniquity mete out to teachers is further complicated when we found that the Head of the Institution – who is the acting administrator and should be wielding powers of oversight – is nothing more than a glorified official having no other powers except to ensure a smooth working of the school, while everything else is decided by the management. Not surprisingly, there is a mushroom growth of such schools and no control is exercised over such institutions. On the other hand, the situation for teachers in government schools is opposite as there is ample facility for a different kind of leave to avail of. Also, the service conditions are quite attractive compared to private management-run schools. In AP, in the name of rationalization, certain schools with discouraging intake are closed down and the wards are sent to the nearby schools. The teachers cannot be removed improperly in government-run schools and so all aspects of management are looked into or taken care, by levying the rules and regulations framed by the government from time to time in such cases.

At the risk of repetition, it should be stated that there are no teaching-aids found in the schools. There is no reading room or library maintained. There are no teaching methods adopted in teaching learning processes4. Though they collect the fee meant for library, they do not spend the money on procuring for the library (*Appendix Table 7)*. Office consists of one employee or at the most two, who have to take care of everything. Entering at 8 A.M and leaving the school by 8 P.M., whether there is work or not, the employees are obliged to remain in office *(Appendix Table 12)*. Any lapse on the part of the employee invites dismissal.

Qualified teachers and related issues:

There is a huge scarcity of qualified teachers in government schools, not only in AP but all over the country. This is going to be one of the chief hurdles in implementing the task on hand that is universalizing education in the greatest number in the least time. While this is the situation in government schools, the position of the private schools is no different as 80-90 per cent of the teachers working in private schools are not qualified5.In addition, the strength of the schools, as far as wards numbers are concerned, is likely to increase in AP, in particular, and in India, in general. This requires a doubling of the present number of teachers who could handle classes efficiently and with care. The study found 90 per cent of government schools, which enrolled the students were doing so in a way that put more than a hundred in each class, making it difficult for the teachers to handle such unwieldy classes. Besides, quality is the victim. The ratio of1:30 of teachers to students to be implemented is a far cry even after a decade. Equally, there should be more number of teacher training institutes both in AP and India. A lot of research – given the view that teacher education must meet the demands of the society from time to time – is still required in pulling up the quality of training imparted to teachers so as to keep up with the times (Table 11). Funding is a pre-requisite for any kind of modernization to take place, and unless finances are provided the situation continues to be precarious.

iii) Financial Resources

Finances, in any sector, are as important as petrol to a vehicle. This is more so for the government which is answerable to public. The modern governments have the chief financial system called budget, which allows the government to spend money from the budget approved by the competent authority, usually the *Lok Sabha,*in a parliamentary democracy like India. At the state level, it is the legislature which approves the budget. Given this structure of functioning, it has been found that the budgetary allocations to the educational sector are not commensurate with the actual needs. Where the pronouncements of the State and the Union Governments of India on education are quite laudable, however, when it comes to actual defraying of financial allocations pronounced, it's an empty promise. Under such circumstances, it is difficult to establish and manage the schools, given that the private sector – though with a responsibility to share a certain burden of imparting education–does not, generally, serve the poor.

The schools under private management, to a large extent, depend on the fee collected from students to function. With most of the schools collecting exorbitant fees that sometimes invite the wrath of the parents, it's not unusual for the Parents' Associations to come out in open critique by drawing the attention of the government to the issue of exorbitant fees being collected by private schools. Even though the government

issues warnings to schools stating that it would take stringent action against their erring ways, no concrete results have emerged so far. Funds are sometimes donated by a few philanthropists to the schools functioning under private management, but such schools are too few to be counted. Almost all the private un aided schools, in all the regions covered by the study, manage their institutions with only the fee collected from the wards with all the expenditures, including salaries of teachers, employees and other sundry expenditure, paid out from this fund base. When asked about the low salaries paid to teachers and employees, the managements6 say that they cannot raise the fee charged from students, and everything has to be managed from within the fee collected from the students.

The implementation of RTEA involves heavy expenditure, and given that the Act envisages sharing of financial burden between the states and the Union government, it's a matter of concern that the states are not in a position to shoulder the burden. States like Uttar Pradesh, Bihar and Punjab have already expressed their inability to mobilize funds and openly declared they would not be able to implement the Act7*(see Appendix Tables 13)*. It is also sad to observe that the budget allocations and actual expenditure on education do not match, given that allocations are ambitious, but actual expenditure found to be too low. While this trend does not indicate a sound fiscal policy, at the same time the goals of RTEA show up as impractical, being unrealisable under such circumstances. Of the many goals, the ones concerning improving the infrastructure of schools, training of teachers, and increase in intake that require heavy investments are, certainly, beyond the capacity of the states. Thus, it's the view of the author that the idea of RTEA is stalwart but the implementation of it is impractical. Having said that, a meaningful way has to be worked out to realize the objectives of the Act, in which it's anhonest admission that the situation is not ripe for taking up such an Act at this moment, and the nation has to wait for obtaining the financial capability to implement such an act; or else, create a provision for taxation meant for the purpose.

The precarious situation explained above needs the urgent attention of the citizen and the government since investment in education is an investment for an all-round development of the country. The RTEA should take cognizance of such factors and the concerned agencies have to take suitable action in this regard.

Quality of education:

According to the reports published by Pratham, the saddening revelation is that in Government primary schools, across India, of the class V students observed for reading ability, more than half was found incapable of reading the basic class II text books which, *in all probability,* they must have had passed to reach a higher class. This raises the quality issues being compromised through the Act8. Foremost, it may be

appropriate to quote the Human Resource Minister who is recorded as opining that the Education Department has paved the way for huge challenges ahead by promising quality education to all9. Further, the Act says that no student would be allowed to drop-out from school or given a fail grade till the age of 14 which turns the focus of the issue from a socio-economic problem to an isolated problem of student ability in studies, though in fact, it's the family background of the student and his socio-economic status that are to blame for the student's being a drop-out or failing examinations. It's needless to say that unless the family's economic status is improved, the Act's objective may not be achieved. Sending such students – who are potential drop-outs – to government-run hostels is as good as doing nothing but watch as mere spectators as the student languishes in his studies as family problems pursue him. As regards quality of education, teacher training, balancing of teacher's duties with good pay for teachers, and congenial school environment show up as major factors, besides others amply explained in this article. Unless such factors are addressed, one cannot expect the quality of education to rise*25 % quota of seats reserved for weaker sections for education*

In the intake of the government schools in AP, as well as throughout the country, 90 per cent of the wards come from weaker sections. It's expected that with private schools having better facilities to offer and better outcomes for their wards, economically better-off families prefer private schools for their children. Apart from this, private schools do not accrue to the group implementing the reservation quota where 25 per cent of seats are reserved for weaker sections. The study has observed that those who can afford to pay the donations and huge fee find places in the private schools as these schools are not obliged by government rules to comply with 25% quota for weaker sections. It's the view of the author that stringent action by the concerned authorities is most welcome in this arena.

III. SUGGESTIONS

The following suggestions may be helpful for better implementation of RTEA, in general, and providing quality education, in particular, in AP:

1. The Department of Education should ensure that only qualified teachers are recruited. If found erring, the school recognition should be scrapped, the school closed and students be sent to other nearby schools;
2. The Department of Education, Non-Governmental Organisations (NGOs) and Parent's Committees shall see to it that physical facilities are provided. Erring schools must be punished severely, with closure if need be. In addition, the government has to ensure such facilities without any delay;
3. It's mandatory for drinking water and sanitary facilities to be provided by the schools, apart from keeping school premises clean and tidy. The drinking water containers must be cleaned every day, and the responsible teacher/head master

must get the container checked daily. They should drink the same water to allay fears of unhygienic water;

4. The parents must be saved from paying donations and exorbitant fee to the schools. Permanent machinery (ombudsman) within the School Education Department should be created to check such malpractices;
5. There should be a model school for each division within the radius of three kilometers to conduct monthly exercises with "*model teaching"* leading to best teaching-learning practices. Inspecting authority, also, should be a participant in such monthly meetings. Such meetings shall not be a farce but should be sincerely attended and practiced;
6. The governments of the States and Union should set up more number of teacher education institutes to train the required number of teachers to implement the RTE Act;
7. All the problems related to quality in education should be addressed. Only then will the demands of the RTE Act on quality be realized; and lastly,
8. The private schools have to ensure that 25% of seats should be reserved for weaker sections of the society. The Department of Education has to create a vigilance wing for this purpose to conduct inspection and ensure such admissions into schools.

Notes

1. *Vide interview dt.2-7-2013.*
2. *ibid*
3. *Field Study Observations*
4. *FGDs Observation*
5. *Uma (2013), Right to Education (RTEA): A Critical Appraisal*
6. *Field Study Observations*
7. *Uma (2013), Right to Education (RTEA): A Critical Appraisal, p. 57*
8. *Uma (2013), Right to Education (RTEA): A Critical Appraisal*
9. *Uma (2013), Right to Education (RTEA): A Critical Appraisal*

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Appendix

Note for source of tables: All the Tables below were taken/compiled from:

1. Mehta, Arun C. (2014), "Elementary Education in India: Progress towards Universal Elementary Education (UEE)", Analytical Tables 2013-14, National University of Educational Planning and Administration, New Delhi, August.
2. Tables have been updated from the educational statistics (2013-14), Governments of Andhra Pradesh and Telangana.

Table 1

Condition of Classrooms: 2013-14 (All Managements) (%)

State	*Condition of Classroom*	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*
AP	Good Condition	78.91	87.35	92.34	86.27	95.05	84.22
	Need Minor Repair	12.74	7.95	6.42	5.88	2.69	9.78
	Need Major Repair	8.35	4.69	1.23	7.84	2.27	6.00
All States	Good Condition	77.44	84.25	97.23	79.08	84.66	81.97
	Need Minor Repair	13.52	9.34	2.05	12.98	9.33	10.87
	Need Major Repair	9.04	6.41	0.72	7.94	6.02	7.16

Table 2

Per cent Distribution of Schools having Single-Classroom across Managements: 2013-14

State/ Managements	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./Higher. Sec*	*All Schools*
All Managements						
AP	23.30	0.87	0.68	9.09	1.63	15.30
All States	7.13	0.56	0.81	1.82	1.86	4.90
Government						
AP	26.69	0.94	0.81	25.00	1.69	20.15
All States	7.05	0.57	1.25	1.65	1.37	5.19
Private						
AP	6.29	0.56	0.00	0.00	0.00	2.80
All States	3.11	0.45	0.75	1.92	2.58	2.25

Table 3
Per cent Availability of Toilets across Gender: 2013-14* (All Managements)

State/ Type	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./ Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*	*Functional Girls Toilet*
Girls							
AP	49.85	66.91	91.59	45.45	67.03	57.09	71.67
All States	80.85	91.33	98.29	86.09	97.12	84.63	91.62
Boys							
AP	84.06	92.34	90.38	81.82	69.04	87.14	79.66
All States	92.93	97.33	98.95	94.37	98.72	94.45	92.67
Any type**							
AP	33.05	20.38	9.02	36.37	31.97	27.89	24.34***
All States	13.11	5.67	1.38	9.77	2.08	10.46	7.85***

* Girls schools and Co- educational schools with girl's toilet & Co- educational schools without girl's toilet, but common toilet > 1

* Boys schools and Co- educational schools with boy's toilet & Co- educational schools without boy's toilet, but common toilet ≥ 1

** Note: Any type: Not having any Toilet (either Girls or Boys); *** functional toilets

Table 4
Schools having Drinking Water Facility across Managements: 2013-14 (%)

State/ Management	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*
All Government Managements						
AP	84.56	89.97	99.6	75.00	86.80	86.50
All States	94.13	97.77	97.59	94.18	99.07	94.93
All Private Managements						
AP	98.49	99.26	100	100	100	99.11
All States	97.1	99.23	99.32	93.73	99.42	98.04

Table 5
Schools having Playground: 2013-14 (All Managements) (%)

State	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./ Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*
AP	47.71	65.1	90.75	90.91	37.4	57.01
All States	51.47	62.94	88.2	65.19	76.52	58.05

Table 6
School having Boundary Wall: 2013-14 (All Managements) (%)

State	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./ Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*
AP	50.64	74.58	92.12	72.73	36.04	60.97
All States	53.77	77.79	94.54	52.52	87.04	61.87

Table 7
Schools having Library: 2013-14 (All Managements) (%)

State	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher.Sec*	*Upper Primary Only*	*Upper Primary With Sec./ Higher. Sec*	*All Schools*
AP	92.03	88.88	92.47	90.91	31.71	90.54
All States	72.39	83.13	90.46	72.12	90.65	76.13

Table 8
Teachers by Academic Qualification & School Category: 2013-14 (Excluding Contractual Teachers) All Managements

State	*Qualification*	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./Higher. Sec*	*All Schools*
AP	Below Secondary	0.18	0.13	0	0	0	0.11
	Secondary	3.82	3.61	2.43	2.27	1.06	3.01
	Higher Secondary	14.78	11.58	2.56	11.36	1.67	9.4
	Graduate	58.14	60.9	29.09	52.27	7.68	54.91
	PG	22.63	23.15	62.28	34.09	84.67	31.72
	M. Phil./Ph. D.	0.43	0.63	3.64	0	4.92	0.85
	Others	0.0	0.0	0.0	0.0	0.0	0.0
All States	Below Secondary	2.32	1.6	1.04	1.9	0.42	1.55
	Secondary	14.04	14.02	3.3	5.03	4.04	10.06
	Higher Secondary	28.09	26.57	7.50	17.50	5.16	20.09
	Graduate	36.08	38.52	40.45	39.56	33.11	39.11
	PG	18.65	17.88	44.25	35.1	51.75	27.39
	M. Phil./Ph. D.	0.65	0.89	2.84	0.81	5.2	1.47
	Others	0.01	0.02	0.06	0.03	0.08	0.03

Table 9
Single Teacher Schools and Average Number of Teachers per School across Managements by School Category: 2013-14

State/ Management	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./Higher. Sec*	*All Schools*
			% of Single Teacher Schools			
AP	23.95	2.33	0.68	0.0	1.63	15.65
All States	11.46	1.19	0.67	11.94	0.94	8.32
			Average Number of Teachers per School by School Category			
All Managements						
AP	34.2	16.79	1.65	0.01	0.18	161730
All States	21.32	25.13	20.38	2.87	12.96	1965200
Government Managements						
AP	2.3	5	18.5	2	9.2	4.2
All States	2.8	6.5	31.8	3.5	19.3	4.2
Private Managements						
AP	6.4	7.6	39.5	5.1	16.4	7.7
All States	5.2	8.3	21.4	4.9	19.3	9.1

Table 10
Qualified Teachers across Managements: 2013-14

State	*Regular Teachers*					*Contractual Teachers*				
	All Schools	*Govern-ment*	*Private Aided*	*Private Un-aided*	*Un-recog-nized*	*All Schools*	*Govern-ment*	*All Aided*	*All Un-aided*	*Un-rec-ognized*
AP	96.87	99.97	99.13	92.93	81.36	89.47	96.93	97.8	100	77.61
All States	80.06	82.89	91.23	74.93	42.01	55.55	53.35	82.65	66.11	64.31

Table 11
Teachers who Received In-Service Training: 2010-11 (Including Contractual Teachers): All Managements (%)

State	*Primary Only*		*Primary with Upper Primary*		*Primary with U. Primary & Sec./Higher. Sec*		*Upper Primary Only*		*Upper Primary With Sec./Higher. Sec*		*All Schools*	
	M	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*
AP	40.59	25.82	22.19	14.94	0.34	0.57	0	0	0.97	1.39	21.93	16.07
All States	29.08	27.68	30.64	30.12	5.25	4.74	18.99	21.5	10.5	14.6	22.53	21.57

Note: M= Male; F=Female

Table 12
Average Number of Working Days Spent on Non-Teaching Assignments: 2013-14(All Managements)

State	*Primary Only*	*Primary with Upper Primary*	*Primary with U. Primary & Sec./Higher. Sec*	*Upper Primary Only*	*Upper Primary With Sec./Higher. Sec*	*All Schools*	*% of Teachers involved to Total*
Rural							
AP	8	7	0	0	7	8	2.37
All States	14	15	19	14	22	16	2.60
Urban							
AP	9	9	0	0	0	9	0.57
All States	18	17	23	17	21	20	2.22

Table 13
Component-wise Allocation and Expenditure in 2011-12 and 2010-11 of AP (in Lakhs)

Component	*Alloc. / Exp.*	*2011-12 (as on 31-12-2011)*		*2010-11 (as on 31-03-2011)*	
		AP	*Grand Total*	*AP*	*Grand Total*
Teacher's Salary	Alloc.	90745	2287851	62126	1609928
	Exp.	65574	1085056	25251	818610
Teacher's Grant	Alloc.	1290	22099	1177	21254
	Exp.	1190	19288	1111	18091
BRCs	Alloc.	14088	133534	7491	88875
	Exp.	1784	34464	5989	53245
CRCs	Alloc.	5181	118834	3405	72380
	Exp.	1870	53377	1707	35229
Teacher's Training	Alloc.	10307	137465	5044	66013
	Exp.	6517	42063	4014	35325
Out of School Children	Alloc.	4609	86275	8281	96057
	Exp.	1016	16131	3560	43347
Remedial Teaching	Alloc.		0	0	0
	Exp.		0	0	0
Special Training	Alloc.	13242	79479	0	30
	Exp.	2172	16444	0	30
Free Text books	Alloc.	9	160988	0	148360
	Exp.	0	102616	0	107603
2 set of Uniforms to children studying in Govt. schools	Alloc.	22507	201935	21067	271088
	Exp.	22507	99751	0	97186
Inclusive Education	Alloc.	5481	83125	4881	75308
	Exp.	1240	30421	4952	51167
BRC (Civil)	Alloc.	1964	14166	54	11419
	Exp.	0	5330	7	2825

Component	*Alloc. / Exp.*	*2011-12 (as on 31-12-2011)*		*2010-11 (as on 31-03-2011)*	
		AP	*Grand Total*	*AP*	*Grand Total*
CRC (Civil)	Alloc.	0	4338	0	765
	Exp.	0	1119	0	102
School Buildings	Alloc.		0	0	0
	Exp.		9	0	0
Deferred liability of PS of previous years	Alloc.		0	0	0
	Exp.		0	0	0
Total School building	Alloc.	269	257931	206	221788
	Exp.	0	66822	57	75423
Additional Classrooms	Alloc.	123426	1333818	64149	993912
	Exp.	81155	567732	51038	477249
Toilets (no. of schools)	Alloc.	5727	96961	3606	70367
	Exp.	420	52380	1926	28404
Drinking water (no. of schools)	Alloc.	244	9843	560	4205
	Exp.	0	5917	333	1580
Boundary Wall	Alloc.	4261	107666	0	83749
	Exp.	0	37862	0	48324
Separation Wall	Alloc.	0	432	0	437
	Exp.	0	102	0	119
Electrification	Alloc.	24	5352	0	2542
	Exp.	0	1986	0	520
Toilet, drinking water, child friendly elements and kitchen sheds for new UPS	Alloc.	0	28770	0	3325
	Exp.	0	33969	0	461
Office-cum-store-cum-Head Teacher's room	Alloc.	1632	162763	0	80596
	Exp.	0	57714	0	25469
Furniture for Govt. UPS students	Alloc.		62	0	0
	Exp.		0	0	0
Residential Schools for specific category of children	Alloc.	3070	33966	57	22181
	Exp.	0	6914	0	5377
Residential Hostel for students in existing UPS	Alloc.		0	0	0
	Exp.		0	0	0
Library (PS+UPS)	Alloc.	3961	24246	0	19221
	Exp.	0	7211	0	12115
Major Repairs	Alloc.	499	17811	780	13595
	Exp.	0	9571	283	7514
Others	Alloc.	0	32699	0	8801
	Exp.	0	678	0	2200
Total Civil Works	Alloc.	145077	2130824	69413	1536903
	Exp.	81575	855315	53644	687681
Teaching Learning Equipment	Alloc.	102	16074	156	20915
	Exp.	1	1745	57	7187

Component	*Alloc. / Exp.*	*2011-12 (as on 31-12-2011)*		*2010-11 (as on 31-03-2011)*	
		AP	*Grand Total*	*AP*	*Grand Total*
Maintenance Grant	Alloc.	5061	76894	4598	75435
	Exp.	4934	69615	4523	66925
School Grant	Alloc.	4923	73822	4942	72078
	Exp.	4802	69003	4706	64697
Research & Evaluation	Alloc.	1352	19353	1312	17715
	Exp.	349	3938	945	10004
Management Cost & MIS SPO	Alloc.	2081	32791	1887	24166
	Exp.	1674	12587	1300	14002
Community Mobilisation	Alloc.	1440	12928	589	5949
	Exp.	167	2861	288	3430
Learning Enhancement Programme	Alloc.	5741	81698	1738	50103
	Exp.	456	11429	312	28504
Innovative Activity	Alloc.	2300	62405	2222	64158
	Exp.	400	14338	1859	41273
Community Training	Alloc.	4691	48184	2354	23703
	Exp.	233	8334	578	11711
Management & MIS District	Alloc.	9170	99874	5105	85730
	Exp.	3636	40758	5014	54156
REMS (SPO)	Alloc.		0	0	0
	Exp.		0	0	0
SIEMAT	Alloc.	0	95	0	141
	Exp.	0	0	0	12
Transport/Escort Facility	Alloc.	859	1337	0	1853
	Exp.	4	108	0	39
Residential Schools for specific category of children	Alloc.	147	15641	71	3503
	Exp.	11	1680	0	1367
Total Outlay Approved (SSA)	Alloc.	350403	5983506	207858	4434788
	Exp.	202112	2591325	119810	2252427
NPEGEL	Alloc.	3680	38262	3615	38962
	Exp.	1487	18253	2504	28971
Grand Total (SSA+NPEGEL)	Alloc.	354083	5527336	211473	4039992
	Exp.	203598	2395743	122314	1994709
KGBV	Alloc.	83558	223188	14964	97295
	Exp.	49740	101845	9918	46985
Grand Total (SSA+NPEGEL+KGBV)	Alloc.	437641	6244956	226437	4571044
	Exp.	253338	2711424	132232	2328383

Source: http://ssa.nic.in/financial-management/allocation-expenditure

GoI, Dept. of School Education& Literacy, Ministry of HRD

BRCs = Block Resource Coordinators; CRCs= Cluster Resource Coordinators; MIS=Management Information System; SPO- State Project Officer

IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

Causes for Differentials in the Utilisation of Public Health Services: A Comparative Study between Andhra Pradesh and Uttar Pradesh

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Public health services use has as its determinants socio-demographic, economic factors of health seekers, the behaviour of functionaries of health offices and, lastly, service accessibility. Kerala (and four other southern states in India) shows a greater use of these services compared to the Middle-Eastern state of Bihar, say. Large differentials in health service use patterns vis-à-vis its determinants are the cause for the gap noted between northern and southern states in theirs having widely different health indices, like infant (IMR) and maternal mortality rates (MMR). A comparative study using random sampling method on the households in the rural areas of the districts of Chittoor (A.P.) and Ghaziabad (U.P.) found the weak organizational structure at the state level to Sub Centre level to be the root of the differing use patterns of health services in these two states. Financial constraints also affect the tendencies to seek health services treatment, including where women's involvement in Self Help Groups (SHGs) and empowerment result in greater health awareness and its greater use. This study concludes a specialized soft skills training program needs to be designed and conducted for all health disbursers irrespective of their education level. Above all, improvement of concomitants of health, like easy reachability of PHC without having to traverse a long distance, can lead to high use of health facilities.

Keywords: *Health services utilisation, Accessibility of health facilities, Maternal & child health care and Family planning.*

I. INTRODUCTION

The pursuit of differentials in utilization of health and healthcare has been the key feature of health policy formulation in India, with the commitment being to improve the access to quality healthcare for the poor and the disadvantaged. This has been reiterated in almost all policy documents related to health, starting from 'Bhore Committee', 1946 to the latest 'Universal Healthcare Bill', 2009 (Bhore et al, 1946; GoI, 2009). According to these health policy documents, health systems in the majority of the states in India work toward eliminating the barriers in healthcare utilization and aim to achieve equitable access to healthcare, which is often interpreted from the

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perspective of fairness of disbursal of healthcare services, such that a person, in equal need of medical care as another afflicted by a disease, similar or otherwise, receives the equivalent treatment as what any other would have got irrespective of his/her income or socio-economic status. To realize this goal, it is imperative to make a systematic assessment of prevailing inequity in utilization of healthcare services which would provide guidance in identifying the points of policy intervention that can reduce the inequity in access to healthcare, a task that has so far not received serious attention both from academia and policy makers.

In the Indian context, through the health extension programmes, an intensive effort has been made to reach the service to the door steps of every person. However, in most instances, the service is not used to the fullest due to several reasons. The mix of available service, poor linkage between the service points, transportation, and a sense among the ailing about there being a lack of seriousness among health professionals compromised the health care use.

So far, a few studies showed a comprehensive analysis of maternal health care throughout the course of pregnancy, delivery and postnatal period. Further, understanding in detail the factors affecting general, maternal health care and family planning use is crucial. Therefore, this study tried to identify the level and determinants of general, maternal health care and family planning use among currently married women who gave at least one birth in the last 24 months starting from July 2014 in Andhra Pradesh and Uttar Pradesh, respectively.

Evidences from this study will help policy makers and health executives at different levels of service to design proper medical health care facilities, and implement new interventions for the betterment of the much affected segment of the population. As a result, it will increase the uptake of general, maternal and child health and family planning services utilization and reduce suffering from health problems arising during the course of pregnancy and child birth, and in general.

II. LITERATURE REVIEW

In developing countries, many factors limit the utilization of maternal and child health services, including its availability, accessibility, quality, and characteristics of users. Factors may include distance – between the location where there is a need for services and where health care services are provided, apart from the cost of services, quality of services, and technical qualification of health practitioners, socio-economic status of the household, and individual and women's autonomy in household decision-making. Concerning the results of poor use of health services and maternal primary health care services, where skilled antenatal care (ANC) and birth attendance have been globally advocated the crucial intervention to reduce maternal mortality in

developing countries, it seems that developing countries lag behind in health indices, with high levels of maternal mortality here. In India, despite the availability of primary health care services in virtually every community and village in India, those in need of health care have to travel long distances to reach secondary and tertiary health care institutions. Against this backdrop, the study sought to find the factors that influence choice of health institutions among currently married women. (Mahapatro, 2012).

Maternal complications and poor perinatal outcome are increasingly associated with non-utilization of antenatal and delivery care services, and poor socio-economic conditions of the patient. It is essential that all pregnant women have access to high quality obstetric care throughout their pregnancies (Mahajan and Sharma, 2014).

Family Planning methods, which in spite of a growing demand for both limiting and spacing births lean toward female sterilization as the dominant method in the national programme, where use of spacing methods remains very limited. Compared to other states, fertility decline has been slower in the empowered action group (EAG) states which contribute about 40 per cent of population growth to the country and also depict gloomy statistics for other socio-development indicators. It is, therefore, important to intensify efforts to reduce both fertility and mortality in these states. Pachauri (2014) discussed in his article on 'Priority strategies for India's family planning programme' that strategies to accelerate progress of India's family planning programme is imminently needed, and emphasized the importance of improving the quality and reach of services to address unmet contraceptive need by providing method choice. He also referred the data from National Family Health Survey – number three (NFHS-3) which shows that although the numbers are small, spacing methods are provided mainly by the private sector. As a result, strategies to engage the private sector through social marketing and social franchising initiatives should be encouraged. But the public system, which is the major provider of family planning services, especially for the poor, must be strengthened so that a choice of methods can be provided by delivering quality services. To sum up, the need to strengthen infrastructure, human resources management, accountability and governance of the public health system have been repeatedly emphasized as these are major impediments to the effective delivery of health and family planning services. However, efforts to do so have been uneven in the country.

To call attention to Uttar Pradesh, one of the key and highly populous states of India, it continues to have one of highly reported figure of maternal mortality ratio i.e. 440 per 100, 000 live births, and still remains above the national average (Sample Registration System, 2011). Investigating why this is so brought out that Uttar Pradesh is characterized by low uptakes of maternal health services, and is one of the deprived states of India in terms of socio-economic prosperity and demographic

strength. Still there are a number of health plans functioning in Uttar Pradesh that have been executed, specially related to maternal health care services, but that hasn't changed anything from the deplorable condition now to the expected scenario. About every second mother, who was pregnant, was only able to seek any ANC care services, and even when they went for the services, it was during the second trimester with the sole purpose of the confirmation of their pregnancy. It is not so surprising an observation, and so common in Uttar Pradesh where the utilization of maternal health services is very low, that people are not too conscious nor do they want to understand that pregnancy needs special, targeted attention (Singhet al, 2012).

Galab and Chandrasekhara Rao (2003) found that the Development of Women and Children in Rural Areas (DWACRA) programme in Andhra Pradesh had significant results bearing on its aims to improve women's access to basic services(health, education, child care, nutrition, water and sanitation),apart from other rural development programmes of the government. Firstly, most women reported in their study that SHG women are able to spend money to meet their own needs like health care, clothing and jewelry. Thereafter, the women members of SHGs have digressed from the traditional path to embark on the non-traditional tasks, like marketing, and in non-traditional enterprises. Lastly, after having joined the SHGs of DWACRA, women's access to and control over their savings, credit and income have improved, and they have greater freedom to move and interact with the officials and other women. The DWACRA groups themselves have expanded avenues for women to assume leadership position. As far as the adoption of family planning and contraceptive methods by the women members of SHGs are concerned, the programme indicates the improvement of the control of women over their reproductive choice. On the whole, it is clear that women are able to have improved control over their labour, resources (saving, credit and income), freedom to move and interact, leadership, and reproductive choices, to an extent. Thus, there is improvement to some extent with regard to 'power to' dimension of empowerment. But, there is no improvement in the 'power within' dimension of empowerment. This is evident from the absence of the collective initiatives of women members to negotiate their gender, caste, class and other interest's vis-à-vis institutions of the market, the state, the community and family. The women are able to handle some of the issues relating to their lives independently. This indicates that 'power within' dimension of empowerment is impacted due to participation in SHGs to some extent.

III. OBJECTIVE, METHODOLOGY AND DATA ANALYSIS

The main objective of the study is to explore the causes for differentials in utilization of health and family planning services by the couples and suggest the appropriate

general health, maternal and child health care, including family planning services to meet the needs of the people in Andhra Pradesh and Uttar Pradesh.

The study was carried out in the rural areas of Chittoor District in Andhra Pradesh, and Ghaziabad District in Uttar Pradesh, India. A multi-stage sampling procedure was adopted for the selection of sample in the study. In the selected villages, mothers having at least one child aged 0-24 months were listed based on the data obtained by Anganwadi Centre (AWCs). The respondents were selected using simple random sampling method from the house list. Thus, a total of 473 women (228 in AP and 245 in UP) were selected and interviewed for the present study.

Data entry and statistical analysis were performed using the Microsoft Excel and Statistical Package for Social Sciences (SPSS) IBM windows version 22.0 software. Univariate, Bivariate and Multivariate analyses were employed to assess the association between the independent variables and utilization of health care and family planning services. Pearson Chi-Square test of significance, Analysis of Variance (ANOVA) and Analysis of Co-Variance (ANCOVA) were used to study the factors affecting utilization of health services and family planning services.

IV. RESULTS AND DISCUSSION

Access to healthcare depends upon the physical infrastructure and manpower in the health sector. The secondary data – specifically, the organ gram of health system in the two states at state level down to PHC level– show that manpower in the health sector was less/ poor in UP as compared to AP. This evidence is further adduced by the fact that the population served per government-allopathic doctors, number of doctors and nurses per lakh population, average number of general nursing mid wives, auxiliary nursing mid wives (ANM), health visitors and health supervisors per lakh population also play a detrimental role in influencing health and family planning services utilizations by the people. Further, if the above ratios are low, it will give the health policy formulators and others concerned the reason and the justification to monitor, supervise and get feedback from among different health providers and also from the people. Ultimately, there will be a seamless co-ordination among health personnel in order to provide quality health care to decisively determine the health and family planning services utilizations.

The health infrastructure in AP and UP states presented in table 1 shows a pattern of health facilities setup vis-à-vis the population that tells positively about AP. Thus, though the number of PHC, SCs, and CHCs are more in UP compared to AP, but given that the population of UP is two and half times more than AP, it is proper to say that in proportion to population size, health facilities in UP are very low and not sufficient compared to that in AP. It is also found that the proportion of human resources in

health services, that is Health Workers, Health Assistants and Doctor's in PHCs are fewer in UP compared to AP.

As shown in the table 1 the proportion of Health Workers (Male) is higher in AP (4608) compared to that in UP (1729); Health Assistant (Female)/ LHVs appointed in PHCs were also more in AP (2251) compared to that in UP (2040); the proportion of Nursing staff at PHCs and CHCs are almost double in AP (4177) than that in UP (2627); the proportion of Doctor's at PHC is also high in AP (3448) compared to that in UP (2861).

Table 1
Health Infrastructure in Andhra Pradesh and Uttar Pradesh

Particulars	*Andhra Pradesh*	*Uttar Pradesh*
	In-Position	*In- Position*
Total Population (In Crore) (Census 2011)	8.4	19.96
Sub-Centre	12522	20521
Primary Health Centre	1624	3692
Community Health Centre	281	515
Health worker (Female)/ANM at Sub Centre's & PHCs	21853	22464
Health Worker (Male) at Sub Centre	4608	1729
Health Assistant (Female)/LHV at PHCs	2251	2040
Nursing Staff at PHCs & CHCs	4177	2627
Doctor at PHCs	3448	2861
Obstetricians & Gynecologists at CHCs	99	475
Pediatricians at CHCs	110	547
Total specialists at CHCs	346	1740
Radiographers at CHCs	65	181
Pharmacists at PHCs & CHCs	1851	5582
Laboratory Technicians at PHCs & CHCs	1422	1836

Source: RHS Bulletin, March 2012, M/O Health & F.W.,GoI

The functioning of the health system in AP and UP reveals that vast differences exist between the two states. The differences are as follows.

- Under National Rural Health Mission (NRHM), 12 Joint Directors/ Deputy Directors and Additional Directors were operating at State level in AP; whereas, in UP, there were only three such type of Directors who were operating the health system.
- At Zonal level, there were 3 Deputy Directors operating under the Regional Director in AP; where as in UP there is no such set up established at zonal level.

- At the District level, under District Medical and Health Office (DM&HO), 12 district level officers were looking after the health in AP, whereas, in UP, only six were managing the same.
- Similarly, at the PHC level, there were 6 officers in AP as against 3 officers in UP who were controlling the PHC administration.
- In addition, in rural areas, Arogyasri, the Free ambulance services (108) for emergency cases with round-the-clock and round-the-year, 104 mobile health services, using the Public-Private Partnership (PPP) model PHCs, were in existence in AP, whereas, there were no such type of PHC mobile health service models in UP.

These differences in the organizational setup of health system will have strong effects on the variation in the utilization of government health and family planning services between Andhra Pradesh and Uttar Pradesh. So, there is a need to have a complete, sufficient organizational setup for improving the utilization of health and family welfare services.

Accessibility of Health Services

Both government and private health facilities functioning at different distances away from the service seeker have an availability and accessibility pattern vis-à-vis number of respondents (Table 2) availing its health service. This pattern of use reveals, overall, most (62 per cent) of the families have access to Primary Health Centre and Sub Centre at a distance of 4-8 KMs. This is comparatively sufficient in AP as PHCs are available within 3-5 KMs distance from the source of health service need, whereas, the same is 5-8 km away in UP. Further, a significant proportion of respondents (58.9) were reported to having said the accessibility of private hospital/ clinic to be within the distance of 20 KMs. Again, though the availability of a District Hospital is around a distance of 50 KMs away, in total more than two fifths (42.3 per cent) of people accessed them. For example, the per centage of people who accessed a district hospital was low in UP (32.8 per cent) compared with that in AP (51.8 per cent). In addition, the accessibility of Medical shops was also poor (overall 42.5 per cent), said to be within the distance of 5 KMs, as only one third of the respondents accessed these in UP as against one half in AP. With regard to the accessibility of Traditional Healer, Registered Medical Practitioners/ Private Medical Practitioners (RMP/PMPs) was high in UP (25.4 per cent) compared to AP (9.7 per cent). These results show that accessibility of most of the health facilities, including, the public and private facilities, was poor in UP compared with that in AP. This may be the reason that one fourth of the Traditional Healers, RMP/ PMPs, were found existing within the accessible distance to the community in UP.

Table 2
Percent Distribution of Respondents by the Availability and Accessibility of Health Facilities

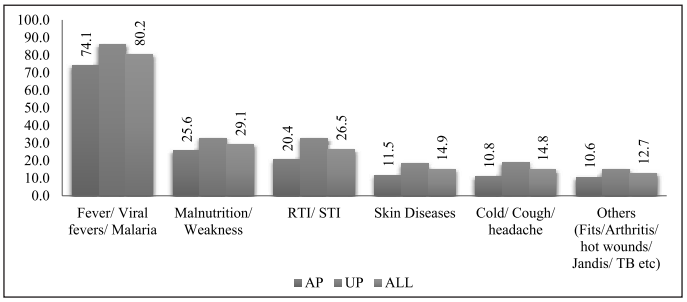
Characteristics	*AP (N=228)*	*UP (N=245)*	*All (N=473)*
Availability and accessibility of Health facilities			
Sub Centre (SC)	69.0	55.0	62.0
	(3-5 KMs)	(5-8 KMs)	(4-8 KMs)
PHC	69.0	55.0	62.0
	(3-5 KMs)	(5-8 KMs)	(4-8 KMs)
Private Hospital/ Clinic (Within 20 KMs)	65.4	52.3	58.9
District Hospital (Within 50 KMs)	51.8	32.8	42.3
Medical Shop (Within 5 KMs)	51.5	33.4	42.5
Community Health Centre (CHC) / Area Hospital (Within 25 KMs)	43.6	18.6	31.1
Traditional Healer/RMP/PMP (Within 5 KMs)	9.7	25.4	17.6

Note: Multiple Answers allowed

Disease Prevalence

Figure 1 reveals a health service use pattern by the afflicted vis-à-vis his/her disease, where the major diseases commonly affecting the people in the study area are reported. An overwhelming (80.2 per cent) portion of the total number of respondents reported that the common diseases prevailing in the study area were fever, viral fever, and malaria, but the diseases reported were higher in UP (86.2 per cent) compared to that in AP (74.1 per cent). The other major illnesses reported by the respondents were Malnutrition/ weakness (29.1 per cent), Reproductive Tract Infection/Sexually Transmitted Infection (RTI/STI) (26.5 per cent), Skin diseases (14.9 per cent), Cold/ Cough/ Headache (14.8 per cent) and others, such as Fits/ Arthritis/ Hot wounds/ Jaundice/ TB etc. (12.7 per cent). The per centage of respondents reporting illness was higher in UP as compared to that in AP. The findings reveal that the prevalence of major diseases as reported by the respondents was higher in the state of UP as compared to that in AP.

Figure 1
Percent distribution of respondents by the major diseases commonly affecting the people in the study area



Note: Multiple Answers allowed

Health Problems experienced by the Respondents and their Family members

Table 3 draws the patterns of health problems experienced vis-à-vis the number of persons experiencing. Among the study respondents, it was revealed that nearly half (49.7 per cent) – counting they and their family members – have suffered from fever, viral fever, malaria, where it was higher in UP (55.8 per cent) compared to that in AP (43.5 per cent) . The other major illnesses affecting the people are Malnutrition/ weakness (18.5 per cent), Cold/ Cough/ Headache (17.7 per cent), RTI/ STI (17.3 per cent), Skin diseases (14.9 per cent), and others, such as, Fits/ Arthritis/ Hot wounds/ Jaundice/ TB etc (8.7 per cent). All the above discussed illnesses, experienced by respondents and their family members, were reported by a higher margin in UP compared to that in AP. It shows the significant association between the availability and accessibility of health facilities with the illness experienced by the people, as the low accessibility of health facilities in UP caused high disease prevalence, while better accessibility of health facilities in AP led to low disease prevalence.

Table 3
Percent distribution of respondents, plus family members, by health problems suffered in the past one year

Characteristics	*AP (N=228)*	*UP (N=245)*	*All (N=473)*
Type of health problems experienced			
Fever/ Viral fevers/ Malaria	43.5	55.8	49.7
Malnutrition/ Weakness	14.3	22.6	18.5
Cold/ Cough/ headache/ Body Pains	15.6	19.8	17.7
RTI/ STI	14.1	20.4	17.3
Skin Diseases	11.5	18.2	14.9
Others (Fits/Arthritis/ hot wounds/ Jaundice/ TB etc)	4.8	12.5	8.7

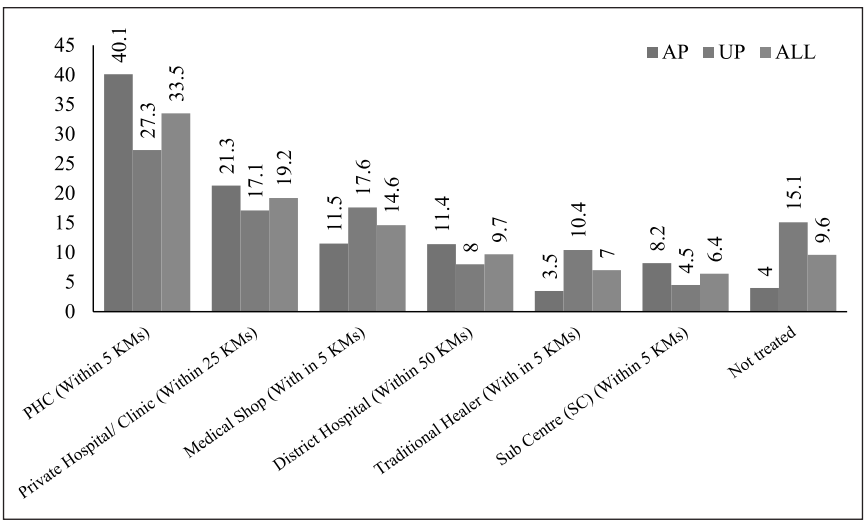
Note: Multiple Answers allowed

Source of Treatment for Health Problems

Figure 2 draws a service use pattern of numbers of the afflicted vis-à-vis their health provisions which reveals that overall, one third (33.5 per cent) of the respondents had visited PHC for treatment, and it was higher in AP (40.1 per cent) compared to that in UP (27.3 per cent). The other sources of treatment reported were private hospital/ clinic (19.2 per cent), followed by medical shop (14.6 per cent), District Hospital (9.7 per cent) and Sub Centre's (6.4 per cent). It is surprising to note that, in total, 7 per cent of respondents had visited Traditional Healers for treatment which was available within 5 KMs, and this per centage was higher in UP (10.4 per cent) compared to that in AP (3.5 per cent). Among the respondents affected by illness, 9.6 per cent did not consult any place for their health problems, and again this was comparatively

higher in UP (15.1 per cent) than that in AP (4 per cent). This shows accessibility of most of the health facilities, including public and private health facilities, are low in UP compared with that in AP. This may be the reason that significant proportion of people are approaching Traditional Healers, RMPs and PMPs for treatment rather than be treated anywhere else.

Figure 2
Percent distribution of respondents taken treatment for health problems by source



Source: Primary survey, 2015

Table 2 shows a service use pattern of numbers of respondents' satisfied vis-à-vis the different satisfaction levels reported on family planning services provided in the health facility. Nearly three fifths of the respondents (59.2 per cent) were reported as having stated 'Good' which was higher in UP (64.4 per cent) than that in AP (54.8 per cent), followed by 'Very Good' (36.3 per cent), which was higher in AP (40.4 per cent) than that in UP (31.5 per cent), and the rest (4.5 per cent) were reported as having stated 'Poor' which was same in both the states.

Table 4
Percent distribution of respondents by satisfaction on Family Planning services given at health facility

Characteristics	*AP (N=77)*	*UP (N=67)*	*All (N=144)*
Good	54.8	64.4	59.2
Very Good	40.4	31.5	36.3
Poor	4.8	4.1	4.5

Source: Primary survey, 2015

Causes for Differentials of Health Care Utilization in AP and UP

i. PHC Staff Behaviour and Infrastructure

Overall, four fifths (79.7 per cent) of the respondents expressed the view that the PHC timing was suitable to visit it for treatment, and this was better in AP (85.1 per cent) compared to that in UP (74.7 per cent). Regarding the time to reach the PHC, most of the respondents (70.8 per cent) said that they took 'less than one hour' to reach the PHC, which was a little higher in AP (73.7 per cent), compared to that in UP (68.2 per cent). Lastly, approximately a quarter (27.7 per cent) of them reported that it took 'one to two hours' to reach the PHC, which was a little higher in UP (30.2 per cent) compared to that in AP (25 per cent).

Regarding the satisfaction levels of the respondents on overall services provided by the PHC, approximately more than two thirds (69.3 per cent) expressed the view that they were 'satisfied' which was better in AP (76.8 per cent) compared to that in UP (62.4 per cent). Another 30.7 per cent of the respondents expressed the view that they were 'not satisfied' by the services of PHC, which was higher in UP (37.6 per cent) compared to that in AP (23.2 per cent).

Transportation facility to the health institutions has an impact on the utilization of health services. The study shows that nearly two thirds (63.2 per cent) of the respondents were travelling by 'Bus' to reach the PHC, which was higher in UP (70.2 per cent) compared with that in AP (55.7 per cent). In the rural setup, autos are the most accessible transportation facility these days. In the present study, 27.9 per cent of the respondents were using 'auto' to reach the PHCs, which was higher in AP (37.7 per cent) compared with that in UP (18.8 per cent).It is important to note that a considerable per cent of respondents (6.8 per cent) were reaching the PHC by 'walk/ on foot' during their pregnancy and lactating days, which was a little higher in UP (8.2 per cent) compared to that in AP (5.3 per cent).

Patient waiting time is an important indicator to assess the respondents' treatment seeking behavior. The study reveals that the majority (57.5 per cent) of the respondents reported that they were waiting 'about an hour' in PHCs to get treated, which was higher in AP (70.6 per cent) compared to that in UP (45.3 per cent). A significant per cent (16.9 per cent) of the respondents expressed the view that they 'had to wait for hours' to get the treatment in PHCs, which was higher in UP (24.9 per cent) compared to that in AP (8.3 per cent). Another 13.5 per cent of the respondents have expressed the view that they 'did not wait much' in PHCs to get the treatment, which was better in AP (17.5 per cent) compared to that in UP (9.8 per cent). It is surprising to note that on an average, 12.1 per cent of the respondents 'did not receive the services' in PHC due to long waiting time, which was higher in UP (20 per cent) compared to that in AP (3.6 per cent).

The study also focused mainly on the behavior of the PHC staff, which includes behaviour of the Medical Officer (both Male and Female), behaviour of Auxiliary Nurse Midwife (ANM) or Staff Nurse, behaviour of Lab Technician, behaviour of Pharmacist and behaviour of the Counsellor. Nearly half (44.5 per cent) of the respondents opined 'poor' on the PHC staff behaviour, which was higher in UP (53.6 per cent) than that in AP (35.7 per cent); 54.2 per cent opinioned 'good' which was higher in AP (62.7 per cent) than that in UP (46.5 per cent).An opinion of 'excellent' was meager (2.3 per cent) which was a little better in AP (4.6 per cent) than in UP (1.9 per cent).

Opinion on the behaviour of Lab Technician at PHC reveals that, overall, a majority (56.2 per cent) of the respondents opined 'good' and the rest (43.8 per cent) reported 'poor'. The state-wise difference shows that the per centage of respondents who opined 'good' was higher in AP (70.6 per cent) compared to that in UP (42.9 per cent).

Opinion on behaviour of Pharmacist at PHC shows that, overall, the majority (58.8 per cent) of the respondents opined 'good' and the rest (41.2 per cent) have reported 'poor'. The state-wise difference shows that the per cent of respondents opining 'good' were higher in AP (72.4 per cent) compared to that in UP (46.1 per cent).

Regarding the behaviour of Counsellor at PHC, overall, a little more than half (52.5 per cent) of the respondents opined 'good' and the rest (47.5 per cent) have reported 'poor'. The state-wise difference shows that the per cent of respondents who opined 'good' was higher in AP (67.5 per cent) as compared to that in UP (37.4 per cent).

Availability of medical equipment, like X-ray and Scan machines, used for diagnosis in the PHC were also assessed in the study. The results show that, overall, most of the respondents (44.8 per cent) have been referred to facilities outside PHC/ Private sources for X-ray and Scan because of non-availability of the equipment in the PHC. This was high in UP (54.2 per cent) compared to that in AP (35.5 per cent). One third of the respondents have undergone x-ray and scan in the PHC itself, which was better in AP (46.5 per cent) compared to that in UP (21.8 per cent). A considerable per cent (21 per cent) of the respondents have been referred to other government hospitals like a General Hospital (GH) in the district headquarters, Maternity Hospitals and Community Health Centers (CHC) etc, which was higher in UP (24 per cent) compared to that in AP (18 per cent).

Women's involvement in SHGs led to their empowerment which had a greater impact on the health awareness and increase in the treatment seeking tendencies for health and family planning services in AP.

In order to assess the overall opinion among the respondents on PHC staff behavior, an index was developed based on the 8 indicators i.e, Opinion on treatment/ information on health aspects by Doctor, Timing given by Doctor for the patient

checkup, behavior of Medical Officer (both Male &Female), behavior of ANM or Staff Nurse, behavior of Lab Technician, behavior of Pharmacist and Counselor. The opinion of the respondents was ranked as 'Excellent, Good & Poor' using the three point scale. The total score ranges between 1 to 24; then the scores were given for PHC staff behaviour as Poor (1 to 8), Good (9 to 16) and Excellent (17 to 24).

Majority (56 per cent) of respondents scored a 'Good' on the index, which was comparatively better in AP (64.5 per cent) than that in UP (48.2 per cent). A significant per cent (42.7 per cent) of the respondents scored 'Poor' on the index, which was higher in UP (51.8 per cent) compared to that in AP (32.9 per cent).

V. SUGGESTIONS

- The present study found that the organizational structure at the state level to Sub Centre level is weak in UP as compared to that in AP. There is an urgent need to restructure the organizational setup of health and family planning setup in Uttar Pradesh at State, District and PHC/ Block level to ensure an effective health system.
- The findings of the present study show that financial constraints to meet the cost of medicines, and travel time and cost, inhibit the eligible couple to seek the service facilities on the health and family planning from PHCs. Hence necessary budgetary allowances should be allotted to provide essential medicines, and diagnostics, free of cost, at PHCs to all the eligible couples. At the same time, referral linkages and patient transportation services should be improved to promote utilization of Health and Family Planning Services.
- The findings of the present study show that women's involvement in SHGs leads to their empowerment which has greater impact on the health awareness and increase in the treatment seeking behavior for health and family planning services in AP. Hence, all eligible women need to be encouraged to enroll in SHGs for empowerment of women in the state of UP, which will have a tremendous influence on health and family welfare utilization by the people.
- Attitude is the foundation of personality as it shapes behaviour and character. Hence, regardless of the differences in levels of education, a specialized soft skills training program needs to be designed and conducted for all the frontline health functionaries, supervisors, and related staff.
- The problems of distance and lack of transport can be overcome by assigning health workers, trained in midwifery, to village health posts by upgrading local health facilities and by organizing emergency transport systems. Since the timing of PHCs are not suitable for the couples, all the PHCs should cater all cases, especially, gynecology cases round the clock or in a 24x7 working module.

– Functioning of PHCs, including performance of Doctors and Paramedical staff, need to be improved by regularly monitoring the health personnel to increase the utilization of health facilities by the people. Every Primary Health Centre should enjoy the three basic requisites of lighting, space and ventilation. Hence, specific infrastructural guidelines should be formulated and disseminated to ensure sound implementation of the same.

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IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

Analysis of Sanitation and Health in South Asian Countries: A Special Reference to India

Parupally Anjaneyulu*

Globally 2.4 billion people live without access to improved sanitation of which 1 billion people practice open defecation (WHO-2015). Sanitation was one of the most off-track Millennium Development Goals (MDG). Only 68% of the world's population has access to improved sanitation (WHO-2015). Sanitation lies at the root of many other development challenges, as poor sanitation impacts public health, education and the environment. Based on the Global WASH fact sheet (2012), The Maldives and Sri Lanka have better sanitation facilities than India and Afghanistan which have the least coverage. South Asian Conference on Sanitation (SACOSAN) is working on the improving the sanitation facilities in the SAARC. Among Indian states, North Eastern states have better facilities compared to other regions (Census-2011).After launching the Swachh Bharat Mission(SBM) programme sanitation growth is observed across the country. The paper is based on secondary data and focuses mainly on sanitation condition in South Asian countries, India and states. GIS Techniques are used to prepare the maps and analyse the data and is presented in the paper.

Keywords: *Sanitation, Swachh Bharat Mission, Nirmal Bharat Abhiyan, GIS*

I. INTRODUCTION

Sanitation includes environmental sanitation which is largely viewed as "the control of all those factors in man's physical environment which exercise a harmful effect on his physical environment, health, improving poverty, enhancing quality of life and raising productivity- all of which are essential for sustainable development" (WHO 1992).The concept of sanitation was therefore expanded to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and wastewater disposal. Globally, Sanitation word is used for safe disposal of human excreta (used by UNICEF-WHO Joint Monitoring Program). As per the JMP-2014, 2.5 billion people lack access to improved sanitation and 1 billion people practice open defecation and out of 10 people, 9 people are still going out for defecation in rural areas. 2.5 billion people lack basic sanitation in the world and out of 7 people, 1 person is practising open defecation in the world. According to the WASH – GLAAS^2014 facts, 67% of

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^ WASH – GLAAS* The Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) is a UN-Water initiative implemented by WHO.

the countries recognize sanitation as a human right by law, 80% of countries report insufficient financing as the main cause for poor sanitation facility in the country.

II. OBJECTIVES AND METHODOLOGY

1. To study the status of Sanitation facilities across the world and specifically South Asian Countries (SAARC).
2. To study the sanitation conditions in India. (2001 – 2011).
3. To analyse the status of sanitation among Indian states.

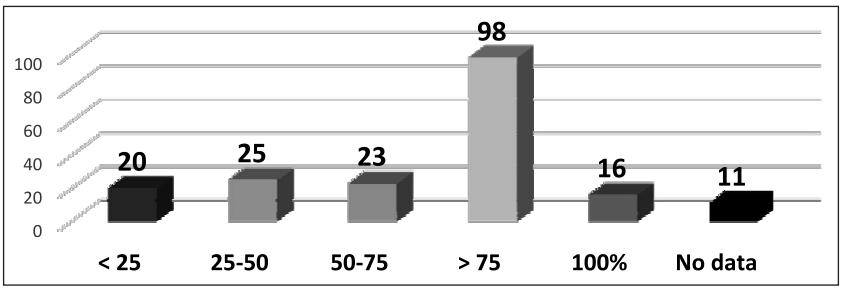
GIS Techniques

This paper has utilized the information and decision support systems to enhance its effectiveness in the analysis of data. GIS techniques are used to prepare maps for this paper. The maps are compared and further analysed to understand the categories of the sanitation facilities across the state and country. From the analysis of such data, various conclusions and recommendations are incorporated in this study.

III. WORLD SANITATION SCENARIO

As per the Global Health Observatory data repository 2015, Australia, Austria, Malta, Republic of Korea and Uzbekistan tops in the chart of sanitation facilities. These countries are now open defecation free with 100% latrine facilities in the rural and urban households having. Niger ranks the lowest in the world in the availability of sanitation facilities with 10.9%, followed by Togo (11.6) and Madagascar (12). Out of 193 (UNO) countries, 14 countries are below 20% of the sanitation facilities.

Figure 1
Worldwide Countries % of Sanitation coverage-2015



Source: http://apps.who.int/gho/data/node.main.46

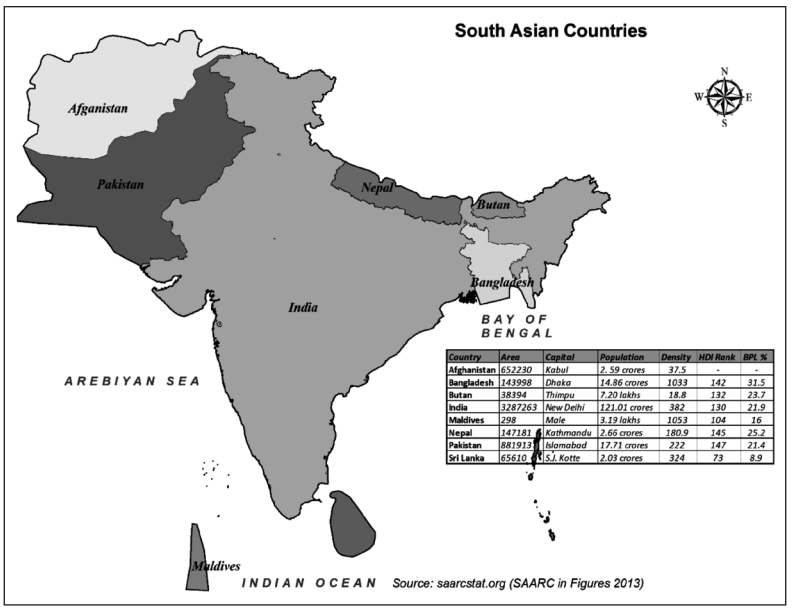
20 countries have below 25% of sanitation coverage, and 25 countries have 25 to 50% of the sanitation facilities. Surprisingly, out of the 193 countries, 98 countries have over 75% sanitation facilities. Some of the countries like Peru, China, Myanmar, Colombia, Brazil, Mexico, Iraq, Turkey, Argentina, Poland, UAE, Norway, France,

Bahrain, United Kingdom of Great Britain and Northern Ireland, Belgium, Italy and Denmark have 75 to 99.6% sanitation facilities. Countries like Spain (99.9), Switzerland (99.9), Canada (99.8), Portugal (99.7), and Denmark (99.6) have the best sanitation facilities in the world. In Spain, rural areas have 100% sanitation facilities whereas the urban areas have 99.8% sanitation facilities. Out of the 193 countries, data for 11 countries is not available.

South Asian Countries (SAARC)

South Asian Countries like India, Pakistan, Bangladesh, Sri Lanka, Nepal and Bhutan are sub continental countries. Afghanistan and the Maldives also come under the south Asian countries.

Figure 2
South Asian Countries



Country	Area	Capital	Population	Density	HDI Rank	BPL %
Afghanistan	652230	Kabul	2. 59 crores	37.5	-	-
Bangladesh	143998	Dhaka	14.86 crores	1033	142	31.5
Butan	38394	Thimpu	7.20 lakhs	18.8	132	23.7
India	3287263	New Delhi	121.01 crores	382	130	21.9
Maldives	298	Male	3.19 lakhs	1053	104	16
Nepal	147181	Kathmandu	2.66 crores	180.9	145	25.2
Pakistan	881913	Islamabad	17.71 crores	222	147	21.4
Sri Lanka	65610	S.J. Kotte	2.03 crores	324	73	8.9

In 1985, The South Asian Association for Regional Cooperation (SAARC) was established for improving (developing) the economic cooperation among the eight countries. SAARC started with 7 countries in 1985 and added Afghanistan in 2006. South Asia covered 5.1 million sq.km area. It covered 11.5% of the Asian continent and 3.4% of the world land surface. The population of south Asia is 1.749 billion and it has the highest Hindu and Muslim population in the world. Overall, it has 24% of the world population share. Among SAARC countries, India is the largest country in terms of area and population followed by Pakistan. Maldives has the smallest area and lowest population. The figure 2 reveals that Maldives has the highest density of 1053

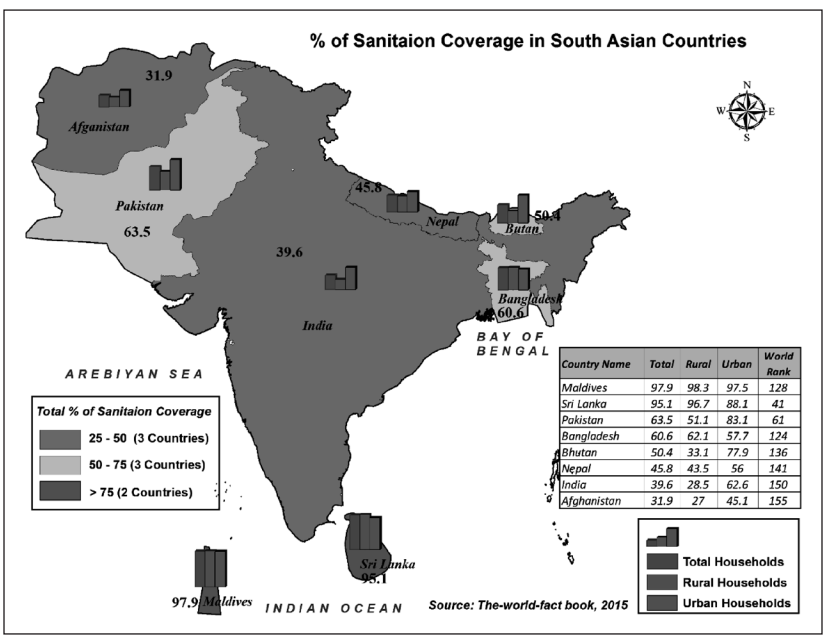
followed by Bangladesh (1033). India has 382 persons per sq. km and Bhutan has the lowest density of 18.8 persons per sq. km. SAARC countries are performing badly in terms of the HDI ranking in the world. Sri Lanka (73) is the only SAARC country who could able to place among top 100 countries.

South Asian Countries Sanitation Scenario (SACOSAN)

South Asian Countries like India, Pakistan, Bangladesh, Sri Lanka, Nepal and Bhutan, Afghanistan and Maldives are facing a lot of problems due to the lack of sanitation facilities. These organised South Asian Conference on Sanitation (SACOSAN).[1] It is a government led biennial convention held on a rotational basis in each SAARC country; it provides a platform for interaction on sanitation. SACOSANs are intended to develop a regional agenda on sanitation, enable learning from the past experiences, and setting actions for the future. The objectives of such conferences are to accelerate the progress in sanitation and hygiene promotion in South Asia and to enhance the quality of people's life.

Figure 3

Percentage and Ranks of Sanitation facilities in SAARC



Country Name	Total	Rural	Urban	World Rank
Maldives	97.9	98.3	97.5	128
Sri Lanka	95.1	96.7	88.1	41
Pakistan	63.5	51.1	83.1	61
Bangladesh	60.6	62.1	57.7	124
Bhutan	50.4	33.1	77.9	136
Nepal	45.8	43.5	56	141
India	39.6	28.5	62.6	150
Afghanistan	31.9	27	45.1	155

As per the Global Health Observatory data repository 2015, Maldives (97.9) have the highest sanitation coverage in the South Asian Countries followed by Sri Lanka (95.1). Only the two countries have over90% sanitation facilities. The data shows that in Sri Lanka rural areas (96.7) have better facilities than urban areas (88.1).

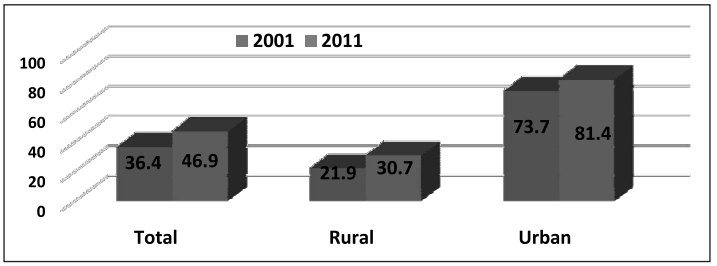
Two countries Pakistan (63.5) and Bangladesh (60.6) have reported more than 60% sanitation facilities. Bhutan (50.4), Nepal (45.8), India (39.6) and Afghanistan (31.9) have less than 50% sanitation facilities. Afghanistan comes at the bottom in providing the sanitation facilities in South Asian countries.

India is the largest among the SAARC nation. It has 39.6% sanitation facilities in the country. Pakistan urban (83.1) area has some good facilities compared to the rural areas (51.1). Except Afghanistan, all countries of the South Asia have performed well than India. Figure 3 shows the world ranks in Sanitation facilities. As per the data, Sri Lanka (41) and Pakistan (61) have better ranks in the world ranking. India and Afghanistan have poor ranks with 150 and 155 respectively.

IV. CURRENT SCENARIO IN INDIA

Some of the urban areas have good facilities but in the rural areas people are still practicing open defecation. Since the 1980's, Indian government is trying to eradicate open defecation and has made a lot of efforts with the help of finding's from various world organisations but still it has not achieved the100% sanitation facilities.

Figure 4
Area wise % of Households having Latrine facilities in India



Source: Census of India-2011

Government of India launched the first Central Rural Sanitation Programme (CRSP) in 1986 with the main objective of improving quality of life of rural people and also to provide privacy and dignity to women. After CRSP, another programme named Total Sanitation Campaign (TSC) was started. The main objective of the TSC is to eradicate open defecation in rural areas and to give subsidy to construct toilet that is under poor category. TSC gives support to schools and Anganwadis also.TSC gives strong emphasis on Information, Education and Communication (IEC). To give a fillip to the TSC, Govt. of India also launched Nirmal Gram Puraskar (NGP) that sought to recognise the achievements and efforts made in ensuring full sanitation coverage. Encouraged by the success of NGP programme, the government renamed TSC as 'Nirmal Bharat Abhiyan' (NBA). The objective is to accelerate the sanitation coverage in the rural areas.

The Prime Minister of India launched the Swachh Bharat Mission on 2nd October, 2014 which aims to achieve Swachh Bharat by 2019. The main objective of this programme is to remove the bottlenecks that were hindering the progress during the previous programs such as Total Sanitation Campaign and Nirmal Bharat Abhiyan and focus on critical issues affecting outcomes. State and Central Governments are aiming to construct latrines for every household in the country. After launching the Swachh Bharat Mission (Gramin), within one year nearly 95 lakh toilets have been constructed in rural areas. It is almost 46% of the toilets constructed since the launching of the SBM (Gramin). In spite of the best efforts of the Government of India and respective State Governments to improve the sanitation conditions in the country, the toilet coverage in rural India is only 30.7% which shows that around 70% of the rural people is still practicing open defecation in the country.

About 63% and 53%of households in India do not have sanitation facilities within the household premises during 2001 and 2011 respectively. This means 36.4% and 46.9% of the households having latrine facilities within the household's premises. In the rural area, 30.7% and 21.9% households have the latrine facilities 2001 and 2011 period. Urban areas covered more latrine facilities than the rural areas. Urban India households have 81.4% (2011) and 73.7% (2001) latrine facilities within the household premises. As per the 69th NSSO Survey, during the July 2012 to December 2012, 59.4% of the country rural households are defecating in the open. Jharkhand and Odisha households are practicing open defecation at 90.5% and 81.3% respectively. But as per the Global Health Observatory data repository 2015, data shows that sanitation facilities have increased in India in terms of total rural and urban areas. As per this data, 7.3% sanitation facilities have decreased from the 2011 Census to 2015 in India. Mainly rural areas sanitation facilities have decreased from 30.7% to 28.5%. Urban areas data is also showing the declining rate. The main reason is the increasing households and population of the country.

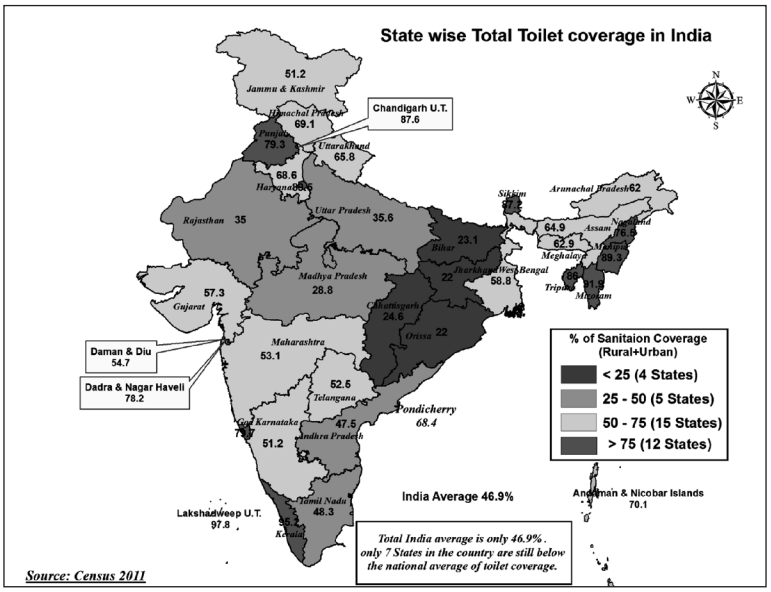
State wise Total Sanitation status

India has 29 States[2] and 7 Union Territories. Sanitation facilities are very poor in some states where illiteracy, rural population and forest area are more. The country has an average coverage of sanitation 46.9%. Seven states have below country average; they are Jharkhand, Odisha, Bihar, Chhattisgarh, Madhya Pradesh, Rajasthan and Utter Pradesh.

Union territories have good sanitation facilities compared to all the states of the country. As per the 2011 Census data figure 5 has been prepared. It shows the state-wise sanitation facilities in India. According to this map, out of 36 administrative province/states, only 4 states have below 25% coverage in sanitation facilities, for

example Jharkhand (22), Odisha (22), Bihar (23.1) and Chhattisgarh (24.6). Madhya Pradesh (28.8), Rajasthan (35), Utter Pradesh (35.6), Andhra Pradesh (47.5), and Tamil Nadu (48.3) have 25-50% coverage in sanitation facilities. Out of 36 administrative province/states, 15 states have 50 to 75% of the sanitation facilities.

Figure 5
State wise toilet coverage in India



Three states from north-east, Assam (64.9), Meghalaya (62.9) and Arunachal Pradesh (62) have above 60% of the facilities and northern states like Himachal Pradesh (69.1), Haryana (68.6), Uttarakhand (65.8), and Jammu and Kashmir (51.2) also have good facilities compared to the southern and the western states. The western states of the country like Gujarat (57.3) and Maharashtra (53.1), and southern states such as Telangana (52.5) and Karnataka (51.2) also have good facilities.

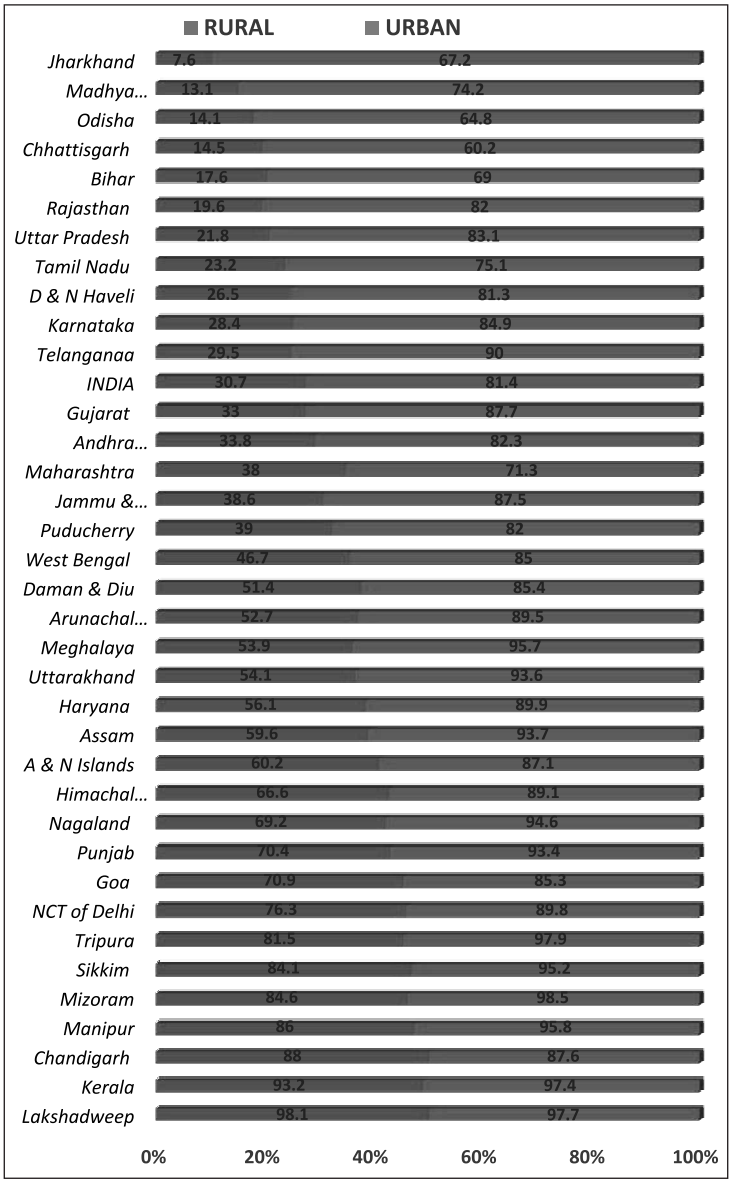
Total 12 states have more than 75% of the sanitation facilities in the country. Kerala state has the highest sanitation coverage with 95.2%, followed by the Mizoram (91.9). Delhi, Manipur, Sikkim and Tripura have 70 to 80% of the facilities. Four north eastern states have above 75% of the sanitation coverage; these states are covered with hills and low population due to which the coverage is more. Sikkim (87.2) and Punjab (79.3) also have better sanitation coverage in the country.

State wise Urban Sanitation

Urban India has better sanitation facilities compared to the rural India. As per the Census 2001, 26.3% households were not having sanitation facilities which decreased

to 18.6%in 2011. InI ndia, out of the 7.88 crores urban households, 82.4% households have sanitation facilities. In all the states, urban areas have more than 60% sanitation coverage. Figure6 is developed based on 2011 Census data. The figure shows rural and urban areas sanitation facilities.

Figure 6
State wise Sanitation coverage in Rural and Urban India



Source: Census-2011

Among the states, the sanitation facilities are lowest in Chhattisgarh with 60.2%. Out of 36 administrative province/states, 6 states have 50 to 75% of the sanitation facilities; they are Orissa, Jharkhand, Bihar, Maharashtra, Madhya Pradesh and Chhattisgarh. All other 30 states(including with Union territories) have above 75% of sanitation facilities. In 11 states, households have above 90% of the sanitation facilities. Mizoram has maximum coverage in sanitation facilities with 98.5% followed by Tripura (97.9), Kerala (97.4), Manipur (95.8), Meghalaya (95.7), Sikkim (95.2), Nagaland (94.6), Assam (93.7), Uttarakhand (93.6), Punjab (93.4) and Telangana (90). Out of 11 states, 6 states are from North Eastern area of the country. Among Indian states, 12 states have 80 to 90% of the sanitation coverage. This includes Haryana, Arunachal Pradesh, Himachal Pradesh, Gujarat, Jammu & Kashmir, Goa, West Bengal, Karnataka, Uttar Pradesh, Andhra Pradesh and Rajasthan. Tamil Nadu also has above 75% of the facilities.

State-wise Rural Sanitation

Comparatively, Rural India has poor sanitation facilities than in urban India. As per the 2011 Census, rural India has 16.78 crores households out of which 69.3% household doesn't have sanitation facility within the household premises. The ministry emphasized on the need for innovative thinking to stop the old practice of open defecation and the ministry report saying that many states like Chhattisgarh, Madhya Pradesh, Arunachal Pradesh, Karnataka, Sikkim, Manipur, and Meghalaya have been at the forefront of the mission for construction toilets of rural areas and they were likely to achieve targets in the next 1-2 years. Changing age-old attitudes toward open defecation is critical in attaining 'Swachh Bharat' goals and the sanitation. The target of the first year is 60-65 lakh but total 95 lakhs toilets have been constructed in the rural areas under the 'Swachh Bharat Mission'.

As per 2011 Census, out of 36 states, 14 states in the country are still below the national average (30.7%) of toilet coverage. Out of 29 states, only 5 states like Kerala (88%), Manipur (86%), Mizoram (84.6%), Sikkim (84.1%) and Tripura (81.5%) having above 75% latrine facilities. However, Union territories like Lakshadweep, Chandigarh (88%) and Delhi (76.3%) states are having more than 75% latrine facilities. Total 11 states are falling 50-75% range. In Goa, 71% rural households have the latrine facilities. Punjab also maintains the same (70.4%).Other states like Nagaland (69.2%), Himachal Pradesh (66.6%) and Andaman (60.2%) have above 60% latrine facilities. Assam, Haryana, Uttarakhand, Meghalaya, Arunachal Pradesh and Daman & Diu have 50 to 60% latrine facilities. Total 17 states have below 50% of the sanitation facilities in the country. West Bengal only has 46.7% latrine facility and other states such as, Jammu & Kashmir, Maharashtra, Gujarat, Andhra Pradesh, and Karnataka have 40-50% facilities.

Maharashtra (38%), Gujarat (33%) and Andhra Pradesh (32.2%) are well advanced in all other indicators but availability of latrine facilities is very poor and states have below the country average. The lowest coverage states like Jharkhand (7.6), Madhya Pradesh (13.1%), Odisha (14.1%), Chhattisgarh (14.5%), Bihar (17.6%), Rajasthan (19.6%), Uttar Pradesh (21.8%) and Tamil Nadu (23.2%) states have below 25% of the latrine facilities within the household premises.

Status of SBM Urban & Gramin (up to October, 2017)

Swachh Bharat Mission (SBM) was earlier called Swachh Bharat Abhiyan (SBA), it was also called Clean India Mission. It was started on 2 October 2014 at Rajghat, New Delhi by the current Prime Minister Narendra Modi. It is a campaign in India that aims to clean up all the streets, roads and infrastructure of cities and rural areas. The objectives of Swachh Bharat include eliminating open defecation through the construction of household-owned and community-owned toilets and establishing an accountable mechanism of monitoring toilet use. Run by the Government of India, the mission aims to achieve an Open-Defecation Free (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi by constructing 12 million toilets in rural India at a projected cost of 1.96 lakh crore (US$30 billion).The mission contains two sub-missions: Swachh Bharat Abhiyan ("Gramin" or rural), which operates under the Ministry of Drinking Water and Sanitation; and Swachh Bharat Abhiyan (Urban), which operates under the Ministry of Housing and Urban Affairs.

As per the Swachh Bharat Mission (Gramin), across the country total 5.19 crores toilets have been built since 2nd October, 2014. 2.66 lakhs villages have been declared as Open Defecation Free (ODF) and 225 districts have 100% ODF. Among 36 states, 7 states are declared ODF. Himachal Pradesh, Haryana, Gujarat, Kerala and Sikkim have reached 100% individual households latrine (IHHL) coverage while Bihar and Jammu & Kashmir are at the bottom level with < 40% coverage. Jammu& Kashmir, Odisha and Bihar are contributed < 30% (2014) of IHHL coverage while as of now (2017) they have reached 30% to 60% range. After launching the SBM, every state has concentrated on the construction of the IHHL. Due to this reason, India reached from 38.7% to 70.4% coverage of IHHL and the country registered 27.3% of annual growth rate. As per the SBM (Urban), across all the cities, 40.3 lakhs individual toilets have been constructed, 2.23 lakhs community and Public toilets are built. Total 1325 cities have been declared ODF. The urban areas of Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh, Jharkhand and Andhra Pradesh states are certified as 100% ODF.

Causes of the Backwardness

– More density of population and low infrastructure facilities cause low sanitation coverage

- Lacking sufficient water also influence the sanitation facilities.
- States having more rural population are the most backward states in the country. Main reason is illiteracy and more rural and tribal population.
- Forest is one of the causes of the open defecation. Availability of open space is also a reason.
- Some of the states having more tribal population and these people understanding levels about the sanitation situation is very poor.
- Illiteracy is the one of the main causes of the backwardness and the progress of the latrine facilities.
- Lack of funds in all states leads to inadequate infrastructure
- At some places people are not using community toilets because they are unsafe for girls and women. Some issues of rape and murder were reported from Uttar Pradesh in May 2014.

V. SUMMARY AND RECOMMENDATIONS

Out of the eight South Asian countries like Maldives, Sri Lanka, Pakistan, Bangladesh and Bhutan countries have above 50% of sanitation facilities. Other Nepal, India and Afghanistan countries have very low sanitation coverage. Maldives and Sri Lankan countries have top position. Afghanistan has the lowest position. Only Sri Lanka and Pakistan have below 100 ranks in the world sanitation ranking. SACOSAN is working on the sanitation to change the situation in the SAARC. It intended to develop a regional agenda on sanitation, enabling learning from the past experiences and setting actions for the future in the 6th conference which was held in Dhaka, January 2016 in Bangladesh.

India has just 46.9% sanitation facilities. Recent studies show that around 6 crore people in the country still practice open defection due to the lack of toilet facility. Water supply and sanitation is a State responsibility under the Indian Constitution. The government developed lots of programmes to eradicate open defecation in the country but lack of proper implementation has made these programmes suffer. After launching Swachh Bharat Mission, a lot of changes have happened across the country. It may increase the sanitation coverage in the households. Overall in the country, more sanitation facilities are observed in the North Eastern states. Jharkhand and Odisha states have lowest coverage in the country. In all the states, urban areas have good sanitation facilities; compared to the national average, only eight states have below country average. Whereas in the rural India, northern states have good latrine facilities compared to the southern, western and eastern states of the country. Union Territories also have better facilities within the household premises. India's capital (New Delhi)

and surrounding states rural households have better conditions. New born state Telangana has below the country average sanitation coverage

Lowest coverage states are required to not just build the lavatories but also change the open defecation habits. In all the states, rural people go for open defecation. There is a need to increase the public campaigns in schools and media to explain the health and economic benefits of using toilets and of better hygiene.

Notes

1. SACOSAN* South Asian Conference on Sanitation (SACOSAN), a government led biennial convention held on a rotational basis in each SAARC country provides a platform for interaction on sanitation. The SACOSAN process is instrumental to generate political wills towards better sanitation in the region.
2. State means: According to Article 12 of the Constitution of India, the term 'State' can be used to denote the union and state governments, the Parliament and state legislatures and all local or other authorities within the territory of India or under the control of the Indian government.

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IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

Climate Variations in Coastal Andhra: Their Causes, Impacts and Solutions for Fisher's Livelihoods

S. Surapa Raju*

Climate variability is a serious concern for fishermen in near term and long term. For instance, sea erosion has taken its toll on AP shoreline over the last 30 years as more old fishermen, than young, say that they have observed a greater extent of the shoreline eat into the villagefront. This has made them go out to deep sea with expenses in fuel and deck hands, though without the assurance of bigger catches, there is a falling income potential, loss of productivity and deteriorating livelihoods, like apprehensions about migrating, or giving up traditional crafts for mechanical labour. This study has made a multi-stage stratified sampling in 450 households in nine areas divided into three coastal zones in two districts of Godavari and Krishna in coastal Andhra Pradesh. The study asks into the effects of sea erosion, wind movements, cyclones, heat waves and currents on livelihoods across three generations of fishermen; while effects of changes in assets – natural (sea), physical (craft, nets), financial, social and human (health issues) – with two case studies, account for the influence of climate variations on livelihoods of fishermen and women. Recommending a need to create awareness and consciousness among fishermen on how to deal with adversities of climate variations, the study advocates for the government to play an active role in encouraging fishing and popularizing the trade with the latest technology.

Keywords: *Climate variations, Fishers, Coastal Andhra, Livelihoods*

I. INTRODUCTION

Climate change is often used synonymously to mean climate variability and, yet, the two are different. Climate change refers to the long-term significant movement – either up or down –in the "average weather" that a given region experiences, while climate variability refers to disturbances in the mean state and other statistics, both known and unknown, of climate on all temporal and spatial scales beyond that of individual weather events. While variability in climate was regarded as part of the usual internal processes within the climate system (internal variability) still, it's only over the past few decades that anthropogenic external forcing (external variability) is seen as

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My sincere thanks are due to Prof. Kalpana Kannabiran, Regional Director and Council for Social Development, Hyderabad for her constant encouragement and cooperation for preparing this research paper.

having compounded this variability in climate**.** Taken together with climate change, that referstoany modification in climate over time due to natural or anthropogenic reasons (IPCC: 2007a),climate variations create severe challenges for the livelihoods of the people, in general, and for the fisher communities, in particular.

Climate Variations and Fish Production – An Overview

Fish behaviour and weather conditions are interlinked, and fisher folk may discern the impact of weather on count and types of fish they catch as fish behave in a wide range of ways in response to effects of changes in climate (Bimal Mohanty: 2010). Foremost, and in particular, climate change causes temperatures to rise in the area warming sea waters, and having both direct and indirect effects on fish production. With increased global temperature heating up waters, the spatial distribution of fish stocks might change when fishes migrate from one region to another in search of salutary climes. Further, where temperature change has been rapid over a period of time compared to other locales similarly affected by climate change, the direct effects of increasing temperature of the earth have been startlingly manifest in marine and freshwater ecosystems, with rapid Pole-ward shifts in distributions of fish and plankton from the warm regions, such as North East Atlantic (Brander: 2007). Ecosystem-related direct effects of climate change are observed in mass mortalities of many aquatic species, including plants, fish, corals, and mammals (Harvell et al.:2002). Lastly, regarding changes in fish stock distribution and fluctuations in the abundance of conventionally fished and "new" species, the effects of climate change may show up by disrupting existing allocation arrangements (Daw, T.; Adger, W.N.; Brown, K.; Badjeck, M.C.: 2009). As far as indirect effects on fish production are concerned, there are instances, firstly,when changes in the marine environment lead to disruption of fish breeding and growth cycles, and consequently to a decline in productivity and yields (Institute for Community Organization Research: 2011).Secondly, the effects on ocean currents and processes of climate change can indirectly affect fish resources (Everett: 1996), as seen in climate-driven changes in species composition and abundance to have had altered species diversity, including the likely effect on the ecosystems, and the availability, accessibility, and quality of resources. The projected effects of climate variability and change foresee significant effects on the physical, chemical, and biological components of marine, terrestrial, and freshwater systems. No doubt, climate variations will affect fisheries cultivation, particularly, economically important species, leading to significant effects on fishers and regional economies. To avoid adversities of climate change and variations on livelihoods of fishers, a process of providing right and comprehensive knowledge on climate change is the need of the hour which can be achieved through

a bottom-up approach that takes into consultation the primary stakeholders, along with the community, affected by the endangering of fisher's livelihood from climate change and variations. This will eventually position them to a vantage point where adequate climate change adaptation and mitigation by augmenting their traditional knowledge is in the stakes (Shyam et.al.: 2015). Marie-Caroline Badjeck's, et.al (2010)paper provides evidence of the impacts of climate variability and change on aquatic ecosystems, wherein the resulting impacts on fishers' livelihoods are likely to be significant, but remain a neglected area in climate adaptation policy. Drawing upon our research and the available literature, and using a livelihoods framework, this paper synthesizes the pathways through which climate variability and change impact fisher folk livelihoods at the household and community level. Md Monirul Islam (2013) assesses the vulnerability from and adaptation to the impacts of climate variability and change, in three small-scale coastal fishing communities in Bangladesh. Using a mixed method approach, this paper puts particular focus on the assessment of livelihood vulnerability, the investigation of the outcomes of climate induced migration of fishers and the exploration of limits of and barriers to adaptation to climate variability. The results from exploring this moot point of research highlights that the level of livelihood vulnerability not only differs between communities but also between different household groups within a community, depending on their level of exposure to vulnerability, sensitivity to it and adaptive capacity. Fishing communities depend for a major part of their livelihoods on natural resources whose distribution and productivity are known to be influenced by climate dynamics. Climate variation is considered to be one of the most serious threats to sustainable development, with adverse impacts expected on the environment, human health, food security, economic activity, natural resources and physical infrastructure. Climate change not only poses serious challenges to people's traditional livelihoods, like fishing households, but also often pushes them into poverty.

II. OBJECTIVES AND METHODOLOGY

The present study aims to know the impact of climate variations on fishing operations and fish catches and their impact on livelihoods of fishers in coastal Andhra Pradesh with the following specific objectives:

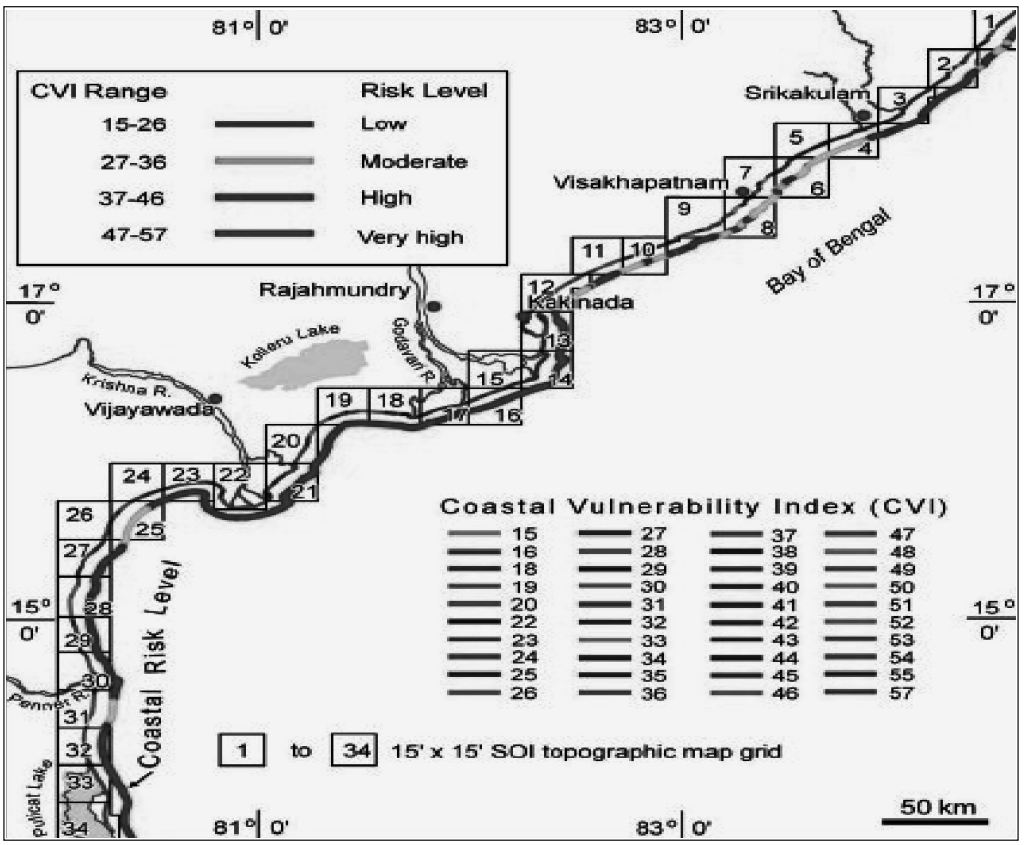
Objectives of the Study

- to find out evidences and experiences of climate variations in sample marine villages;
- to know the impact on livelihoods of Fishers due to effects on livelihood assets.

Methodology and Sample Design

This study took place in three coastal districts of Andhra Pradesh through a multi-stage stratified sampling method. Nine coastal districts were classified into three zones based on Vulnerability index prepared by the Environment Protection Training and Research Institute (EPTRI).

Figure 1
Coastal Vulnerability Index and risk levels of different segments of AP coast



Source: EPTRI (2011, P.75):"State Action Plan on Climate Change for Andhra Pradesh, "Environment protection Training and Research Institute, Gachibowli, Hyderabad, pp 1-127 (Draft report submitted to Ministry of Environment and Forests, Government of India, New Delhi).

i. Stage-I: Selection of Zone

The entire coastal area of Andhra Pradesh was classified into three zones, namely Northern, Central and Southern coasts based on their coastal vulnerability. According to coastal vulnerability index, the risk levels were classified into four categories, namely low, moderate, high and very high level of risk. Among the three regions/zones, the central zone had a high likelihood that it is at high risk levels than the remaining two

and,for this, of the three zones, the central zone was chosen for this study.

Table 1
Selection of Zone in Andhra Pradesh based on Coastal Vulnerability Index

Coastal zone VII.	*Region wise Total length of Risk level of the coast in Andhra Pradesh (In KMs)*					*Selection of Region*
	Low risk level CVI Range between 15-26	*Moderate CVI Range between 27-36*	*High CVI Range between 37-46*	*Very High CVI Range between 47-57*	*Total*	
Northern	30	142.1	150.7	38.1	360.9	-
Central	-	-	125.3	258.0	383.3	High
South	-	51.8	87.7	146.3	285.8	-
Total	30			442.4	1030.0	-

Source: CVI =coastal vulnerability Index-based on EPTRI (2011, p.75): "State Action Plan on Climate Change for Andhra Pradesh,"Environment Protection Training and Research Institute, Gachibowli, Hyderabad, pp 1-127 (Draft report submitted to Ministry of Environment and Forests, Government of India, New Delhi).

Stage-II: Selection of Coastal Area in the Central Zone

After selecting the Central Zone for this study, Kakinada in East Godavari and district of Krishna in Andhra Pradesh were selected for the study, given that these two regions happened to be the highest and moderate risk level areas in the entire coastal zone.

Table 2
Selection of coastal area in the central zone

Central Zone VIII.	*Region-wise Total length of Risk level of the coast in A P (In KMs)*					*Selection of Region*
	Low risk level CVI Range between 15-26	*Moderate CVI Range between 27-36*	*High CVI Range between 37-46*	*Very High CVI Range between 47-57*	*Total*	
Kakinada area	-	-	11.8	61.7	73.5	High
Nilerevu estuary	-	-	-	31.5	31.5	
Pandi lagoon	-	-	-	11.4	11.4	low
Surasaniyanam	-	-	4.3	14.6	18.9	
Vainateyam estuary	-	-	22.6	5.9	28.5	
Vashista estuary	-	-	18.5	10.3	28.8	
Gugoleru creek	-	-	22.4	9	31.4	Moderate
Manginapudi	-	-	9.9	18.8	28.7	
Krishna estuary (Divi)	-	-	-	60.2	60.2	
Krishna estuary	-	-	11.9	30.1	42.0	
Nizampatnam	-	-	23.9	4.5	28.4	
Total	-	-	125.3	258	383.3	

Source: EPTRI (2011, p.76):"State Action Plan on Climate Change for Andhra Pradesh," Environment Protection Training and Research Institute, Gachibowli, Hyderabad, pp 1-127 (Draft report submitted to Ministry of Environment and Forests, Government of India, New Delhi).

ii. Stage-III: Selection of fishing areas/ landing centres

From the districts of East Godavari and Krishna in Andhra Pradesh,three areas were selected on the basis of 'high', 'moderate' and 'low' risk levels, which are Kakinada (High risk), Gugoleru creek(moderate risk) and Pandi lagoon (low risk). In each area, three villages were chosen for data collection.

Table 3
Selection of Sample Villages and Households

Name of the sample district / area	*Landing centers/ villages*	*No of households taken for the study*
East Godavari Kakinada area	Uppada	50
	Subbampeta	50
	Harbor area	50
	Total	150
East Godavari (Pandi lagoon area)	Antervedipallipalem	50
	Karvina	50
	Vodarevu	50
	Total	150
Krishna (Gugoleru creek and Manginpudi)	Gilakaldindi	50
	Manginipudi	50
	Tallapalem	50
	Total	150
Grand Total		450

Source: Primary data, 2014-15

iii. Stage-IV: Selection of Sample Households

After selecting the study villages, the entire village's count of households were listed. After listing the households in the village exhaustively, there was segregation of all households into three categories, based on the age of the households members, who were classified into three generations: first generation (60+ years), second generation (46 - 59) and third generation (25 years) where, each generation, across the areas and their districts, contributed 150 households so that, a total of 450 households were contacted for collecting information.

Table 4
Sample households by three generations

Number of respondents selected by Age	*Selected households by age and area of vulnerability*			*Total Sample households*
	East Godavari Kakinada area	*East Godavari (Pandi lagoon area)*	*Krishna (Gugoleru creek and Manginpudi)*	
61+	50	50	50	150
46- 60	50	50	50	150
> 25	50	50	50	150
Total	150	150	150	450

Source: Field data, 2014-15

III. DATA COLLECTION AND ANALYSIS

Both primary and secondary data was collected for this study. A total of 450 households were selected having three generations of fishers[1] who were interviewed following

the interview schedule that resulted in useful information being collected. Group discussions were also conducted in order to understand the perceptions, awareness and knowledge of fisher folks about climate variations and its impact on the fishing sector. Secondary data[2] were collected from the Assistant Directors of Fisheries stationed at respective district headquarters, as also from non-governmental organizations. Collected data from the field was analyzed by using the Statistical Package for Social Sciences (SPSS).

IV. RESULTS AND DISCUSSION

After analyzing the data collected from the fishing households using semi-structure schedule and focus group discussions, the results ascertained were classified into two sections. The first section deals with Evidences and Experiences of Climate Variations in the sample villages; and, the second section focuses on impacts of climate variations on livelihoods of fishers.

Section 1: Evidences and Experiences of climate variations in sample villages

Evidences gathered from the three generations of fishers elicit information of climate variations on their fishing areas. Fishers have expressed their experiences of many aspects of climate variations influence in the sample villages, such as (i) sea erosion, (ii) changes in wind patterns, (iii) waves and sea currents, (iv) Sea-surface Temperature, (v) Cyclones, and (vi) Heat Waves.

i. Estimation of Sea Erosion in the sample villages

Sea erosion happens, primarily, as a result of rise in the sea level and powerful storms. As mentioned earlier, the coastline north of Kakinada Bay is a high risk area with respect to coastline vulnerability being subject to severe erosion, and some villages have been inundated when wave dynamics in this region changed. Specifically, the Uppada coastline is, undoubtedly, one such active shoreline, which has been subjected to the fury of Bay of Bengal. We have found that reports have noted that Uppada, Subbampet and Ameenabad villages in the Kakinada area are partly submerged, and the change in shoreline as sea erosion ate into the coastline is quite alarming towards north of Kakinada. According to Padma Kumari et.al (2012), nearly 4.18 sq.km of sea erosion has taken place from 1990-2006 in coastal Andhra. But in Krishna district, it is a different picture and most of the area is deposited with sand (Fig.1). In this connection, an attempt has been made by the researcher to know the sea erosion/deposited sand in the sample villages by collecting the opinions of the fishers. Out of 450 fishers, 143 fishers i.e., 32 per cent of the sample fishers,expressed that they had observed an occurrence of changes of shoreline either of sea erosion/deposited sand in their

villages. Most of the fishers in the villages around Kakinada and Antervedi have observed influence of sea erosion.

Table 5
Distribution of Fishers' Responses on Sea Erosion by Area

Signs of climate variations	*Response on changes taken place*	*Area Wise*			
		Kakinada area	*Antervedi area*	*Manginipudi*	*Total*
Sea Erosion	Yes, changes observed	80(56.0)	63(44.0)	Nil	143(100.0)
		(53.3)	(42.0)		(31.8)
	No response	70	87	150	307
		(46.7)	(58.0)	(100.0)	
	Total	150	150	150	450
		(100.0)	(100.0)	(100.0)	(100.0)
Area of Erosion	1/2 km	43 (64.2)	24(35.8)	-	67(100.0)
					(46.8)
	1/4km	16(51.6)	15(48.4)	-	31(100.0)
					(21.7)
	1/8 km	13(40.6)	19(59.4)	-	32(100.0)
					(22.4)
	Observed change but not able to measure	8(61.5)	5(38.5)	-	13(100.0)
	Total	80(55.9)	63(44.1)	-	143

Source: Data collected from fishers, 2014-15

ii. Fishers' Responses on Sea Erosion by Area

Out of total 143 fishers, 57 per cent of fishers from Kakinada area and 42 per cent from Antervedi area have reported that erosion has taken place in their villages. Interestingly, there is no sign of erosion in the sample villages of Krishna district. Out of total of 80 fishers who observed the changes of shoreline from sea erosion in and around Kakinada area, 43 fishers i.e., 64.2 per cent of them said that they have observed that nearly 0.5 Km of sea erosion has taken place in their villages (Table 5). Thirty-six per cent of fishers of Antervedi area have reported that nearly 0.5 Km of shoreline change from sea erosion was observed in their villages. Opinions on sea erosion influence on shoreline were collected from the fishers by fishermen's generations. While collecting the information from the fishers, care was taken to elicit information on sea erosion with respect to two aspects, i.e. (i) said to have observed the signs of Sea Erosion in and around their villages and (ii) if they observed the signs, then to what extent the change of the shoreline from the sea erosion has taken place. To get the extent of erosion area, two points of time were implemented, i.e. starting from the time of entry into fishing profession, and the present-day observation of fisherman to get the factual picture on sea erosion.

Table 6
Distribution of Fishers' Responses by Generations on Sea Erosion

Signs of climate variations	*Response on changes taken place*	*Generations*			
		1St Generation (N=150)	*2nd Generation (N=150)*	*3rd Generation (N=150)*	*Total Sample (N=450)*
		Last 30 years	*Last 20 years*	*Last 5 years*	
Sea Erosion	Yes, changes observed	97	46	--	143
		(64.7)	(30.7)		(31.8)
	No response	53	104	150	307
		(35.3)	(69.3)	(100.0)	(68.2)
	Total	150	150	150	450
		(100.0)	(100.0)	(100.0)	(100.0)
Area of Erosion	1/2 km	53	14	-	67(100.0)
		(54.6)	(30.4)		46.8)
	1/4km	20	11	-	31(100.0)
		(20.6)	(23.9)		(21.7)
	1/8 km	17	15	-	32(100.0)
		(17.5)	(32.6)		(22.4)
	Observed but unable to measure	7	6	-	13(100.0)
		(7.2)	(13.0)		(9.1)
	Total	97	46	-	143
		(100.0)	(100.0)		(100.0)

Source: Field data, 2014-15

From the information gathered from the three generations who were asked to recollect sea erosion's influence from the time theirs having entered fishing profession, sixty-five per cent of 1st generation and 31 per cent of 2nd generation fishers have assented that sea erosion had taken place in their villages (Table 6). The 1st generation fishers expressed the view that at least 0.5 KM of area was observed with erosion having taken place in their villages over the last 30 years. Interestingly, the 3rd generation, or the younger breed of fishers, have not witnessed the influence of sea erosion for the last 5 years in their villages.

Figure 2
Sea Erosion in the Sample villages of coastal Andhra Pradesh

Sea Erosion at Uppada (Kakinada Area)

Source: Field photos

iii. Changes in Wind Pattern and Generations

It's a much-noted fact that the wind direction will have an important influence on the way weather is expected to behave vis-à-vis climate change. Changes in wind patterns are also expected as the climate changes. To cite a few instances of wind to weather manifestations, and effect of climate change on them, it has been recorded that winds are driven toward that direction according as differences in density show up between adjacent air masses that have different air temperatures and moisture content so that winds flow from an area of high density to one of low density. With climate change, differential heating and cooling of land and water will influence the intensity, frequency and seasonality of climate patterns (such as El Niño) and extreme weather (like droughts and storms). As a result, climate change often alters the speed and direction of the dominant wind patterns, and because wind skimming the sea surface pushes at the surface waters, any changes in climate and wind patterns affect currents that carry larval fish as they develop, which can, thus, impact the survival of young fish. For example, if a species depends on currents that keep larvae in warmer, predator-free waters, a change in climate that disrupts this pattern can cause serious problems for that stock with obvious implications for fishermen. Information on wind direction and its pattern was collected from the fisher people by conducting Focus Group Discussions (FGD) in the sample villages. It gives us information on which type of wind will fetch more catches, and which type of wind will bring in less catches and what kind of nets they have to use to procure more catches.

Table 7
Wind Pattern and Its Impact on Sea Conditions and Fishing Activity

Wind Name in Telugu	*Type*	*Direction of wind Arrival*	*Months*	*Sea conditions and fishing activity*
Thurpugali Godram)/chaligalulu	N	Northern direction	September – December	Challatineeru, pure water in sea, more cyclones and less availability of fish catch, less number of sea going days
Thurpu pi gali/konda kali	E	Eastern direction	January to June	More varieties of fish available, suitable for fishing ,
Jaddigali	S	Southern direction	January to June	More Varieties of fish available, suitable for fishing
Dari gali/ chaligali	W	Western direction	July to September (rainy season)	Rains, not suitable for Fishing.

Source: Field data, 2014-15

Because wind pushes surface waters, these changes will affect currents that carry larval fish and thus may impact the survival of young fish. Opinions were collected from the three generations of fishers on changes in the wind pattern in the study area.

Table 8

Changes in Wind Pattern by Generations of Fishers

Perceptions on changes in wind patterns	*Different Generations of Fishers*			*Total (N=450)*
	1St Generation (N=150)	*2nd Generation (N=150)*	*3rd Generation (N=150)*	
	(60+ years)	*(46-59)*	*(<25years)*	
Yes, observed changes	145 (39.6) (96.7)	123(33.6) (82.0)	98(26.8) (65.3)	366 (81.3) (100.0)
No	5(5.9) (3.3)	27(32.1) (18.0)	52(61.9) (34.7)	84 (18.7) (100.0)
Total	150 (100.0)	150 (100.0)	150 (100.0)	450 (100.0) (100.0)

Source: Primary Data collected from three generations of fisher People, 2014-15
Note: Area wise no changes were observed by the fishers.

Nearly 81 per cent of the total sample households observed the changes in wind pattern in both the sample districts of Godavari and Krishna. Among the generations, 97 per cent, 82 per cent and 65 per cent of 1st, 2nd and 3rd generation of fishers, respectively, said that they have observed the changes in the wind pattern. This indicates that changes in wind took place in the sample villages from 1st generation to present generation. The researcher collected the opinions of the fishers of different generations on wind pattern for two points of time i.e. (i) said to have seen the impact of wind pattern change on fishing activities at the time of their entry into fishing activity, and (ii) expressed on the present situation of wind patterns, and its impact on their fishing activities at the time of survey. The difference gave us not only changes in the wind pattern but also the impact of the change on their fishing activities.

iv. Impact of Changes in Wind Directions on Fishing Activities

Fishermen began to experience gradual changes in wind pattern from 1st generation to present generation. Most of the fishers revealed that they have experienced extensive adverse impact of wind directions on their fishing activities, some of which are (i) Sea Current and Wind directions, (ii) Wind and wave directions, and (iii) adverse effects of wind blowing from the east etc.

Table 9

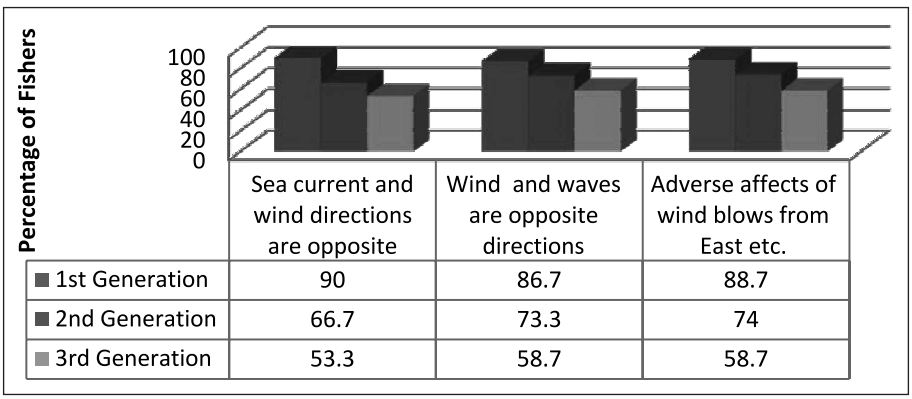
Distribution of Responses by three Generations about the changes in the wind pattern from year of entry into Fishing and Present year (Survey Year)

Changes in wind and its impact on fishing	*Observations by generation*											
	At the time of Entry				*At the time of Survey*				*Changes*			
	1St	*2nd*	*3rd*	*Total*	*1St*	*2nd*	*3rd*	*Total*	*1St (N=150)*	*2nd (N=150)*	*3rd (N=150)*	*Total (N=450)*
Sea current and wind directions are opposite	10 (6.7)	23 (15.3)	18 (12.0)	51	145 (96.7)	123 (82.0)	98 (65.3)	366	135 (90.0)	100 (66.7)	80 (53.3)	315 (70.0)
Wind and waves are opposite directions	15 (10)	13 (8.7)	10 (6.7)	38	145 (96.7)	123 (82.0)	98 (65.3)	366	130 (86.7)	110 (73.3)	88 (58.7)	328 (72.9)
Wind blows from East etc.	12 (8.0)	12 (80.)	10 (6.7)	34	145 (96.7)	123 (82.0)	98 (65.3)	366	133 (88.7)	111 (74.0)	88 (58.7)	332 (73.8)

Source: Primary data collected from the fishers, 2014-15

Figure 3

Percentage of Fishers Responses on Changes in Wind and its Impact on Fishing



Source: Field data, , 2014-15

i. Sea Current & Wind Directions and it impact

Ninety per cent of 1st generation, 67 per cent of2nd generation and 53 per cent of 3rd generation fishers expressed that they have observed the changes in the sea current and wind directions from the point of time of their entry into fishing to present year. At the time of their taking up the profession, sea current and wind directions wereblowing in paralleldirection, but now the movements are in reverse directions. They said that due to reverse directions of wind and sea current, there is more difficulty in piloting the boat and carry on fishing, so that they are worried about more expenses incurred on oil for fuel to push the boat onwards against wind direction in sea. Most of the fishers expressed the view that due to wind and oscillating sea currents that are not in the same direction, it leads to entangling of their nets causing losses, not only to their fishing activity of that day's catch but also in employing more manpower to set right their nets for next day's fishing.

ii. Wind and waves are in opposite directions

Nearly 87 per cent of fishers in 1st generation, 74 per cent in 2nd generation and 58 per cent of fishers from 3rd generation assentedthat they have noticed the changes in wind and waves. The 1st generation fisher folks said that at the time of their entry into fishing activity, i.e. 30 years back, the wind and waves were moving parallely, but now they are in opposite directions. Irrespective of generations, all the fishers expressed the view that due to opposite directions of wind andwaves, fishers face difficulty in pilotingtheir boats and difficulty in reaching the fishing spots. Most of them said that they have incurred huge expenditure on oil for fuel and time.

iii. Wind blowing from the East

Nearly 89 per cent of fishers in 1st generation, 73 per cent in 2nd generation and 58 per cent of fishers from 3rd generation expressed the view that they have noticed the changes in wind and waves. The 1st generation fisher folks said that at the time of their entry into fishing activity, i.e. 30 years back, the wind and waves stayed in one direction, but now they are in opposite directions. Most of the fishers in sample villages expressed the thought that they observed more days of wind blowing in from the East than any time before today, and they are worried about the adverse impact of the eastern wind blowing in bringing in less catch on those days as it is not favorable for fishing.

Figure 4

Adverse Changes in Wind and sea Currents Causes Entangled Nets in the Study Villages

iv. Fishers 'Observations on Sea-surface Temperature, Cyclones and Heat Waves

Data collected from the three generation of fishers on increase in sea-surface temperature, natural disasters and heat waves and its impact on their fishing activities

were based on their observations from the time of theirs having entered into fishing till thepresent year. With regard to sea-surface temperature, only 20 of the sample households assentedthat they have observed the changes. Within the generations, most of the 1st generation fishers (58 per cent) said that changes were noticed in sea surface temperature thanwere noticed by the other two generations. Nearly one third of total number of fishers in all the three generations noted that there was an increase in cyclones and heat waves in their study region. Out of total population who said they had seen cyclones and heat waves – about 33% - the majority part of them were made up from the 1st generation – who alone comprised 58% of their population having said that cyclones and heat waves were frequent in their villages –which means that there was a gradual increase in the cyclones and heat waves in the study area.

Table 10
Changes observed in Fishing Activities by Three Generations

Observations	*1St Generation (N=150) 30 years of Experiences*	*2nd Generation(N=150) 20 years of experiences*	*3rd Generation (N=150) 5 years of xperiences*	*Overall Sample (N=450)*
Near shore fishing has drastically declined	Plenty of fish varieties were available 30 years before but now the catches in near shore area has severely declined.	Few fish varieties were available 20 years from now, but now the catches in near shore area has declined.	Now the catches in near shore area have declined.	Near shore fishing has drastically decreased
Several species have declined severely	Katukamenu,Milk shark, Mudskippers, White fish, Royya, YerraKavalluetc have declined	Kavvaluburagkakal-liroyyalu have declined	Kavvaluburagka-kalliroyyaluhave declined	More fish varieties have been declined severely
Size of the fish has decreased	Previously they would catch large sized fishes but now the size of the fishes have been reduced	Sizes of the fishes have been reduced	------	Large number of fishers have observed that the fish sizes decreased in recent years
Changes in Fishing operations (distance and days of fishing)	30 years from now, most of them operated their crafts within 5 km and came back to the shore in the same day, but now they have to go outto sea long distances to catch fish and returned to shore after 4 days(multi-day fishing)	20 years back, fish were available at a distance of 10 km from shore but now they have to go out to sea long distance to catch fish and returned shore after 5 days(multi-day fishing)	Fishers have to go out to sea long distance to catch fish, and returned shore after 6 days(multi-day fishing).	Changes from single day to multi-day fishing, and according to the fishers, they have to go out to sea long distance for fishing.

More catches available after fishing Ban, but it reduced	More varieties and quantities of fish catchesavailable in July to December (after fishing ban) in the days in sea, but now even going out to sea long distance yields no signs of fish	Previously, after the ban,more varieties and quantities of fish catches were available, but now it's difficult to get the fish even after going long distances.	-	More varieties and quantities of fish catches were available in July to December (after fishing ban) duringthe days in sea, but now even going for long distance yields no signs of fishes in identicalmonths.
Women employment decreased	Previously more women workers were in fishing activities in the village, but now they depend on agriculture.	Previously more women workers were in fishing activities in the village, but now they depend on agriculture	women are going for agriculture.	Previously more women workers were in fishing activities, but now they depend upon agriculture.

Section 2: Impact on Livelihoods of Fishers due to Effects on Natural Assets

A livelihood is a means of making a living. It encompasses people's capabilities, assets valued for engaging in a livelihood, income earned and activities required to secure the necessities of life (Dhere, Amar M.: 2013). If a person has to make use of capabilities, assets and activities to fulfill the basic requirements for survival, then with regard to livelihood of fishers, the assets are, namely; resources (water resources), the capabilities are fishing skills(Traditional Fishing skills), and activities are accessibility to knowledge and facilities (craft technology made up of boats and nets, and infrastructural facilities such as ice, marketing facilities etc.). Fishers livelihood comprises of various fishery-related activities, for instance, that fisher folks take up for their living by capturing and culturing fish in locally available water bodies. There are five major components in livelihood assets of fishers (i) Natural; (ii) Human; (iii) Social; (iv) Financial; and (v) Physical. The present study mainly focused on changes in the climate variations on Natural assets of livelihoods of fishers in the study region. Sea is the primary resource for the marine fishers for their livelihoods, and changes in climate affects the natural resources (sea)that has been enumerated in the last section. Any changes in the sea has direct impact on the fishing activities and their catch made of fish, and incomes earned.

Table 11
Changes observed in Sea (natural asset) and its impact on livelihoods

Changes observed in Sea (natural asset) and effects		*Impact on Livelihoods of Fishers*			
changes	*effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
sea erosion	Near shore fishing has drastically decreased and more fish varieties have declined severely Drying platforms is affected	Not possible to anchor their boats in nearby landing centres/villages	They have to go out to sea for long distance from their village for anchoring boats, which involves transport cost, and is time consuming.	Decreasing the fishing hours and possibility of getting less incomes	Low incomes leads to vulnerability
		Fisher has to go long distance for fishing	Increase in variable cost such as incurred in oil, ice, and number of hours of fishing	possibility of getting low incomes as increase expenditure faced.	Vulnerable of women increases as they get less employment opportunities due to decline in fish varieties. Women are affected due to lack of drying platforms

Impact of Sea erosion on fishers – A Case Study

Sixty-two years old Prasad hails from Naiker colony of Uppada village. He has been going to sea for fishing since 1953. When I asked him for his views on the changes in the sea line in his village from time of his entry into fishing activity to present day, he replied, after recollecting a moment, "(Chala Marpuvachindi,appudusamudramchaladuramgaundedidi. Uppudusamudrammundukuvachindi.Danivalanaboatululangaruveyadamchalakastamgaaundi)". Translated to english,he is recorded as saying "lots of changes have taken place from my childhood days to now. Previously sea shore was far away from my village and today it has come nearer to the village. Due to sea erosion it is very difficult for us to anchor the boats". He further told that due to erosion, he anchors his boat at harbor area, which is 3 to 4 Km far away from his village. So, he has to take an auto from his village to harbor area for carrying his nets and other equipment which incurs additional cost for him. He expressed that most of the land is eroded and most of the dry platforms are submerged. Most of the women dry-fish vendorsare severely affected due to submerged platforms. Further, he added, that near-shore fishing has decreased drastically, and most of the traditional boat owners, who were fishing in near shore areas, are now wage earners or lusker for mechanized boats.

Changes observed in Sea (natural asset) and effects		*Impact on Livelihoods of Fishers*			
Changes	*Effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
Rise in sea surface temperature and low rainfall leads to near shore fishing being affected	Changes in fish breeding cycles, fish production and survival rates, and fish migrated to suitable areas for food and for cooler place to nest and swim. Drastic changes in the near shore fishing	Fishers have to go out to sea for distance places to catch fishes involving more operational expenditure; Need to upgrade craft technology, particularly traditional fishers, which involve capital investment; Changes in fish sizes; Overall decline in fish production	Number of fishing hours and days are increased in fishing operations;	Low incomes due to more operational costs	Get less price for their catches, and fishing units to become unviable. Fish merchants donot extend credit to the fishing households due to availability of less quantity of catches. So most of them go to money lenders for credit with higher rate of interest for fishery and household requirements. Employment opportunities decreases; **(debt increases)**

Table 12
Changes in wind pattern and changes in waves and currents and Livelihoods

Changes	*Effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
changes in wind pattern and changes in waves and currents	Changes in the fish breeding; and, some of the species migrate to other places due to sea current and unfavorable waters.	Difficulty in sailing and reaching fishing spots. Cost of fishing increases due to unfavorable winds. Nets get tangled due to unfavorable changes in waves and sea currents.	increase in operational costs and loss of nets	loss of days and possibility of low incomes	Additional burden for the fishers to replace the nets; loss of fishing days and income

Case Study -2

Raya Babu, son of Devaswami, aged 51 hails from Manginipudi area in Krishna district and owned mechanized craft. He started fishing at the age of 15. He expressed the thought about the changes in climate variation in his fishing activity for the last 30 years. During the interviewing, about the climate variations and its impact on fishers, he said he has seen a lot of changes in winds, and waves and sea current oscillations from his childhood to present day. He described the past and present situation of winds and waves. He said "Previously winds and waves were more favourable for fishing, and now it is much too difficult for fishing with adverse changes of wind, sea currents and waves". He further said that due to winds and sea currents having changed from moving in one direction to different direction, it had led to our nets getting entangled, and it causes huge loss for fisherman in terms of fishing days and labour. He said that now-a-days fisherman has to go far off places for fishing due to un-expected oscillations of sea currents which increases the cost of oil and labour.

Table 13

Changes observed in Physical Assets and Livelihoods

Changes observed in Physical capital (fishing crafts and nets) and effects		*Impact on Livelihoods of Fishers*			
Changes	*Effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
Near shore fishing drastically affected	Availability of fish for traditional fishers decreases	Most of the traditional fishers have to go out to sea for long distances; need more nets to get more fish and lack of such nets become a hurdle to their fishing activity;	- opportunity cost – (loss of wages from alternate livelihoods, like agriculture, if fish is not available at fishing spots, and in distance fishing also);	less income for traditional fishers due to absence off is h preserving techniques in their crafts; (lack of ice boxes are also due to lack of space in boat)	severe effects of livelihoods of fishers when they have to migrate to other places;(Gujarat and West Bengal etc.,) Due to there being no viable units, most of the fishers sell their traditional crafts, and become a labourer in mechanized crafts. (As mentioned in case study 1) Approach money lenders for purchasing nets for long distance fishing – credit- market- linkages and poor becomemore poor.

Source: Field data, 2014-15

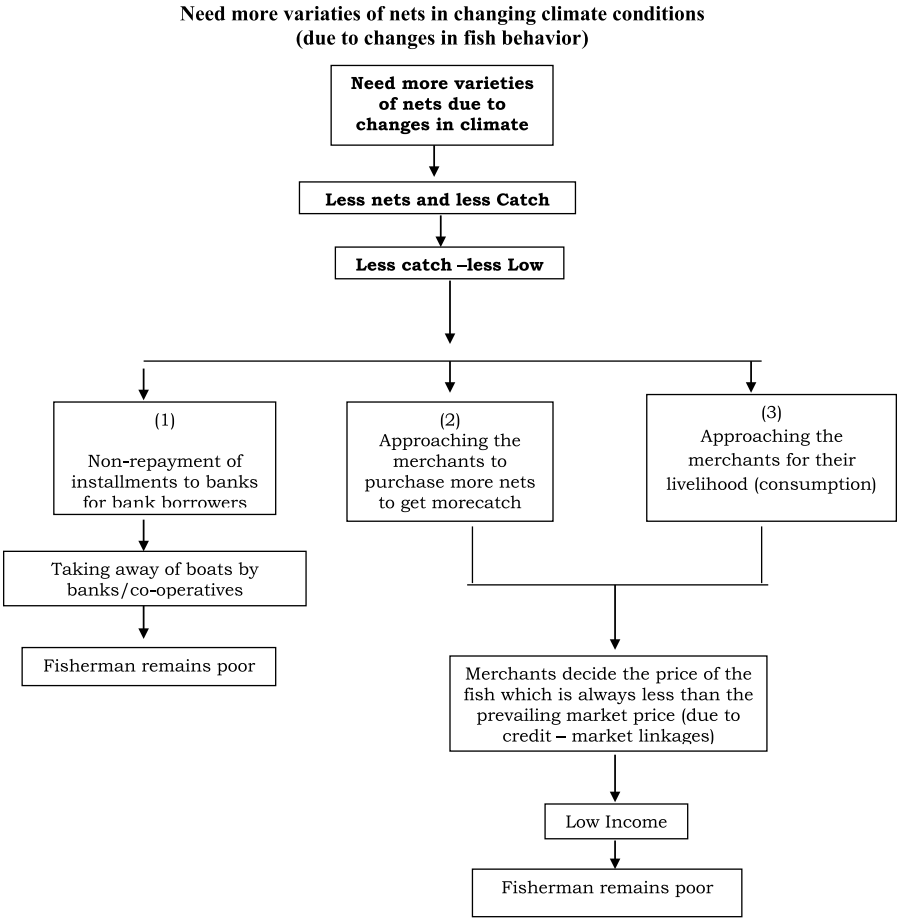


Table 14
Changes observed in Financial capital and Livelihoods

		Impact on Livelihoods of Fishers			
Changes in financial capital	*Effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
near shore to deep sea fishing	requires more capital for crafts and nets; bankers do not come forward to sanction loans for craft and nets; co-operatives are not in a position to supply loans to all the fisher members	changes from traditional to modern; less distance covered in fishing area leads to less catch; less nets less catch;	- increases	Dependson the technology, distance and area covered for fishing;	due to theirs being poor, the traditional fishers are not able to get the money from the banks;

Source: Field data, 2014-15

Table 15
Changes observed in Human Capital & social capital, and livelihoods

Changes observed in Human Capital (ability to work)social capital		*Impact on Livelihoods of Fishers*			
Changes	*Effects*	*Impact on the fishing activity*	*Operational Expenditure*	*Incomes*	*Livelihoods*
changes in health aspects due to climate	Fever, health issues from long distance fishing, such as waterborne diseases increases	- less mandays; - decrement in fishing hours	increment due to long distance	decreased incomes and increasing health expenditure	less incomes for all the fishers;
more pressure on operational grounds	Conflicts, particularly between traditional and modern crafts	loss of mandays due to conflicts and unrest in the fishing villages	_____	decreases	loss of man-days and unrest in the fishing operations and fishing villages

Source: Field data, 2014-15

V. CONCLUSIONS

The coastline of Andhra Pradesh along the Bay of Bengal is about 974KM long and this is under attack by sea waves and destructive tidal currents. The coastline, north of Kakinada bay, is subjected to severe erosion; and some villages have been inundated due to changes in the wave dynamics in the region. The 1st Generation of fishers have expressed the thought that at least 0.5KM of area was being eroded in their villages for the last 30 years. Regarding wind patterns, nearly 81 per cent of the total sample households said they have observed changes in wind pattern in both the districts under sample study. Irrespective of type of crafts, all the Fishers have said they were into increasing their area of fishing operations from the last 20 years till now. Thus, impact of climate variations on livelihoods of fishers who are more vulnerable due to adverse changes in sea (natural asset),are as follows; (i) increased operational expenditure for oil, a fuel, and deck hands, as drastic change in the near shore fishing are forcing the fishers to go out to sea to distant fishing spots to catch fishes,on the hope of bigger catches, but failure to do so results in falling income.; (ii) increased mandays in spending more fishing hours and days in fishing operations on the hope of bigger catch but failure to do so result in falling productivity; Both falling earnings and productivity have low catches to blame, which, in turn,harm credit-friendliness of fish merchants further lowering the fishermen's ability to face adverse conditions of climate variations. Other effects of adverse climate variations are loss to fishing equipment and houses; migration to other areas affecting children's education; and nets getting tangled due to unfavorable changes in waves and sea currents. There is a need to take up comprehensive studies in the marine villages to deal with the situation

by creating more consciousness about the negative results of climate variations among fishing households. In addition, it would be germane to create awareness among the fishing communities about the possible effects of climate variations and to deal with the disasters. Preserving endangered species, promotion of mangrove plantation, conservation of coastlines and provision of financial aid to fishermen community are required to be followed up as support activities to fisher folks in the marine villages. The government has to focus more on design and supply of suitable fish craft technology to help fishermen catch the currently accessible fish at deep sea. Encouraging group fishing and supply of crafts to groups of fishers for improving their livelihoods will also help. Apart from fishery-related activities, generating more employment opportunities in activities other than fishing activities, like agriculture, horticulture are also in the agenda.

Notes

1. The main reasons for choosing three generations include: (1) fishermen's past experience is an important determinant as the fishermen can be substantially impacted by changes in climate and ocean condition and also the fishermen have different observations of phenomena that are associated with climate variability from generations. Accordingly, three generations were selected for this study to know the impact, (2) Comparing with the other people, fishermen have a deeper knowledge of climate variability, and (3) different types of craft owners were interviewed with a view to know the impact of climate variations among the different scale of technologies from traditional to the modern, i.e. mechanized crafts.
2. Secondary sources of information were used to know the general trend of fisheries and species-wise trend.

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IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

MGNREGS Raising Rural Indebtedness: Evidences from Micro Level Analysis in West Bengal

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This paper is motivated by concerns about resistant complaints of 'delayed MGNREGS payment' which is alleged to be limiting the extent of success of the scheme. The paper analyzes, through field survey, the implication of delayed payment under MGNREGS on the livelihood of the rural labour households. The survey of the above-mentioned study was conducted in the financial year of 2016-17 and three of the 10 most backward agricultural districts of West Bengal namely Birbhum, Bankura and Utter Dinajpur were purposively selected on the basis of MGNREGA work intensity to permit comparative analysis among district persistently excelling (Birbhum), district with average performance (Bankura) and district displaying the poorest MGNREGS performance (Utter Dinajpur), for the period of three to four years at a stretch (2012-15). Within the districts, 3 Panchayats and 5 villages were surveyed that matched the afore-mentioned criteria. The sample size of the study was 300 households with 70 percent weightage to MGNREGS participant households and 30 percent to MGNREGS non-participant households The results of the survey indicate that MGNREGS participant workers, being pervaded by the problem of delayed wage payment to the extent of 3 to 3.5 months, rather ran into debt and sorted to variable borrowing, in contrast to the very objective of the 'noble' Social Protection Scheme of reducing poverty and indebtedness. The intensity of MGNREGS implementation and degree of indebtedness of participant households seemed to move in same direction. Consequently the rural labours of the studied areas preferably accelerated their period of distressed migration outside the state to settle the debt. Yet worse becomes the situation of non-migrating households In the absence of sufficient rural farm and non-farm works, with the receipt of MGNREGS payment, a large share of money was used to pay off the debt rather than investing in household consumption. So in other words, MGNREGS, coupled with the curse of 'delayed payment', proved to be a bane rather than boon wherever it provided intense coverage.

Keywords: *MGNREGS, Rural labour, Delayed payment, Indebtedness, Rural-urban migration*

I. INTRODUCTION

In lieu of its pledge to the 1st and 3rd objective of Millennium Development Goal, Government of India formulated National Rural Employment Guarantee Act (NREGA/NREGS), one such public works program which is claimed to be the biggest

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in the history of India in providing safety net against wide-spread rural poverty and unemployment. It makes 'work as a right' and at the same time meets the parameter of gender equity through a concrete legal framework. The program has been legally fortified to conform to the role of providing income insurance in the presence of seasonality in agrarian labour market against building of longer term capital assets. The design is apt to mitigate both idiosyncratic and covariate shocks and it is impressive to observe that since its commencement in 2006, MGNREGS has generated substantial man-days of rural manual work. Till 2013, it has generated 1408 crore man-days all over India from its launch in February 2006 and an average of five crore households have been provided with employment every year while Scheduled Castes and Scheduled Tribes account for 50 per cent of the total person days generated (Kumar, 2013). The above facts underscore the potent attempt made by the erstwhile Union Government through implementation of MGNREGS to bring perceptible development implications on rural economy.

Since its inception there has been intense discussion on the relevance of MGNREGS in terms of employment generation, poverty alleviation and rural development. From the very enforcement MGNREGS has been applauded for creating positive impact on farm income, benefitting the poorest section of rural society, i.e., the agricultural labour. Agricultural wages have increased across the country because of the tightening of agricultural labour market which has conferred better bargaining power to the rural labourers and the ability to negotiate on remuneration and conditions of work (Reddy, 2011). On an average MGNREG is calculated to be boosting the real daily agricultural wage rates by 5.3 percent (Berg et. al., 2012). Clément Imbert and John Papp (2012) too established that casual wages have increased (by 4.5 percent), while further adding that there is a parallel fall in private sector work opted by low-skill workers (by 1.6 percent) which gives a vital indication towards backward bending labour supply curve to activities other than MGNREGS. The improved Real farm wages during post-MGNREGS period as compared to pre-MGNREGS period across gender have spun over positive secondary effects that include reduced indebtedness of the impoverished households (Sarkar et.al., 2011; Kumar and Chakraborty, 2016) and decline in distressed migration (Jacob, 2008; Coffey, 2013; Das, 2015; Macwan and Zala, 2015; Parida, 2016).

However one of the short-coming of MGNREGS implementation that has captured limelight time and again is the problem of delayed MGNREGS payment. According to the Act, MGNREGS wages are to be paid within a fortnight of the closure of master-roll. The violation of the above is alleged to be limiting the extent of success of the scheme and its envisaged benefits at field level. The change in the Central Government was expected to alleviate the problem. The arrival of National Democratic Alliance

(NDA) Government was looked upon as a silver lining for the sincere empathy it had extended several times to the poor by being strongly vocal on the issue of rampant corruption accompanying the Programme. But in reality situation was observed to have little changed or rather deteriorated over time due to which by mid-2016 Supreme Court intervened in and ordered the Union Government to get strict in following paragraph 29 of Schedule II of MGNREG Act to avoid further repercussions related to belated MGNREG wage payment. In the light of above discussion, it becomes imperative to investigate through micro level analysis, the enormity of the above-mentioned problem and its ensuing ramifications which is scorned to be coming in the way of the realization of the full potential of MGNREGS. In other words, the objective of this paper is to examine the implication of delayed payment under MGNREGS on rural labour market economy.

The above objective has been addressed by carrying field study in West Bengal. As West Bengal, post-British rule, has continuously receded in industrial growth primary sector comes to be playing an important role in providing livelihood to majority of its productive workforce (Khasnabis, 2008). In that case, rural development is central to mitigating exploitation of the large base of rural impoverished to ensure the rural well-being of West Bengal. MGNREGS came into existence during Communist Party rule, a Government the agenda of which was to fight for workers' democracy, ensure their control over the means of production and distribution and eventually free them from suppression and bureaucracy. In 2011 there was a change in power and with Trinomool Congress alighting into the chair of State governance, it was also boisterous in voicing its pro-poor intentions. The expenditure on MGNREGS recorded the highest among all states of the country in 2013-14. The State exceeded the budget and recorded largest-ever expenditure of more than Rs 5600 Crore (Sengupta, 2015)-- a vital evidence indicating towards the initiative of State Government to make the benefits of the PWP available to the broader sections of rural downtrodden. However, given that plight of delayed payment has been troubling almost all the states at varying degree, it is of cognizable value to understand the magnitude of the aforesaid problem through conducting micro-level study in West Bengal.

II. METHODOLOGY

The field work for the study was conducted in the financial year of 2016-17 and selection of the study area was done in three stages. Firstly, three of the most backward agricultural districts[1] of West Bengal (where MGNREGS was first launched i.e., in 2006) namely Birbhum, Bankura and Utter Dinajpur were purposively selected on the basis of MGNREGS work intensity (number of households demanding MGNREG works covered and number of man-days generated across the rural households) to make a comparative analysis among district persistently excelling in terms of intensity

of MGNREGS implementation (Birbhum) for the period of three-four years at a stretch (2012-15), district with moderate performance (Bankura) and district displaying the poorest MGNREGS performance (Utter Dinajpur) in the corresponding time period. Within the three districts, three blocks were selected (one block in each district) using the similar criteria (Rampurhat II block in Birbhum, Indpur block in Bankura and Hemtabad block in Utter Dinajpur). Then from the each block one gram panchayat was purposively selected again following the same set of indicators which eventually led way to identifying five villages (two villages per gram panchayat except Margram II Panchayat[2]) where the field work was actually conducted. In each village two categories of labour households were the target of survey, MGNREGS beneficiary labour households and MGNREGS non-beneficiary labour households, so as to understand the impact of MGNREGS on the employment pattern and livelihood of the rural labour sect. 50 households per village were surveyed giving 70:30 weightage to MGNREGA participant rural labourers and non-participant rural labour households and the total sample size added up to 300 rural labour households (in Margram II Panchayat, 100 households were surveyed only in Margram village). For deciding on the sample of MGNREGS participant households, a list of beneficiaries was obtained from the concerned gram panchayat in the village along with the information on the caste factor. Then Random Sampling Method was adopted. Panchayat also helped in the identification of MGNREGS non-participant households and similar sampling procedure was employed for non-beneficiaries as well. Semi-structured questionnaire was used to collect information related to the study. Thereafter the data was tabulated and said objective of the study has been analyzed using descriptive statistics.

A Prelude to the surveyed villages and Sample Labour Households

The studied village of Margram in Birbhum are located to the north east of the district. The soil is slight to moderate in acidic reaction. The region receives sufficient rainfall which supports good agriculture. Besides, ground water is also available and extracted through shallow tube wells. The major cropping pattern of the villages forms Aman Paddy/ Potato/Vegetables/ Boro Paddy.

The sample villages namely, Chakoltore and Indpur of Indpur block are situated to the west of Bankura District which is relatively low productive and drier than eastern and southern parts. The soil is mostly lateritic, light in texture and acidic in nature. Coupled with such situation, moisture stress is prominent throughout the area due to highly uneven rainfall distribution received in this part. Because of rocky land texture ground water recharge is poor and magnifies the problems related to extracting out of water for irrigation purpose. As a result only kharif paddy is only extensively grown in rainfed conditions.

The studied villages of Hemtabad block lie to the south-western part of Utter Dinajpur. The area is stretched over lowland and cultivation is well backed by irrigation facilities in form of shallow tube wells apart from relying on monsoon rainfall. So the major crops grown are water intensive in nature which comprises maize, kharif paddy and rabi paddy.

It is a familiar fact that SC, ST and other backward communities as well as religious minorities are the ones who have been socio-economically vulnerable since ages so facing discrimination is typically associated with these segments of rural society. In concern of these deprived sections, MGNREG Act had mandated several clauses so as to make them avail most of the benefits of MGNREG Scheme and eventually make growth 'more inclusive' in social terms[3]. Table 1(a) shows that in all the three districts, irrespective of their variable nature of the scheme implementation, socially disadvantaged groups are chiefly the ones who have obtained work under MGNREGS. In Margram Panchayat of Birbhum and Hemtabad Panchayat of Utter Dinajpur, Scheduled Caste and Muslims were found to be working in the scheme with Muslims claiming 66 percent share in Birbhum and 61 percent in Utter Dinajpur. OBCs were also present in the MGNREGS workers category but they comprised extremely small proportion (10-15 percent).

Whereas, Bankura was a Hindu dominated district where a combination of SC and OBC were only engaged in MGNREGS activities with SC families' participation (83 percent) largely superseding that of OBC (17 percent).

Table 1 (a)
Distribution of MGNREGS Participant households by religion and caste

Religion and caste of the sample households		*Birbhum*	*Bankura*	*Utter Dinajpur*
Margram Panchayat		*Indpur Panchayat*	*Hemtabad Panchayat*	
Hindu	SC	17 (24)	58 (83)	27 (39)
	OBC	7 (10)	12 (17)	-
Religious Minority	Muslims	46 (66)	-	42 (61)
Total		70 (100)	70 (100)	70 (100)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

Among the sample households, a substantial cluster was observed to preferably seek inter-state migration in lieu of higher income. Such households were characterized by larger family size with more number of members in the younger section of working age group (below 45 years) (see Table 1 (b)).

Table 1(b)
Distribution of MGNREGS Participant Migrating Households by Religion and Caste

District	*Gram Panchayat*	*Number of Migrating Households*	*Hindu Religion Caste*				*Muslim Religion*
			SC	*ST*	*OBC*	*Others*	
Birbhum	Margram Panchayat	55 (78)	13 (24)	-	5 (9)	-	37 (67)
Bankura	Indpur Panchayat	58 (83)	51 (88)	-	7 (12)	-	-
Utter Dinajpur	Hemtabad Panchayat	56 (80)	24 (43)	-	-	-	32 (57)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

However, it is important to mention that among the sample households surveyed, 15-20 percent of the households were there who did no opt for migration whatever may be the nature of exigency. These households either had women as head of the household or comprised older working persons falling in the age group of above 45 years (45-59 years)[4]. The insecurity of single women and the age factor of the working members did not permit them much of geographical mobility. So in this paper they have been categorized into a separate group titled non-migrating households (see Table 1 (c)).

In Margram Panchayat, the sample participant households mostly belonged to Muslim sect so the major concentration of both migrating and non-migrating household was found to be in Muslim group (see Table 1(b) and 1(c)) – the rest of households were in the SC and OBC category. In Indpur Panchayat SCs singled out as majority among migrating and non-migrating households, over OBCs. While in Hemtabad Panchayat, labour households belonging to Muslim community predominated in migrating and non-migrating households alike, followed by SCs.

Table 1(c)
Distribution of MGNREGS Participant Non-Migrating Households by Religion and Caste

District	*Gram Panchayat*	*Number of Non-Migrating Households*	*Hindu Religion Caste*				*Muslim Religion*
			SC	*ST*	*OBC*	*Others*	
Birbhum	Margram Panchayat	15 (22)	4 (27)	-	2 (13)	-	9 (60)
Bankura	Indpur Panchayat	12 (17)	7 (58)	-	5 (42)	-	-
Utter Dinajpur	Hemtabad Panchayat	14 (20)	3 (21)	-	-	-	11 (79)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

Non-MGNREGS households were the ones who too belonged to labour class, but had chosen not to toil for MGNREGS because of its irregularity in work availability and payment[5].

Table 2(a)
Distribution of MGNREGS Non-Participant Households by Religion and Caste

Religion and caste of the sample households		*Birbhum*	*Bankura*	*Utter Dinajpur*
Margram Panchayat		*Indpur Panchayat*	*Hemtabad Panchayat*	
Hindu	SC	6 (20)	15 (50)	14 (46)
	OBC	3 (10)	13 (43)	-
	General	4 (13)	2 (7)	-
Religious Minority	Muslims	17 (57)	-	16 (53)
Total		30 (100)	30 (100)	30 (100)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

Amid non-MGNREGS worker households, besides presence of SC, OBC (only in Bankura) and Muslims households, there was an addition of social group in 'general' category (Table 2(a)). This means that households in general category, which actually did not fall into the group of backward social communities, voluntarily or involuntarily remain away from the programme.

Table 2(b)
Distribution of MGNREGS Non-Participant Migrating Households by Religion and Caste

District	*Gram Panchayat*	*Number of Migrating Households*	*Hindu Religion Caste*					*Muslim Religion*
			SC	*ST*	*OBC*	*Gen*	*Others*	
Birbhum	Margram Panchayat	24 (80)	4 (17)	-	2 (8)	4 (17)	-	14 (58)
Bankura	Indpur Panchayat	22 (73)	11 (50)	-	9 (41)	2 (9)	-	-
Utter Dinajpur	Hemtabad Panchayat	25 (83)	12 (48)	-	-	-	-	13 (52)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

Table 2(c)
Distribution of MGNREGS Non-Participant Non-Migrating Households by Religion and Caste

District	*Gram Panchayat*	*Number of Non-Migrating Households*	*Hindu Religion Caste*					*Muslim Religion*
			SC	*ST*	*OBC*	*Gen*	*Others*	
Birbhum	Margram Panchayat	6 (20)	2 (33)	-	1 (17)	-	-	3 (50)
Bankura	Indpur Panchayat	8 (27)	5 (62)	-	3 (38)	-	-	-
Utter Dinajpur	Hemtabad Panchayat	5 (17)	2 (40)	-	-	-	-	3 (60)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total

When discussing about the MGNREGS non-participant households, it is relevant to explicate that non-participant migrating and non-migrating households showed

similar nature of concentration of labour households by caste and religious groups as that of participant households (see Table 2 (b), (c)). In other words, in non-participant migrating households as well, Muslims formed larger ratio in Margram Panchayat and Hemtabad Panchayat, and SCs in Indput Panchayat.

III. MGNREGS PERFORMANCE IN THE STUDIED VILLAGES

Performance of MGNREGS at the grass root level is contingent upon the effective strategy of the Panchayat to uplift poor because the onus of implementation of the prestigious scheme rests on it. Having power to exercise a great deal of discretion in allocation of resources, rural institutions play the fundamental role in the success of MGNREGS and directly responsible for its variable performance within and across the districts.

Table 3
Performance of MGNREGS across Panchayats under Study per annum

MGNREGS Performance Indicators	*District/Gram Panchayat*		
	Birbhum	*Bankura*	*Utter Dinajpur*
	Margram Panchayat	*Indpur Panchayat*	*Hemtabad Panchayat*
Average Mandays obtained per MGNREGS participant household per annum during FY 2012-13	72	40	19
Average Mandays obtained per MGNREGS participant household per annum during TE-2013-15 (i.e., average of 2013, 2014 and 2015)	85	35	17
Performance of MGNREGS (FY-2016-17)			
Rural HHs covered by MGNREGS against demand (in Percentage)	89	64	86
Average No. of days of employment provided per HH	86	44	14
Average amount received per HH (in Rs.)	17,450	8,800	2,772

Source: nregs.nic.in; Information provided by Gram Panchyat, 2016-17

In all the study areas of research, the primary reason highlighted for the differential performance of MGNREGS was variability in the scope of work (see Table 3). Official demand placed with panchayat for MGNREGS works was yet another factor that played vital role in finalizing the actual amount of works to be generated in a specific region. Definitely the scope of work in the study areas of Birbhum is high owing to frequent flooding of the River Dwaraka that would damage the semi-concrete roads, agricultural land and property at a notable scale. Nevertheless, Margram panchayat deserved appreciation for executing MGNREGS Programme effectively in a way that each of the MGNREGS participant household receive mandays closer to the Legislated target of 100 days work per household (more than 80 mandays of work per household).

However, a contrary picture was observed in the study area of Indpur Panchayat, Birbhum which records not more than 40-45 mandays work per household consistently, for 3-4 years together. Indpur panchayat is characterized by poor agronomic conditions because of highly intermittent rainfall and lateritic nature of the soil, as discussed previously. In spite of an ardent need for supplementary jobs given the poor state of agricultural employment (monocropped) in situ, the unskilled rural labours never managed to receive MGNREGS works more than one-third of the legal entitlement for years together. Rugged climate and the rocky nature of soil were alleged by the Indpur gram panchayat to be reducing the scope of work. In that case, it is needless to mention that bureaucratic apathy and inadequate bureaucratic capacity were the real reasons responsible for mediocre performance of MGNREGS in Indpur.

While, in the study areas of Utter Dinajpur, the prime reason for a disappointingly poor implementation of MGNREGS (less than 20 mandays of annual employment per household) could be attributed to open and rampant corruption. This piece of information was corroborated by the respondents reporting use of private contractors to get the MGNREGS works done, in violation to another salient feature of the Act. In fact 17 percent of the sample participant workers recounted that they actually did not work and rather complained of their job cards being purchased against meager sum by non- registered workers having personal connection in panchayat. Such indications are credible enough to prove how political foul play was responsible for abysmal performance of MGNREGS in the surveyed area of Utter Dinajpur.

Given that all the three gram panchayats had Trinamool Congress as the ruling party, it is imperative to reiterate that political will of the local self governments is the chief factor that decides as to how the rural public programme would be implemented. Nevertheless, PRI cannot be blamed for the problem of delayed wages because during the last years of UPA rule (2009), in response to reports of persistent fund leakages at PRI level, it had been made mandatory that the due wages should be straight away deposited in the individual beneficiaries account within a fortnight of e-master-roll submission to Central (System of Fund Transfer Order or FTO). This step becomes fully effective in the study areas from 2013 and from then onwards the aptness of the time with regard to MGNREGS wages release rested with Central and State Government directly.

Annual Work Pattern of Rural Labour Household (MGNREGS Non-Participant Household)

The rural areas are characterized by traditional form of cultivation largely dependent on monsoon with limited crop diversification. In such condition neither small nor marginal cultivators nor agricultural labours can find work only in agriculture

throughout the year and rather have to diversify their economic activities to have a sustainable livelihood. Table 4 discusses the employment pattern followed by the rural labours (MGNREGS non-participant households) in the study areas as per the need and accessibility of occupation, to meet their necessities[6].

Table 4
Share of Different Categories of Employment in MGNREGS Non-Participant Labour Household

Forms of Employment	*Margram Panchayat*		*Indpur Panchayat*		*Hemtabad Panchayat*	
	Migrating Households	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*
Farm works within Village	115	99	99	73	141	94
(Mandays/HH)	(49)	(54)	(43)	(41)	(46)	(42)
Farm works outside Village	-	-	48	54	-	-
(Mandays/HH)			(21)	(30)		
Non-farm works	91	84	52	52	132	130
(Mandays/HH)	(38)	(46)	(23)	(29)	(43)	(58)
Works pertaining to	31	-	31	-	32	-
Migration (Mandays/HH)	(13)		(13)		(11)	
Total	237	183	230	179	305	224
	(100)	(100)	(100)	(100)	(100)	(100)

Source: Primary Survey, 2016-17
Note: Figures in Parentheses are percentage of total; HH- household

In Margram panchayat the fertile soil supports impressive production and productivity of both kharif and rabi crops, higher than state average. As a result more than 100 days employment or 49 percent of the total annual employment was procured by rural labour households from farm sector. But then within each agricultural season there is high and low period of employment as well. For instance, sowing and harvesting are thick period for providing intense farm employment while thin period forms activities like ploughing and weeding. So after the sowing period of kharif paddy, there would arise scarcity of on-field work. Besides, kharif season coincides with monsoon and in mid of rainfall non-farm rural works are not to be readily found at the locale. In such circumstances, when sowing of kharif paddy gets over the rural labours opted for short-term migration out of the state in pursuit of alternative employment[7]. A higher wage of almost twice to what they got in the rural vicinity would allure them to leave their family behind even if it meant toiling double number of hours per day (up to 11 hours a day in urban informal sector compared to 6-7 hours in rural sector) in utter insecure condition. They spent approximately one month (13 percent of total household persondays) outside West Bengal and would come back to their home by mid-October (see Table 4). October also coincides with the festive time for both Hindu and Muslim households residing in the studied villages so they compulsorily returned. In addendum, full-fledged farm employment also resumes by the end of October as the harvesting of kharif paddy starts, seconded

by sowing period of rabi paddy and potato. October also represents the month from when rural non-farm works such as brick-kilns[8], repairing and reconstruction works in and around the village become active as it marks the initiation of dry period. In fact non-farm works paid 30-35 percent more wages than what they received in farms. So from then onwards there was found to be an alternation of rural farm and non-farm works, in situ, opted by the rural labours as per availability and financial requirement of household, till April. The annual employment derived from rural non-farm sector per labour was 38 percent of total person days.

Indpur panchayat of Bankura is a dry rural area. Insufficient rainfall and low water table do not allow water to be saved or extracted for rabi cultivation. The average number of days of agricultural works in the above study area obtained per household was around 15 percent less than of what procured by the agricultural labour of Margram panchayat. However, the unskilled labourers preferred to work more in agriculture and would migrate to the agriculturally developed pockets inter-district during rabi season. Burdwan is well-known for high yielding rice cultivation and Hoogli is famous for voluminous potato production which together acted as important 'magnate' for rural labours of Bankura. So mass exodus to the above districts during the sowing and harvesting season of rabi paddy and potato, offered some employment relief to the agricultural labours (20 percent more work days) during agricultural off rabi season in their own home space. Rest of year involved engaging into informal sectors in and around the village (23 percent of total mandays per HH). 14 percent of the work period entailed inter-state migration which comprised agriculturally light work days of the kharif season pre-*Durga* festival. They had to return back to their village by mid-October because *Durga* festival is the biggest Hindu festival and were widely celebrated in Indpur panchayat.

Hemtabad panchayat of Utter Dinajpur experiences a well distributed rainfall. But the sandy characteristic of soil does not support high yield of paddy. On a brighter side, high quantum of shower enables a high water table and filled up ponds (water can be extracted within a depth of 40 feet). So rabi season is benefitted by rabi crop cultivation namely potato, maize and boro paddy. Similar to other study areas, in Hemtabad Panchayat too inter-state migration took place during thinner agricultural period of aman paddy cultivation and rural labours would be reverting to their homes by October to celebrate their major festival (in Hemtabad, significant population belonged to Muslim community and one of their main festival was Muhharam) and remained back with family for the rest part of the year. So besides engaging in urban informal pursuits for around one month (10 percent of total mandays per HH), the MGNREGS non-participant household had agriculture as mainstay (46 percent of their labour days was spent on agricultural works) and 43 percent of workdays was invested on non-farm rural employment.

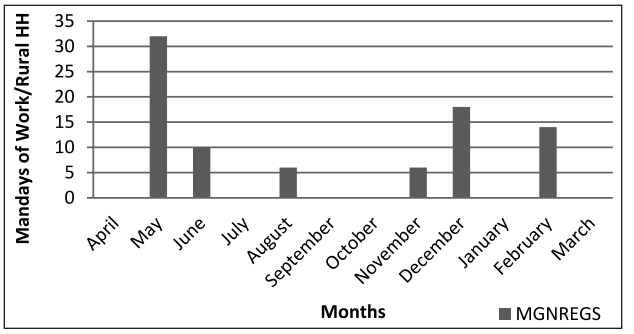
On the other hand, the workers of non-migrating households had to bank only on farm and rural non-farm sector for livelihood due to problem in geographical mobility, given age and gender factor. In Indpur, the labourers did move to other places for agricultural purpose during rabi season but it was largely commutation to agriculturally sound part intra-district. Biri rolling[9] was found to be one of the most popular non-farm home-based work found to be carried out by the female labourers in migrating and non-migrating households alike, in Margram Panchayat. Whilst, in Hemtabad Panchayat, packaging of bay (*tejpatta)* leaves was taken up at wide scale by the women workers of both classification of labour households.

MGNREGS Works Allocation across the Year

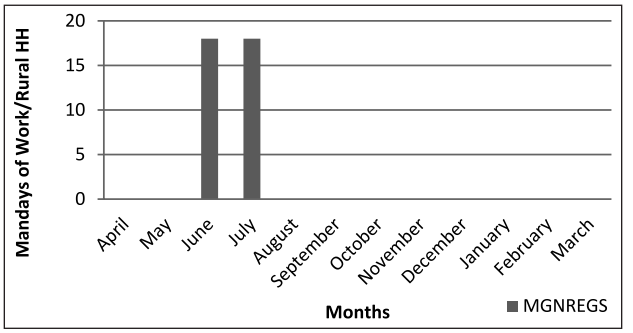
Coming to MGNREGS participant labourers, MGNREGS work is provided per household rather than per labour and is supposed to be given during the agriculturally light period when there is also crisis of other types of employment so as to smoothen consumption during the period of economic plight.

Figure 1
Seasonal Distribution of MGNREGS Works across the Year

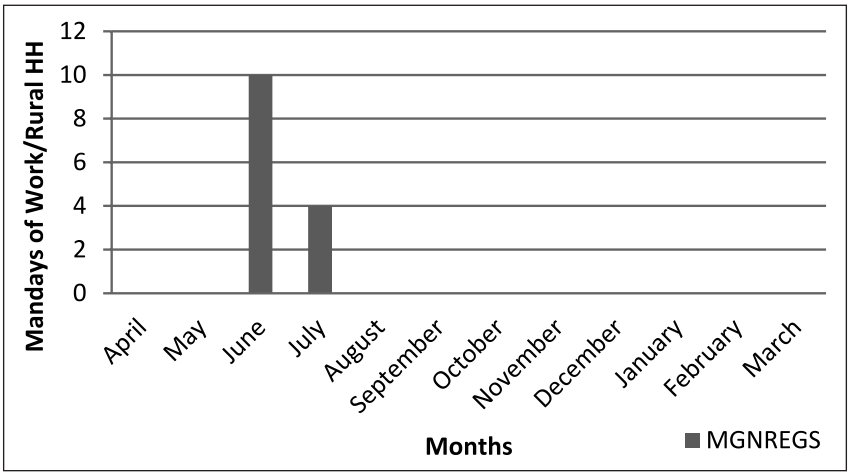
(a) Birbhum (Margram Panchayat):



(a) Bankura (Indpur Panchayat):



(c) Utter Dinajpur (Hemtabad Panchayat):



Source: Primary Survey, 2016-17

MGNREGS works chiefly comprise activities relating to land development, pond excavation and renovation, drought proofing through plantation, flood proofing, road repairing and other forms of infrastructures required for rural development. Flood proofing through construction of bunds was important in Margram panchayat, frequently prone to flood. Whereas, drought proofing, by means of social forestry (useful in retaining soil moisture) was widely undertaken in drier area of Indpur Panchayat. Other works in the studied areas comprised repairing of earthen roads and construction of toilets.

However it is important to mention that a bulk proportion of the above-mentioned works were given during the pre-kharif and drier phase of kharif period. Kharif season corresponds to the period of monsoon rainfall and befits only farm works (aman paddy cultivation) In the face of limited agricultural days and absence of supplementary income from rural non-farm sector, employment with secured government stipulated wages in the form of MGNREGS if offered within the village then consumption stress could be carefully averted. Again rabi season, which remains relatively waterless, provided good scope for MGNREGS works.

In Margram panchayat, 58 percent of MGNREGS works were obtained during pre-kharif and kharif season and rest took place during the rabi season (see Figure 1(a)). Whereas, beneficiaries of Indput Panchayat and Hemtabad Panchayat received MGNREGS employment only during kharif season (see Figure 1(b), 1(c)).

Annual Pattern of Farm and Non-Farm Works Envisaged by MGNREGS Participant Households (in the situation of timely payment)

The variation in the general employment pattern between rural labours of MGNREGS participant and non-participant households was not that stark since they both belonged to labour group and faced similar pestering economic requirements. However Public intervention in the shape of MGNREGS definitely made a difference and brought about rearrangement in the work pattern followed by MGNREGS participant households. In fact in the presence of MGNREGS, a soft natured work in the vicinity of their home with assured wages requiring 3-4 hrs to be invested, it was given the priority while other categories of activities got adjusted accordingly.

MGNREGS performance had been consistent in the three target panchayats for four - five years at a stretch (2012 to 16) (see Table 3) and coupled with this fact, timely payment under MGNREGS was more or less in vogue till FY 2012 (i.e., from 2013 onwards the scenario of wage payment got worsened). In view of the above fact, the following Table (5)[10] discusses the annual distribution of farm and non-farm activities that the MGNREGS participant households would have observed in 2016-17, given the current pattern of MGNREGS works (see Figure 1 (a); (b); (c)), if timely payment of MGNREGS wages were still a reality, as was till 2012.

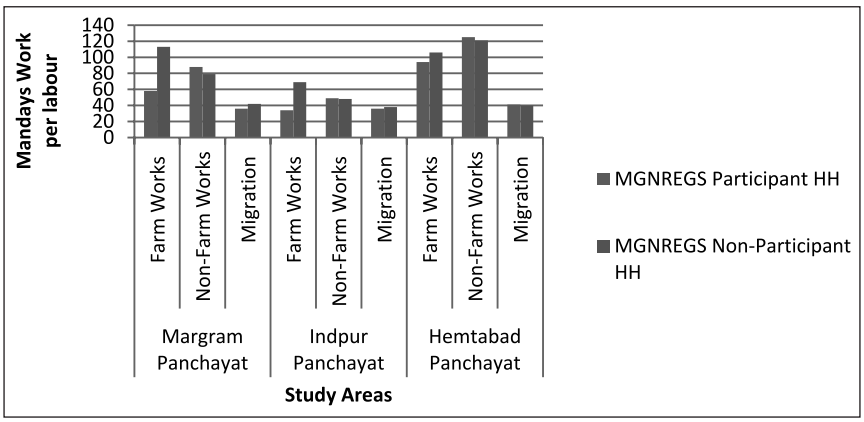
Table 5
Share of Different Categories of Employment in MGNREGS Participant Labour Household (in the situation of timely payment)

Forms of Employment	*Margram Panchayat*		*Indpur Panchayat*		*Hemtabad Panchayat*	
	Migrating Households	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*
Farm works within Village (Mandays/HH)	41 (17)	39 (21)	44 (20.4)	49 (22)	115 (41)	86 (43)
Farm works outside Village (Mandays/HH)	-	-	48 (22.3)	66 (30)	-	-
Non-farm works (Mandays/HH)	87 (37)	67 (35)	51 (24)	61 (28)	121 (43)	102 (50)
Works pertaining to Migration (Mandays/HH)	27 (11)	-	28 (13)	-	31 (11)	-
MGNREGS Works (Mandays/HH)	82 (35)	84 (44)	44 (20.3)	45 (20)	14 (5)	14 (7)
Total	237 (100)	190 (100)	215 (100)	221 (100)	281 (100)	202 (100)

Source: Primary Survey, 2016-17

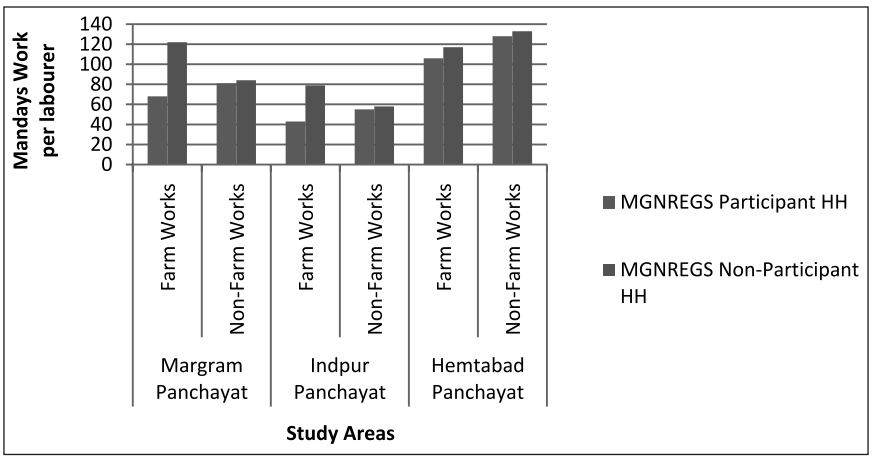
Note: Figures in Parentheses are percentage of total

Figure 2
Labour Supply to Different Categories of Employment across MGNREGS Participant and Non-Participant Migrating Households (when MGNREGS participant Households Receiving Timely Wage Payment)



Source: Primary Survey, 2016-17

Figure 3
Labour Supply to Different Categories of Employment across MGNREGS Non-Participant and Participant Non-Migrating Households (when Receiving Timely MGNREGS Wage Payment)



Source: Primary Survey, 2016-17

In Margram Panchayat, MGNREGS participant migrating households obtained an average of 82 mandays work per household under MGNREGS which emerges to be an important source of employment (34 percent of total workdays of the HH) (see Table 5). 56 days of it clashed with agriculture while rest 26 days was allotted during agricultural-off period. MGNREGS wage rate being at par with the current prevailing agricultural

wage rate (Rs. 200) and given that MGNREGS works are softer in nature, the timely wage payment would have propelled the beneficiaries to substitute MGNREGS for agricultural works (48 percent mandays less per labour in agriculture when compared with the control group) (see Figure 2). However, non-farm wages rate was 25 percent higher than MGNREGS wage rate and so MGNREGS works, offered during rabi season, would have acted largely as supplement along with non-farm works. Marginal positive effect would be also observed in arresting the number of mandays invested per labour in rural-urban migration of beneficiary households (by 14 percent).

In both Indpur and Hemtabad Panchayat, 2016-17 saw MGNREGS works concentration primarily in the peak cultivation period (see Figure 1 (b); (c)). So giving priority to MGNREGS works, each rural labour in migrating households of Indpur and Hemtabad was found to be willing to work 51 percent and 11 percent less in agriculture respectively, in tune with number of workdays obtained under MGNREGS, in face of timely payment.

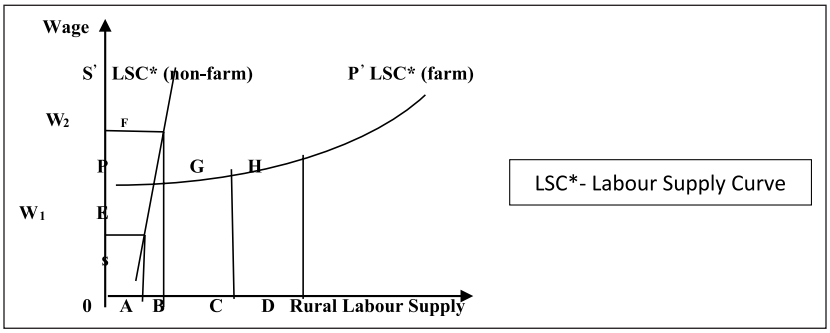
Seasonal allocation of MGNREGS works to participant non-migrating households was the same as the migrating ones. So comparative analysis between MGNREGS participant and non-participant non-migrating household (see Table 5 and Figure 3) shows that a timely payment would have made each of labour in non-migrating household, work 44 percent less in Margram Panchayat, 45 percent less in Indpur Panchayat and 9 percent less in Hemtabad Panchayat, in agricultural activities, depending on the mandays of MGNREGS work received during peak cultivation season. Non-farm works would not be substituted for MGNREGS, more so, because the option of additional income through migration was totally absent for the non-migrating participants, reasons mentioned earlier.

The above discussion is suggestive of the behavior of the rural labour and its supply to different sectors in presence and absence of MGNREGS works (see Figure 4 (a), (b), (c)).

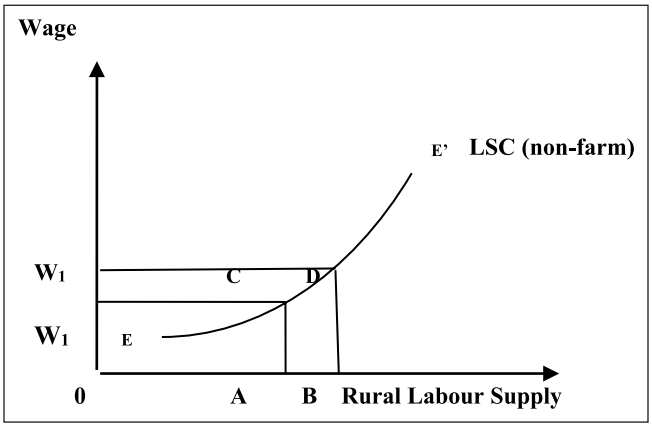
Figure 4

Labour Supply to Farm and Non-Farm Sector and Influence of MGNREGS

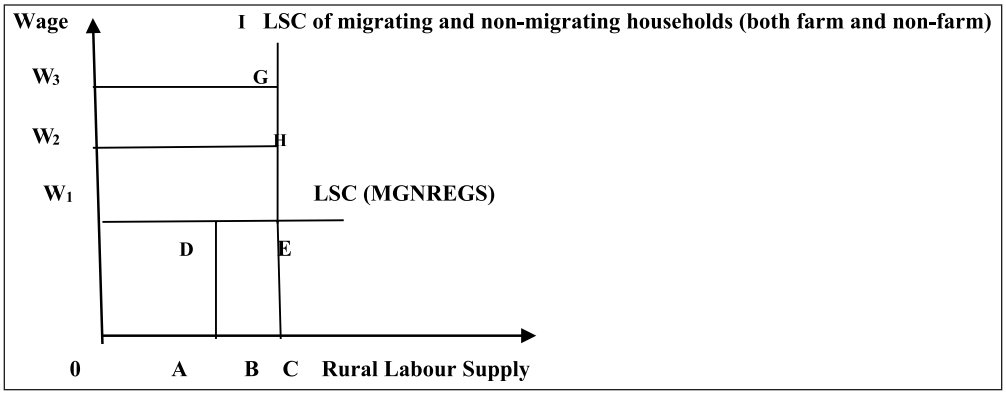
(a) Labour Supply in Agricultural Peak Season (MGNREGS non-participant households)



(b) Labour Supply in Agricultural Lean Season (MGNREGS non-participant households)



(c) Labour Supply to Farm and Non-Farm Sector in MGNREGS participant households



Source: Prepared by Authors based on Primary Survey Information, 2016-17

MGNREGS non-participant rural labours, who were largely technically semi to unskilled in nature, pays key preference to agricultural works among other kinds of employment intra and inter-state. In the agricultural season, when demand for farm labour climbed up, the rural labour supply curve was found to be highly elastic (Curve PP′) (almost next to perfect) (see Figure 4 (a)) which implies almost unlimited supply of labour at prevailing wages, even if it might be below subsistence level. On the other hand, the labour supply to the non-farm sectors stayed largely inelastic (Line SS′), the focus being on agriculture.

Nevertheless, during the agriculturally lean season, the inclination to work in non-farm occupation gained momentum. Accordingly, the labour supply curve becomes perceptibly elastic, i.e., a small degree of positive change in wages was compelling enough to stimulate positive supply of the rural labours into non-farm wage market (Curve EE′) (see Figure 4(b)).

Coming to MGNREGS participant labour households (whether migrating or non-migrating), the rural labour actually becomes near about perfectly elastic in its supply only to MGNREGS (Line W^1 E) and the labour supply becomes near-about inelastic (Line BI) to both farm and non-farm works on the days when MGNREGS works is allotted. However, important it is to reiterate that MGNREGS mandays got perfectly substituted for agricultural workdays (concentrated in kharif season) while MGNREGS acted mostly as supplementary to non-farm rural works (in rabi season).

IV. MGNREGS AND PROBLEM OF DELAYED PAYMENT

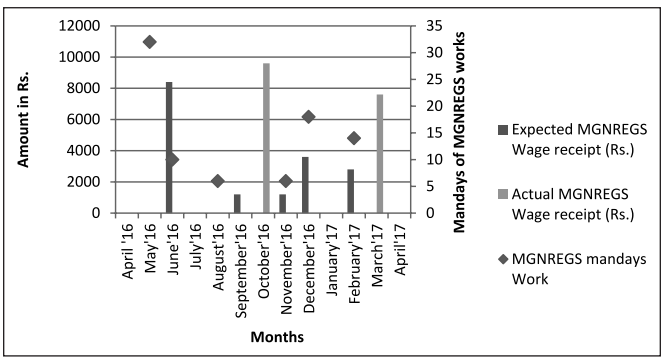
In actuality, MGNREGS participant workers were observed to be seriously pervaded by the problem of delayed wage payment. A delayed payment means that whole effort put into labor under MGNREGS, unyielding. During MGNREGS works when the rural labourers do not participate in other kinds of works, they actually forgo the smooth flow of casual wages which they could earn otherwise. But the end result came up to be a big null for the timing. Even the panchayats were helpless in this situation because after having sent the e-master-roll, the decision on the wage release lied with the Central and the State Government. Therefore the labour had to search for multiple money sources to combat the crisis.

Having received numerous complaints from varies states on 'outrageous behavior' of the Centre in releasing MGNREGS wage payment, the Supreme Court, in early 2016, had reproached the Centre government for "unconscionable delay" in discharge of funds for MGNREGA scheme (Economic Times, 2016). Besides criticizing the Centre, the Supreme Court (SC) had ordered strict enforcement of paragraph 29 of Schedule II of MGNREG Act, 2005 and directed the Central Government to ensure compensation at the specific rate of 0.05 percent per day per worker for delayed payment of due wages (Economic Times, 2016).

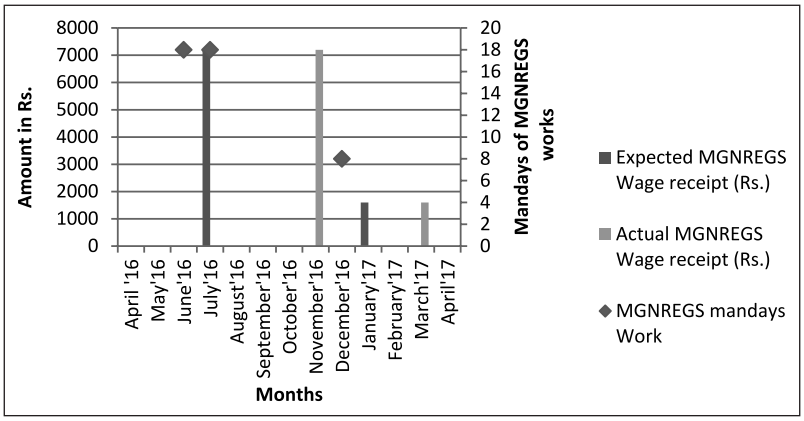
Figure 5

Time of MGNREGS Wage Payment (Expected and Actual) of the works conducted in FY 2015-16

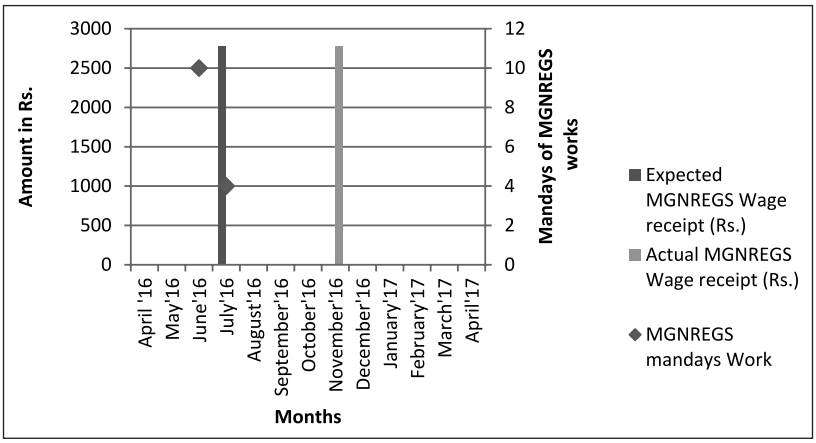
(a) Birbhum (Margram Panchayat):



(b) Bankura (Indpur Panchayat):



(c) Utter Dinajpur (Hemtabad Panchayat):



Source: Primary Survey, 2016-17

Figure 5 (a), (b), (c) shows that, on an average, there was 3-3.5 months delay in MGNREGS wages disbursement in 2016-17, more or less common to all the three study areas. So considering the instructions of the Supreme Court on the compensation rate (0.05 percent per day of the due wage per worker post the due date), the total wage payable to each of the MGNREGS households was Rs. 17854 (Rs. 654 more than basic amount) in Margram panchayat, Birbhum; Rs.9250 (Rs. 450 more than basic) in Indpur Panchayat, Bnkura; and Rs.2917 (Rs. 145 over basic) in Hemtabad panchayat, Utter Dinajpur, respectively. But reportedly neither did the MGNREGS labourers have awareness nor did they receive any fraction of their due compensation over the principal amount in line with the orders of the Supreme Court.

V. MGNREGS AND RURAL INDEBTEDNESS

One of the most abhorrent ramifications of MGNREGS wages delay came up to be indebtedness of the job card holders' households. Practically, in large share of labour households (around 50-55 percent), indebtedness was the most common feature as they sorted to multiple borrowings to combat economic emergency (see Table 6 and 7). MGNREGS was unanimously acknowledged as a 'way out', in fact, it was one of the wise intention with which MGNREGS was launched and Act clauses were framed accordingly. But the violation of the Schedule II actually led MGNREGS to behave in a regressive manner, making them to remain trapped in the vicious circle of borrowing and redressal. In fact, unfortunately, due to MGNREGS delay in wage payment, the previously non-indebted households also ran into debt (see Table 7).

Figure 6 shows that wages delay in MGNREGS payment hit hardest the region where MGNREGS provided thickest protection, namely Margram panchayat, Birbhum. The total amount of cash borrowing by virtue of MGNREGS payment delay went close to Rs. 6,000 per MGNREGS participant household, which formed 35-40 percent of their annual borrowing[11] (see Table 7). Private moneylenders were the preferable source to borrow loans because though they charged interest as high as 10 percent per month (subjected to a maximum ceiling of 15,000 at a time) (see Table 8) but they lent money in bulk readily without going into series of formal procedures.

Similarly, the rural labour in Indpur panchayat too gets fraught with indebtedness but the amount was 30 percent less than that of Margram, approximating to around one-fourth of their annual loan per beneficiary household, thanks to less mandays they worked in MGNREGS. The amount was borrowed from private moneylenders who charged 72 percent interest on the principal amount per annum.

Table 6
Incidence of Indebtedness among MGNREGS Participant Households

Particulars	*Margram Panchayat*		*Indpur Panchayat*		*Hemtabad Panchayat*	
	Migrating Households	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*	*Migrating Households*	*Non-Migrating Households*
Total no. of MGNREGS participant HHs	55	15	58	12	56	14
No. of HHs already indebted (for other reasons)	32 (58)	8 (53)	35 (60)	7 (58)	20 (53)	6 (43)
No. of HHs got indebted due to MGNREGS delayed Payment	55 (100)	15 (100)	58 (100)	12 (100)	56 (100)	14 (100)

Source: Primary Survey, 2016-17

Note: Figures in Parentheses are percentage of total

Table 7

Extent of Annual Cash Borrowing and share of MGNREGS

Particulars	*Margram Panchayat*				*Indpur Panchayat*				*Hemtabad Panchayat*			
	Migrating Households (already indebted)	*Migrating Households (not indebted)*	*Non-Migrating Households (already indebted)*	*Non-Migrating Households (not indebted)*	*Migrating Households (already indebted)*	*Migrating Households (not indebted)*	*Non-Migrating Households (already indebted)*	*Non-Migrating Households (not indebted)*	*Migrating Households (already indebted)*	*Migrating Households (not indebted)*	*Non-Migrating Households (already indebted)*	*Non-Migrating Households (not indebted)*
Borrowing for other reasons (Rs.)	10,500	0	7,250	0	9,000	0	6,080	0	12,000	0	9,500	0
Borrowing due to MGNREGS (Rs.)	5,860	5,860	4,620	4,620	3,100	3,100	3,000	3,000	1,270	1,270	1,000	1,000
Total Borrowing (Rs.)	16,360	5,860	11,870	4,620	12,100	3,100	9080	3,000	13,270	1,270	10,500	1,000
Percentage of MGNREGS borrowing to total loan	36	100	39	100	25	100	33	100	9.5	100	10	100

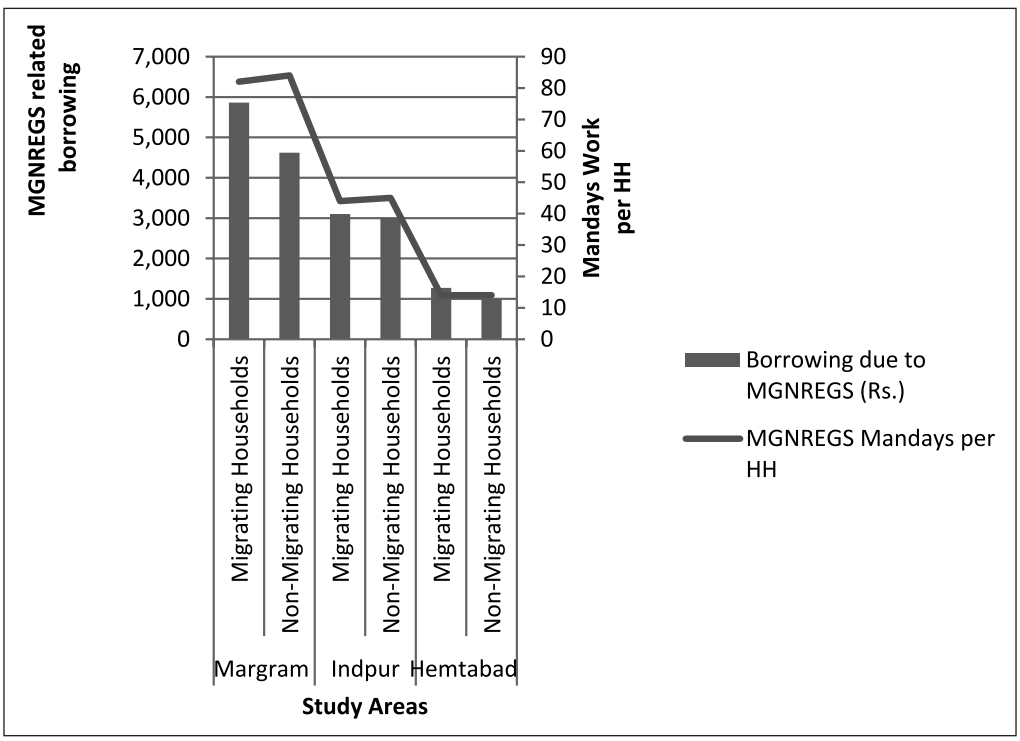
Source: Primary Survey, 2016-17

Table 8
Preferable Source of Borrowing by the Amount of Loan Borrowed

Amount (Rs.)	*Source*	*Interest Rate charged (in percentage per month)*		
		Margram Panchayat	*Indpur Panchayat*	*Hemtabad Panchayat*
Less than and equal to Rs. 2,000	Neighbours and Employers (farm and/or non-farm)	Nil.	Nil.	Nil.
Rs. 2,000 and above but not more than Rs.15,000 at a time	Private Moneylenders	10	6	10

Source: Primary Survey, 2016-17

Figure 6
Correlation between MGNREGS Works and Rural Labour Indebtedness



Source: Primary Survey, 2016-17

However, in view of only 14 mandays work per rural beneficiary household in Hemtabad panchayat, the indebtedness caused due to MGNREGS was maximum Rs. 1,000 or 10 percent of total annual borrowing. This amount was managed loans from neighbours free of interest.

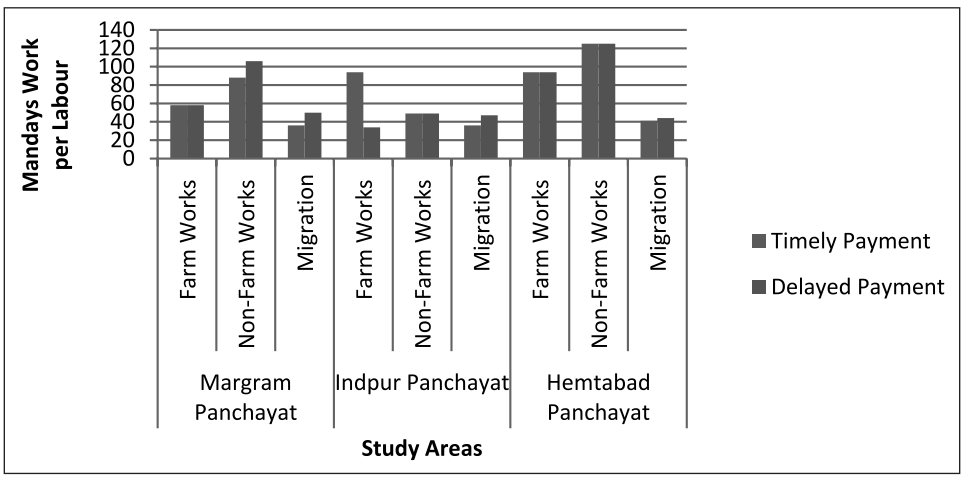
In concise, Figure 6 suggests positive correlation between mandays of work obtained under MGNREGS per participant labour household and the burden of indebtedness in the study areas.

VI. MGNREGS FUELLING DISTRESSED MIGRATION

Already under the burden of debt, when MGNREGS too added to aggravating the plight, the rural labours of the migrating households resorted to prolonging their period of distressed migration outside states than what they would have opted in case of timely payment, to settle the debt[12] (see Figure 7 (a)).

In Margram panchayat, the debt incurred during kharif season, owing to MGNREGS delayed payment, was serviced off (with interest), by over-stay (per labourer) on account of migration to the extent of 40 percent. 20 percent extra persondays were invested in rural non-farm activities per labour to repay the credit borrowed by virtue of MGNREG employment given during rabi season (see Figure 7 (a)).

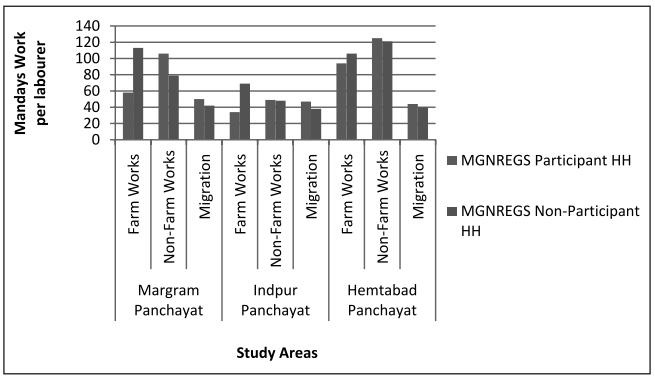
Figure 7 (a)
Change in Employment Pattern opted by the MGNREGS Participant Migrating Households owing to Delay in MGNREGS Payment



Source: Primary Survey, 2016-17

The MGNREGS beneficiary labours in migrating households of Indpur panchayat underwent an increase in migration related stay to the extent of 30 percent per worker, as a consequence of MGNREGS delayed payment. And 7 percent increase in migration per labour was observed in Hemtabad Panchayat, the debt being relatively quite small owing to significantly less mandays of MGNREGS works allocated per household.

Figure 7 (b)
Comparison of Employment Pattern across MGNREGS Participant and Non-Participant Household (when MGNREGS participant suffering from Delayed MGNREGS Payment)[13]



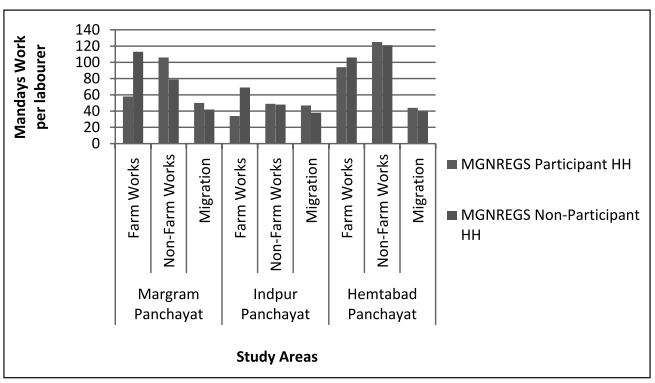
Source: Primary Survey, 2016-17

A cross-section comparison shows that distressed migration linked work sought by each of the MGNREGS participant migrating worker was even 20 percent more in Margram Panchayat[14], 23 percent more in Indpur Panchayat and 10 percent more in Hemtabad Panchayat, when compared with the control group (of MGNREGS non-participant households), which is depressing (see Figure 7 (b)).

MGNREGS Delayed Payment and Non-Migrating Household

In order to reduce debt, the non-migrating MGNREGS participant households in all the three panchayats had only the 'fall-back' option of working more in the locally available farm and non-farm works.

Figure 8 (a)
Reallocation of the Employment Pattern per Labourer in MGNREGS Participant Non-Migrating Household owing to Delayed MGNREGS Payment



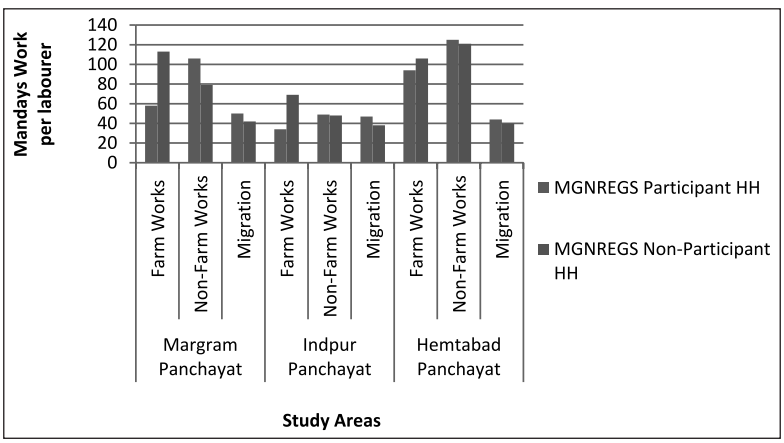
Source: Primary Survey, 2016-17

In lieu of reducing MGNREGS related debt, the non-migrating MGNREGS participant households of Margram panchayat worked 15 percent more per labourer in farm sector and 8 percent more in non-farm works (see Figure 8 (a).

Whereas, 7 percent and 8 percent more farm works were performed per labour in Indpur Panchayat and Hemtabad Panchayat respectively, as an attempt to lessen indebtedness.

Figure 8 (b)

Comparison of the Employment Pattern across MGNREGS Participant and Non-Participant Non-Migrating Household (when MGNREGS participant suffering from MGNREGS delayed payment)



Source: Primary Survey, 2016-17

Cross-section comparison between participant and non-participant non-migrating labour household mainly highlights the sacrifice of farm works made by participant households in order to work for MGNREGS (see Figure 8 (b)). Though the participant labouers did increase mandays worked in farm and non-farm variably, over what they would have performed given timely MGNREGS wage payment (as discussed in Figure 8 (a)), but nevertheless, the mandays remained lower relative to the non-participant counterparts.

However painful is the fact that despite incurring surplus work-load other than working under MGNREGS, the non-migrating labour households of all three studied Panchayats failed to service off the due debt (22 percent, 20 and 67 of due debt was able to be paid off by the non-migrating households in Margram panchayat, Indpur Panchayat and Hemtabad Panchayat respectively). Subsequently, with arrival of the MGNREGS wages amount, a big share went in clearing debt rather than being used for meeting household expenditure.

VII. CONCLUSION

MGNREGS is connoted as an anti-poverty programme since it gives work during rural economic emergency but the above analysis shows that consequent to violation of the Act MGNREGS, the intended objective got frustrating. Most of MGNREGS works were given amid or just before agricultural peak period. Though it did put the MGNREGS participant agricultural labourers in a favourable position to be able to bargain for higher wages from the employers, but nonetheless, another problem stepped in, i.e., when MGNREGS works allotted by the panchayat, the labourers would evade farm works at variable extent. This very decision made them to eventually suffer in both ways. On the one hand, they lost out the daily casual wage that they otherwise could have received. On the other hand, the MGNREGS participant labourers, despite providing services to MGNREGS, neither got timely payment nor received any compensation. Therefore they had to sort for borrowing.

The most adversely hit was the region where MGNREGS was successful in providing thickest density of protection (above 80 mandays per rural household), i.e., Margram Panchayat. In other words, intensity of MGNREGS implementation and degree of plight of participant households seemed to move in same direction. The delayed payment though somewhat stepped up labour supply to the farm sector easing the local labour crisis faced by farmers, but in actuality, to mitigate the debt burden, the distressed labour of the migrating households had to extend seasonal migration as it fetched almost twice higher wage rate than available locally. But concomitantly, the host of insecurities, risks and vulnerabilities that accompanied migration also got equally stretched. However, to the complacency, with the arrival of the MGNREGS wages payment, at least that lump-sum amount could be positively utilized for household consumption purpose. On the other hand, the non-migrating households inhabited by single women and aged working people, had to struggle more due to their limited geographical mobility. Dearth of sufficient non-farm works in and around village, coupled with low non-farm wage rate (only 25-28 percent more than unskilled farm wages), made them impoverished in the face of high indebtedness caused due to MGNREGS, since with the receipt of MGNREGS payment, a large share of money was used to pay off the debt rather than enhancing consumption. So in all it can be stated that MGNREGS, pervaded by the curse of 'delayed payment', proved to be a bane rather than boon wherever it was functioning well. And blessed were the studied area where less mandays per household was allotted because it would mean less of over-work.

Off-late the Central Government has taken several measures to ensure transparency in the implementation of MGNREGS, the worth-mentionable step being the introduction of GIS (Geographic Information System) in monitoring the works

conducted under MGNREGS at different phases. But the problem of delayed payment still lingers as was discussed in Jitendra (2017). The delay or holding of payments began in March, 2017 and the unpaid amount increased over time. Most importantly since the first week of September, no wage payments were made in many of the major states including West Bengal. In fact about a thousand workers and their supporters from thirteen states were found to be protesting in Delhi during September demanding timely wage payments, among other things. In November, 2017, Venkat further reported that payments worth Rs. 3,652. 58 crore have remained pending in up to 20 States which included West Bengal. So still now the above discussion on the problem of delayed payment and its spiteful aftermath holds true and therefore it does become imperative to add that besides improving the quality of the Scheme, if the Government can give equal effort to guarantee timely payment of MGNREGS wages particularly in the poorer states like West Bengal, it would make it truly effective at the grass-root level in giving protection to the rural poor during the period of economic crisis.

Notes

1. Among 10 most backward districts of West Bengal, listed by MGNREGA, Birbhum, Bankura and Utter Dinajpur was finalized for field survey on the basis of ranking made using secondary data provided by MNGREG official website.
2. In Margram II Panchayat, there is only one village governed by the aforesaid Panchayat so the author couldn't carry out survey in two villages as was done in other target areas of study.
3. An important clause of MGNREGA stating the scheme to be build in Right based Framework and self-targeting in nature wherein adult members of a rural household can apply for work under the scheme whoever is willing to do unskilled base manual work with special preference to SC/ST/Minorities.
4. Noteworthy to mention is that the average family size of such households was also small compared to the migrating rural labour households with less number of workers per household available to toil.
5. The job-cards of such households had become defunct.
6. The MGNREGS non-participant households belonged to rural labour class but had voluntarily stayed from engaging themselves in MGNREGS works because of irregularity and uncertainty of work allotment under the scheme. However, there does existed a ratio who gloomily stated that they were deprived and discriminated in giving MGNREGS works inspite of placing official demand with job card.
7. Since the labours were mostly technically unskilled in nature, majority of them would work as helper in informal construction works irrespective of gender (86 percent) while a miniscule ratio knew mason work.
8. Works in brick kilns and rural construction requires continuous and ample sunshine which is facilitated by the rabi season with retreat of south-west monsoon.
9. Rs. 100 was paid per worker against rolling of 1000 biris.

10. The numerical data discussed in Table 5 has been recorded using the 'Recall Method' to understand the employment pattern that existed during the years of near timely MGNREGS payment. Since for 4-5 years the intensity of MGNREGS implementation has remained similar in the studied areas with the problem pertaining to delayed payment getting worsened from 2013-14 so 'Recall Method' enables comparison between target and control group and analyze the labour supply behavior when MGNREGS wages were timely.
11. Migrating households were noticed to be having more amount of annual borrowing than non-migrating households. Even the borrowing due to MGNREGS was also relatively less (also see Table 7). This is because, given the smaller family size and absence of more number of competent working members to pay off large debt with interest, the cost of living was compromised.
12. In face of extremely limited non-farm employment opportunities during kharif monsoon season, seeking informal urban works outside state (distressed migration) was an easy and faster way of debt redressal, as highlighted by the participants. This is because of the prevalence of significantly higher wage rate outside which was almost double to what paid locally. So devoting time on urban works, though highly stressful, uncertain and often exploitative, proved financially beneficial for them.
13. The farm mandays pertaining to Indpur Panchayat, shown in the graphs Figures 7(b) and 8(b) do not include the mandays involved in performing agriculture outside the village because its only the mandays in local agriculture that got affected by MGNREGS delayed payment.
14. Each of MGNREGS participant migrating worker also worked 34 percent more in non-farm sector compared to the control group to settle debt taken during rabi season. In rabi season non-farm works was referred because firstly, farm works were limited and secondly, non-farm works offered 25-30 percent higher wage rate so debt could be redressed faster with relatively less labour days.

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IASSI Quarterly: Contributions to Indian Social Science, Vol. 37, No. 2, 2018

An Assessment of the Inequality of Educational Attainment in the District of Purulia, West Bengal

Mukunda Mishra*

The measurement of inequality in status of human development inevitably takes the status of education into its fold. The level of educational attainment is directly and indirectly related to the almost all the parameters of development. The primary data collected from 170 villages and 3 urban municipal wards bring to fore the complex pattern of inequality in educational attainment within the district. The present study uses the Mean Year of Schooling (MYS) for the population aged 25 years and more as the indicator for level of attainment as proposed by the UN Institute of Statistics (2012 scheme). The non-spatial analysis of educational inequality has been accomplished by calculating the MYS of the population disaggregated by required non-spatial classes. The spatial pattern of inequality in educational attainment has been reported by block level datasets as well as analyzing the rural urban differentials of the same.

Keywords: *Mean years of schooling; Rural-urban, Spatial inequality, Non-spatial inequality*

I. INTRODUCTION

Education is considered by the economists as a kind of human capital. There are established facts about country's stock of human capital deriving a positive growth rate for its economy (Barro, 1991; Mankiw et al., 1992). Researches show that the investment to education ensures significant positive returns (Bhaumik and Chakrabarty, 2009) and there are ample evidences showing higher returns for people from the more disadvantaged socio-economic classes (Krueger and Lindahl, 2001). So, development, when conceptualized as a process of sustainable human well being, cannot be addressed properly without linking it with the parameter of education.

Education occupies a strategic position in India's development initiatives; and, successive development policies and Five-Year national development plans have accorded high priority to education development (NUEPA, 2014). Alongside the National Sample Survey database explores that there is a large variation of enrollment and attainment of education across Indian states since independence (Filmer and Pritchett, 1998). Naturally, the same scenario should be found with a changing magnitude if investigated at the district as well as sub-district administrative units in

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the country. India is not an exception to the very common features of the developing countries that the educational attainment is obviously increasing but the raising average of educational level is often accompanied with increased levels of inequality in education (Pieters, 2009). The inequality of opportunity of education between castes, communities and genders is concerned with the low degree of social mobility (Asadullah and Yalonetzky, 2010). Moreover, this issue of equality of opportunities become more relevant in the case of present educational system under the 'atmosphere' of privatization where the growing gap of per capita expenditure to education by 'wretched' and 'affluent' economic classes arises the debate between equity and quality of education. The disparity between different social, religious and economic classes (i.e. non-spatial) as well as the spatial units in terms of educational attainment should have every possibility to influence the 'landscape' of human development of a given region.

The district of Purulia is located at the extreme west of the State of West Bengal in India was selected as the study area. The district lies between 22.70295^0 N to 23.71335^0 N latitude and 85.82007^0 E to 86.87508^0 E longitude, covering a total area of 6259 sq. km and accommodates 2,930,115 inhabitants with an average population density of 468 persons per km^2 (Census of India, 2011). The district has achieved a marginal level of development in health, education and income – the three basic dimensions of Human Development (West Bengal Human Development Report 2009). The constraints such as unfertile soils, extreme climates and the lack of irrigation opportunity restrict the district to achieve an agricultural yield beyond the subsistence level. Regarding the level of educational attainment, the rural and urban literacy rates are 62.73 and 76.18 percent in the district, respectively. Moreover, the literacy rate amongst urban females is 67.15 per cent and it has yet to reach the 50 per cent 'benchmark' in the rural areas (District Statistical Handbook 2013).

The present study tries to assess spatial and non-spatial disparity in educational attainment in the district of Purulia in the state of West Bengal.

II. MEASURING INEQUALITY OF EDUCATIONAL ATTAINMENT

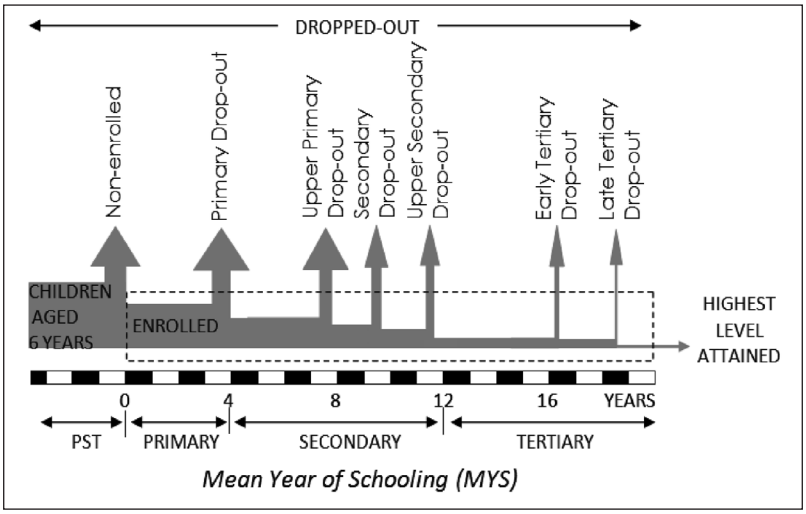
Educational attainment is defined as the highest grade completed within the most advanced level attended in the educational system of the country where the education was received. Some countries may also find it useful to present data on educational attainment in terms of the highest grade attended (United Nations, 1998). Simply, the term 'attainment' evokes the notion of 'a kind of progression' from very elementary to more complicated learning experience, embracing all fields and programme groups that may occur at that particular stage of the progression. Hence, the attainment is a journey of an individual or a community or a country through a continuous tract

of gaining higher knowledge. Fig. 1 shows attainment as a process of transforming children who can be termed as potential human resources, to the knowledgeable citizens of the country through the course of time. The figure also clearly reflects that the level of attainment is inevitably linked with two important channels – enrollment and drop-out. Enrollment is the entry of population to educational system; whereas, drop-out is the exit of population from education system before attending the possible highest grade. The mutual interaction between the rate of enrollment and the rate of drop-out determines the levels of attainment of a region, country or within a community.

Hence, the measurement of the proportion of the life of the population spent in schooling i.e. the knowledge acquiring process is found more relevant in the measurement of human development than that of the measurement based on enrollment or literacy based indicators. Mean years of schooling (MYS) have been used by the Human Development Report Office (HDRO) of the United Nations Development Programme (UNDP) since 2010 as one of two education indicators in the calculation of the Human Development Index (HDI). MYS replaced the adult literacy rate that was used in the calculation of the HDI until 2009. MYS indicates the average number of completed years of education of the population of a well defined spatial unit; excluding years spent repeating individual grades. MYS estimates produced by the UIS is suggested to cover the population aged 25 years and older, which is the indicator used in the calculation of the HDI.

Figure 1

A simple flow diagram depicting the 'journey' of a population from elementary level of education to the highest level of attainment and its presentation by the Mean Years of Schooling (MYS)



Until 2013, the UNESCO institute of Statistics (UIS) educational attainment survey referred to ISCED 1997 (UIS, 2006) and considered the following levels of attainment:

- No schooling
- Some primary education
- Completed primary education (ISCED 1)
- Completed lower secondary education (ISCED 2)
- Completed upper secondary education (ISCED 3)
- Completed post-secondary non-tertiary education (ISCED 4)
- Completed tertiary education (ISCED 5 or 6)

In 2011, the new scheme, namely the ISCED 2011 levels of education has been launched. The revised version of the ISCED defines educational attainment as "the highest ISCED level completed by the individual. For operational purposes, educational attainment is usually measured with respect to the highest education programme successfully completed, which is typically certified as a recognized qualification. Recognized intermediate qualifications are classified at a lower level than the programme itself" (UIS, 2012). The new scheme calculates the MYS from more finer resolution of grades in the attainment system to get more precision in the estimation of MYS. The revised scheme considers the following levels of attainment:

- No schooling (ISCED 01 or 02)
- Some primary education (ISCED 03)
- Completed primary education (ISCED 1)
- Completed lower secondary education (ISCED 2)
- Completed upper secondary education (ISCED 3)
- Completed post-secondary non-tertiary education (ISCED 4)
- Completed short-cycle tertiary education (ISCED 5)
- Completed Bachelor's degree or equivalent (ISCED 6)
- Completed Master's degree or equivalent (ISCED 7)
- Completed doctoral degree or equivalent (ISCED 8).

Table 1
Different levels of educational attainment as proposed by UNESCO Institute of Statistics (UIS, 2012) and syncing the scheme with Indian standard levels along with official durations for each

Attainment level	*Status*	*Synced with regional standard of education attainment level*	*Official duration (years)*	*Years of schooling considered*
ISCED 01	No schooling	Illiterates	0	0
ISCED 02	No schooling	Literates	1#	1
ISCED 03	Some primary education	Class I - III	2#	2
ISCED 1	Completed primary education	Class IV Qualified	4	4
ISCED 2	Completed lower secondary education	Class X Qualified	6	10
ISCED 3	Completed upper secondary education	Class XII Qualified	2	12
ISCED 4	Completed post-secondary non-tertiary education	Class XII+ certificate courses	1#	13
ISCED 5	Completed short-cycle tertiary education	Diploma courses	2#	14
ISCED 6	Completed Bachelor's degree or equivalent	Graduation completed	3	15
ISCED 7	Completed Master's degree or equivalent	Post Graduation completed	2	17
ISCED 8	Completed doctoral degree or equivalent	Research degree awarded	8#	25

Duration assumed for intermediate/ unrestricted levels

Present study follows UIS 2012 scheme to calculate the Mean Years of Schooling from the primary dataset. Different levels of attainment as proposed in UIS 2012 scheme has been synced with the standards of attainments followed in the study (see **Table 1**). The value of MYS for all the sites have been calculated (following UIS, 2012) for the population in the age group 25-65 years ($MYS_{25\text{-}65Y}$) using the formula below:

$$MYS_{25-65Y} = \sum_{l} [HS_l]_{25Y}^{65Y} \times [YS_l]_{25Y}^{65Y} \quad (1)$$

Where, is the portion of the population belongs to age group 25-65 years attained up to the 'l' level of education and is the official duration of level 'l' of attainment. The above equation is based on a single assumption that the duration of each level of education remains constant over time (which is followed by majority of the countries in UIS database as reported by UNESCO). The lower limit of age is considered to be 25 years as the population below 25 years may have incomplete grades that may lower the calculated Mean Years of Schooling (MYS). The upper limit is set as 65 years, considering the population beyond this age has very limited participation in the income generating process and influence the human development process insignificantly.

III. DATA AND SOFTWARE

Primary Datasets

The present study uses the primary data collected through household surveys constructed using a pre-printed survey schedule. The district of Purulia is constituted with 20 Community Development Blocks (i.e. C.D. Blocks) and a total of 170 Gram Panchayats (GPs) within the administrative jurisdiction of these blocks. There are also three urban municipalities in the district. The survey was designed to estimate simple proportions without any cross-classifications in a large population by collecting the samples randomly from each C.D. Block, provided that the sample is distributed at least one census village in each of 170 GPs and one municipal ward of each of three urban municipalities of the districts ensuring the representation of the entire study area. The sufficiency of the collected sample size from each unit was validated by using the following formula (Australian Bureau of Statistics, 2016):

$$n_x \geq \frac{(Z_{1-\alpha})^2 \left(\frac{p_E}{p_x}\right)\left(1 - \frac{p_E}{p_x}\right)}{c^2} \quad (2)$$

where is sample size for x set of population; is the Z value at α significance level; is the population within set x; is the expected population having the attributes which are being estimated from the survey; and c is the confidence interval. For the present study, the ratio was assumed to be unknown and was set to 0.5 (i.e. 50%), as this would produce a conservative estimate of variance. The value of Confidence Interval (c) was set as 0.05.

Secondary Datasets

The Census of India provides required dataset for generating required variables associated with the statistical estimation of the level of Human Development in different part of the district of Purulia. The datasets of Census of India 2001 and 2011 has been utilized for the analysis of a decadal changing pattern of development perspective in the district.

Software

The statistical analysis has been operated with MS Excel v2007 (*Microsoft Corporation*) and SPSS v17.0 (*IBM Analytics*). Maps are prepared in QGIS v2.8 software platform.

IV. RESULTS AND DISCUSSION

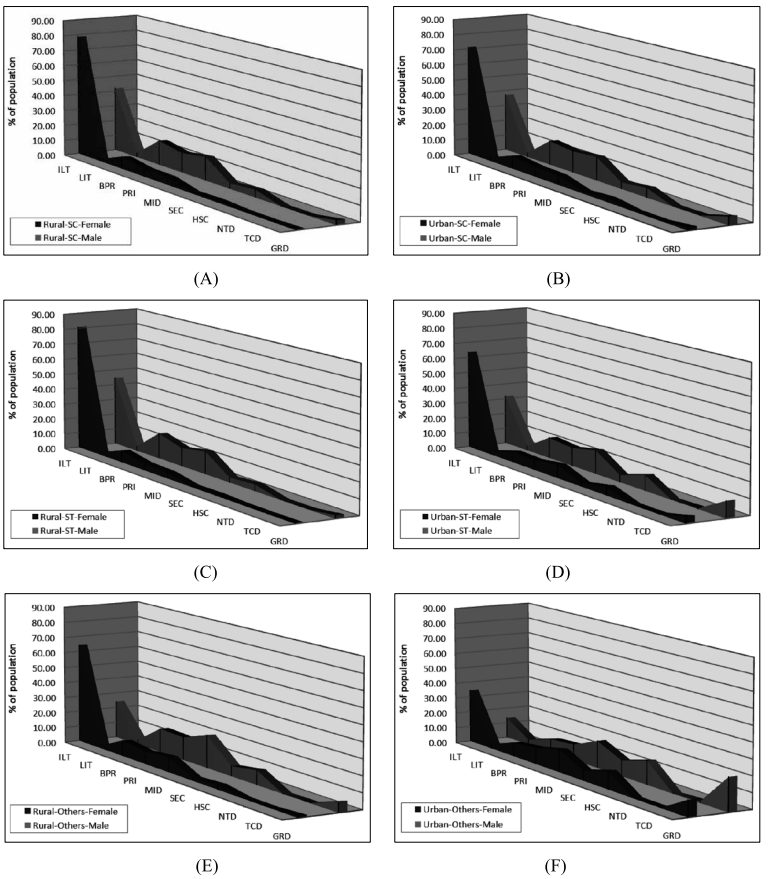
Educational Attainment Differentials among Social Classes

The Census of India (2011), in its report on enumeration of education related data (i.e. Census Table C-8) highlights the levels of schooling among population aged 25 years

and older, disaggregated by social classes in the district of Purulia (See Table 4a in Appendix). This is, with great anxiety, to be stated that about 78.61% and 80.68% of the female population aged ≥25 years, belonging respectively to SC and ST communities, are illiterates (Fig. 2(A) and 2(C)); whereas, for the males of the rural SC and ST populations in the same age group, the illiteracy rate is 41.90% and 44.13% respectively. A careful comparison of the status of educational attainment with respect to different levels or grades of educational qualification between SC, ST and Others (i.e. non-SC and non-ST population) social classes in the rural areas of the district of Purulia (see Fig. 2(A), 2(C) and 2(E)) makes it clear that there is no significant difference between SCs and STs in this respect; but, the rest of the population exhibits a better attainment profile.

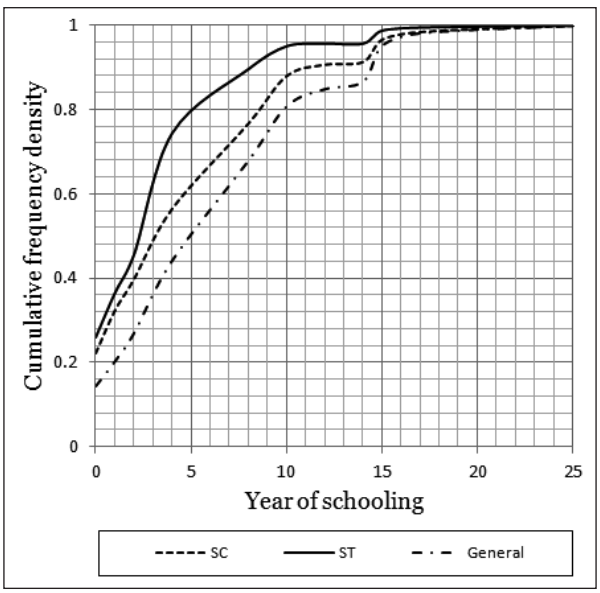
Figure 2

Gender wise distribution of population (aged 25 years and more) into different levels of schooling among (A)Rural SC population; (B)Urban SC population; (C)Rural ST population; (D)Urban ST population; (E) Rural others population and (F)Urban others population [N.B. : ILT – Illiterate; LIT – Literate; BPR – Below Primary; PRI – Primary; MID – Middle School Level; SEC – Secondary; HSC – Higher Secondary; NTD – Non-technical Diploma; TCD – Technical Diploma; GRD – Graduate & above]



The lower levels of illiteracy rate (64.19% for females and 23.88% for males) and a higher level of attainment till graduate or higher grades (1.24% for females and 6.55% for males) among the population other than SC and ST clearly indicates the better attainment profile in comparison with the SC and ST population in the district. The difference of attainment profile of SC and ST population than that of Other castes is found to be wider in urban areas (see Fig. 2(B), 2(D) and 2(F)). For the urban females with the age ≥25 years, where the illiteracy rate is 71.11% and 63.44% for SC and ST population respectively, the said illiteracy rate is only 34.40% for the population other than SC and ST. However, for the urban males with the age of ≥25 years, where the illiteracy rate is 36.91% and 31.74% for SC and ST population respectively, the said illiteracy rate is only 13.27% among the population other than SC and ST. The inequality at a considerable magnitude is also found in the case of attaining tertiary levels of education. The portion of population with ≥25 years of age, completed graduation or attained higher education is only 3.66% for SCs, surprisingly 7.33% for STs and 15.99% for Others. Interestingly, the profile of ST males looks better than that of the SCs in terms of attainment of graduate or higher levels of education as 5.36% of SC males with the age of ≥25 years, attained graduate or higher studies whereas the figure is 10.49% for SC males in the district.

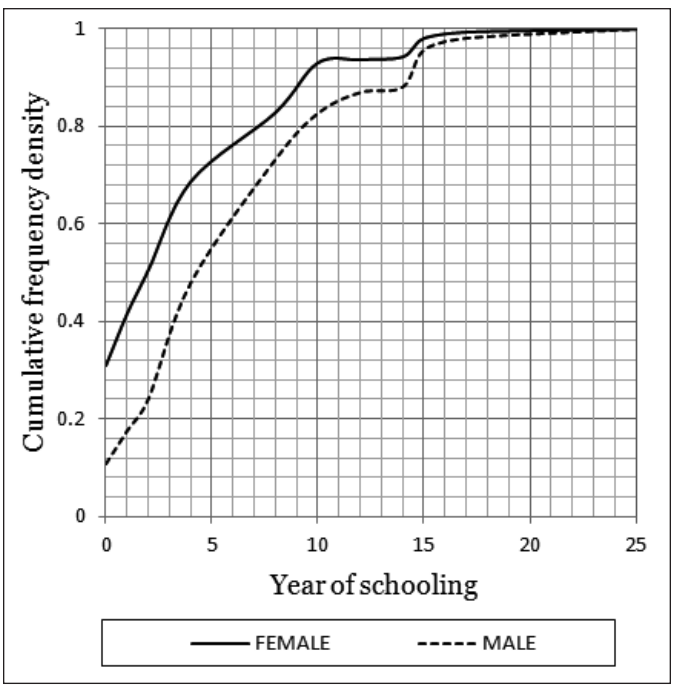
Figure 3
Distribution of sample population belongs to different social classes aged 25-65 years in different levels of schooling



The primary data collected through household survey in 170 villages and 3 municipal wards has recorded the detailed information about the educational

attainment of the members of the sample household in the study area. This dataset has been used to calculate the Mean Years of Schooling for the population in the age group of 25-65 years ($MYS_{25\text{-}65Y}$), disaggregated by SCs, STs and Others using the UIS (2012) method as mentioned earlier. There is a distinct difference between the profiles of different social classes in terms of the distribution of population against the number of years they spent in schooling (see Fig. 3). The calculation of $MYS_{25\text{-}65Y}$ using Equation 4.1 above results in the values as 5.56 years and 3.97 years for SCs and STs respectively for the sample population whereas it is 7.05 years for population belongs to General category. The tribal population in the district lies behind the non-tribals in attaining higher education. The primary data shows that only 4.24% of ST population within the age group of 25-65 years have acquired graduate or higher academic degrees whereas this figure is almost double for SCs (8.61%) and more than triple for General category (13.31%) of population (see Table A in appendix).

Figure 4
Distribution of sample population aged 25-65 years, disaggregated by genders, in different levels of schooling



The Gender Gap in Educational Attainment

The district of Purulia witnesses a wide gap between genders in terms of educational attainment which is clearly viewed in Fig. 2. The education data of Census of India

(2011) shows that the gender gap of educational attainment persists both in rural and urban areas of the district but the gap is much wider in rural areas than that of the urban centers in the district (see Table B in appendix). The illiteracy is prevailing widely among the females in the rural areas, evidenced by as large as 80.68% of females aged 25 and more years to be recorded as illiterates; whereas among males in same age group, the illiteracy rate is about 44.43%. The same scenario of inequality persists in urban areas also where 63.44% of female population aged ≥ 25 years is illiterate whereas the illiteracy rate is 31.74% for the males in the same age group (Census of India, 2011). The secondary and tertiary levels of education is not equally attained by both of the genders neither in the rural areas nor in the urban centers in the study area; but, the difference in educational attainment, in this case also, is more distinct in rural areas than that of the urban areas. The social classes, if considered, the gender inequality in educational attainment is clearly visible across all the social classes. The highest degree of gender inequality in educational attainment is found among the tribal population, residing in the rural areas of the districts.

The values of Mean Years of Schooling calculated gender wise for the population within the age group of 25-65 years allows to compare the levels of educational attainment among the male and female population. The cumulative frequency distribution of males and females belongs to the said age group against years of schooling (Fig. 4) clearly demonstrates the gender inequality in terms of the years spent for schooling. The calculated gender specific values of $MYS_{25\text{-}65Y}$ are 4.28 years and 6.82 years respectively for females and males (see Table A in appendix). A large volume of illiterate females, accompanied with higher rates of upper secondary and early tertiary drop-out, especially in the rural areas lowers the MYS of females to a large extent in comparison to males in the district. The issue of wide inequality in educational attainment between males and females has other socio-economic implication also. Poor responses to the State policies for motivating tribal girl students in pursuing higher education, high rate of drop out among girl students and failure in proper empowerment of the tribal women can be attributed to the gender inequality of education attainment among tribes. Moreover, the educational attainment in economically wretched families is often reported to have constrained by low capability of expenditure toward providing higher education to the children of the families. The early age of marriage among girls, compulsions of girls to involve into the wage earning system, mental block of the parents to send their female wards away from home for attaining higher education, non-availability of public education institutions locally at the remote rural areas and many other social and economic factors lead to widen the gap between genders in terms of educational attainment.

The spatial inequality in educational attainment:

There is a prominent disparities among the blocks of the district of Purulia in terms of the level of literacy as reflected in the last Census dataset (2011) which is graphically presented in **Fig. 5**. There is a considerable gap of literacy between genders across the district with varying magnitude. More interestingly, there is no block in the district where the male literacy rate is found below 70% limit and contrastingly, there is no block as well which attains more than 60% of female literacy rate (see **Table C** in appendix for details).

Figure 5

Levels of literacy among male and female population in different C.D. Blocks of Purulia district (Data source: District Statistical Handbook, Purulia, 2011)

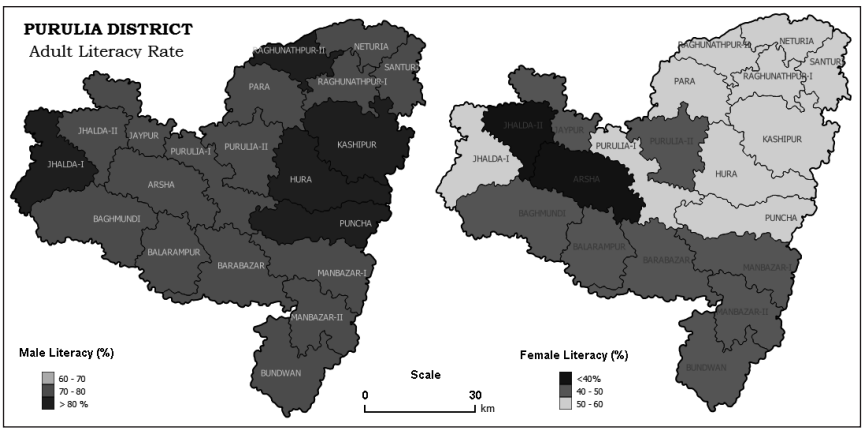
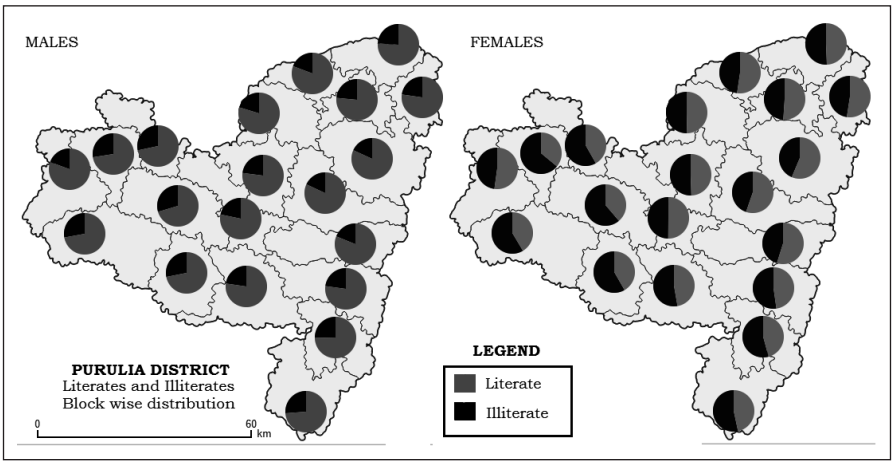


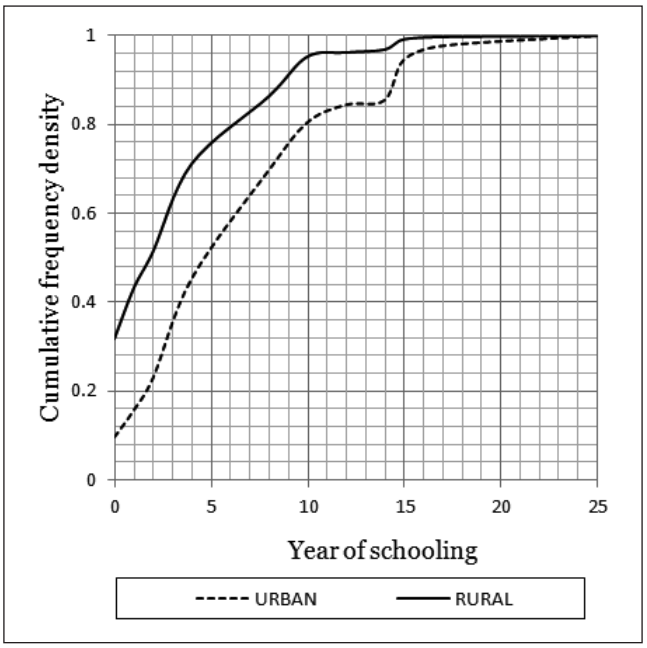
Figure 6

Graphical presentation of the spatial distribution of literate and illiterate population specified by genders in the C.D. Blocks of the district of Purulia (Data source: Census of India, 2011)



The blocks of Kashipur, Hura and Puncha in the east; Raghunathpur-II at the north and Jhalda-I at the west are the blocks that exhibit male literacy rates more than 80% levels of male literacy as well as more than 50% level of female literacy also. On the other hand, the blocks of Bagmundi, Balarmpur, Barahbazar, Bandwan, Manbazar-I and II in the south, along with Purulia-II and Jaypur shows the worse scenario, having less than 80% male literacy and less than 60% female literacy. The worst level of female literacy (<40%) is found in the blocks of Arsha and Jhalda-II which are the blocks having widest gender gap between genders in terms of literacy. The share of literate and illiterate population in different blocks of the district is graphically represented in Fig. 6. This map presents the spatial variation of the gender gap of literacy in the study area.

Figure 7
Distribution of sample aged 25-65 years in different levels of schooling disaggregated by type of settlement (i.e. rural and urban)



The graphical presentation of Census of India (2011) dataset in Fig. 2 above clearly bring to fore the presence of disparity in level of educational attainment between rural and urban areas in the district of Purulia. Table 2 represents the scenario of the rural-urban difference of literacy among male and female population in the district. The table shows that both the male and female population in the urban areas of the district posses a higher literacy rate in the urban centers than that in the rural areas and this rural-urban gap is more prominent for female population (as high as 19.09%) than that

of the male population (7.80%) in the district. Moreover, the gender gap of literacy is also higher in rural areas (as high as 28.77%) than that of the urban centers (17.48%)in the study area.

Table 2
A summarized information on rural-urban difference of literacy

Residence	*Literacy rate (Per cent)*		*Gender gap of literacy*
	Males	*Females*	
Rural	76.83	48.06	28.77%
Urban	84.63	67.15	17.48%
Rural-urban gap of literacy	7.80%	19.09%	

Source: Census of India, 2011

The primary data collected from the sample households also highlights the rural-urban difference in the educational attainment. The distribution of the number of individuals according to the years spent for schooling (Fig. 7) shows the wide gap between the graph for rural and urban dwellers. Table A in the appendix shows that, in the urban areas 14.5% of the sample (age group 25-65 years) posses graduation and higher academic grade; whereas in the rural areas this figure is only 3.1%. As a whole, the Mean Years of Schooling for the said age group ($MYS_{25\text{-}65Y}$) is 7.21 years in the urban centers but this figure is calculated to be as low as 3.88 years only for the rural areas. The low levels of attainment in the rural areas in the district has made it compulsion for the greater portion of the rural population to remain associated with the physical labour based occupation leading to a low income and low standard of living.

V. CONCLUSION

The discussion on educational attainment in the district successfully explores some important trend of inequality which can be summarized as: (1) The inter social-class as well as inter gender inequality of attainment is more prominent in rural areas than that of the urban centers of the district; (2) The SC and ST population of the district are devoid of satisfactory level of higher education as well as these communities are characterized by a very high rate of female illiteracy and an unsatisfactory levels of male literacy; (3) There is a clear indication of a rapid upper secondary and early tertiary school drop-out in the district irrespective to classes, communities and genders; (4) The illiteracy among the rural females aged 25 years or more provides the most disappointing scenario of the attainment level for the district; (5) There is a clear indication of the non-participation of the population to technical education and skill oriented trainings which may be due to the lack of awareness from the end of the people as well as the deficiency in proper policies from the end of the government.

The primary field survey reveals that the enrollment rate of children aged 6 years is very close to cent percent in all the survey villages. The imbrications of education policies with monitoring, coordination and consultation by the workers under ICDS project along with the arrangement of Mid-day meals to the primary and lower secondary schools is found working effectively toward reaching very close to the benchmark of 100% enrollment of children to education system. Except some tribal villages, the enrollment scenario is satisfactory. But, there is a wide gap between enrolling children to education system and retaining them there for a long-term. There is an alarming rate of school drop out in the district as reported by the district administration (Official website of Purulia District, 2015) mentioning a 20.36% drop-out from Class-I to Class-II, 15.78% form Class-II to Class-III, 15.25% from Class-III to Class-IV with a gross of 43.16% drop out between Class-I to Class-IV.

There are a range of psycho-social factors like family orthodoxies, apathy in educating female child, under-age marriage of girl children, child labour etc to influence the school drop-out but, the non-availability of attainment favourable physical infrastructure, education goods & services at local level are the prime concern of drop-out. As for example, a family at far flank rural area will think for withdrawing the girl child of the family who is at her late childhood, from schooling if there is no scope for secondary schools at the vicinity. Hence, the rural areas with very limited outreach of public educational facilities and services have higher possibility of getting high volume of school drop-out, assuming the psycho-social factors prevail all over the wide rural Purulia equally. Besides, a range of essential educational amenities and services, strictly associated with the urban spaces, somehow, makes the peripheral areas of the districts to experience a higher susceptibility of school drop-out than that of the areas surrounding the district headquarter and other urban municipal areas of the study area.

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Appendix

Table A

Estimation of Mean Years of Schooling (MYS) for the population with the age of 25 years and older, disaggregated by social and religious classes, genders and residence of population

Attainment Level	*Status*	*Years of Schooling*	*Social Classes*			*Genders*		*Residence*	
			Sc	*St*	*Others*	*Females*	*Males*	*Urban*	*Rural*
ISCED 01	Illiterates	0	22.21	26.05	14.30	30.79	10.61	9.64	31.76
ISCED 02	Literates	1	10.11	10.54	5.89	10.69	6.81	6.05	11.45
ISCED 03	Class I – III	2	7.46	9.07	6.73	8.95	6.55	7.27	8.23
ISCED 1	Class IV Qualified	4	16.74	28.83	17.24	18.21	23.89	22.36	19.74
ISCED 2	Class X Qualified	8	20.27	15.23	23.78	14.22	25.38	24.41	15.19
ISCED 3	Class XII Qualified	10	11.27	5.41	12.90	10.22	9.48	10.76	8.94
ISCED 4	Class XII+ certificate courses	12	2.65	0.59	4.07	0.63	4.27	3.98	0.92
ISCED 5	Diploma courses	14	0.67	0.04	1.77	0.60	1.10	1.03	0.67
ISCED 6	Graduation completed	15	5.30	3.07	8.55	3.79	7.61	9.11	2.29
ISCED 7	Post Graduation completed	17	1.82	0.73	2.94	1.27	2.43	3.13	0.57
ISCED 8	Research degree awarded	25	1.49	0.44	1.82	0.63	1.87	2.26	0.24
Mean Years of Schooling (Years)			5.56	3.97	7.05	4.28	6.82	7.21	3.88

Source: Primary Field Survey

Table B

Level of schooling by the population (aged 25 years and older) of different social classes disaggregated by gender and residence

Levels of schooling	*Gender*	*SC Population (25-65 Y)*				*ST Population (25-65 Y)*				*Other Population (25-65 Y)*			
		Rural		*Urban*		*Rural*		*Urban*		*Rural*		*Urban*	
		Popul.	*In %*	*Popul.*	*In %*	*Popul.*	*In %*	*Popul.*	*In %*	*Popul.*	*In %*	*Popul.*	*In %*
Illiterate	Females	91976	78.61	12962	71.11	107960	80.68	1407	63.44	249385	64.19	25817	34.40
Literate without grade	Females	1638	1.40	396	2.17	2226	1.66	50	2.25	7446	1.92	2151	2.87
Below Primary Education	Females	9176	7.84	1523	8.36	10235	7.65	152	6.85	39430	10.15	6647	8.86
Primary Education	Females	5874	5.02	1166	6.40	5793	4.33	140	6.31	31229	8.04	7953	10.60
Middle Education	Females	5614	4.80	1080	5.92	5159	3.86	189	8.52	37766	9.72	11026	14.69
Secondary Education	Females	703	0.60	250	1.37	715	0.53	51	2.30	6916	1.78	4876	6.50
Higher Education	Females	1213	1.04	456	2.50	992	0.74	122	5.50	11403	2.93	8569	11.42
Non-technical Diploma	Females	0	0.00	0	0.00	0	0.00	1	0.05	87	0.02	50	0.07
Technical Diploma	Females	8	0.01	11	0.06	8	0.01	3	0.14	68	0.02	93	0.12
Graduates and higher	Females	540	0.46	351	1.93	366	0.27	94	4.24	4807	1.24	7870	10.49
Total	Females	116997	100.00	18228	100.00	133807	100.00	2218	100.00	388537	100.00	75052	100.00
Illiterate	Males	50128	41.90	6843	36.91	57844	44.43	690	31.74	95316	23.88	10775	13.27
Literate without grade	Males	3200	2.67	489	2.64	3749	2.88	57	2.62	12107	3.03	2606	3.21
Below Primary Education	Males	18986	15.87	2876	15.51	21400	16.44	288	13.25	61338	15.37	7049	8.68
Primary Education	Males	15158	12.67	2531	13.65	15261	11.72	251	11.55	58264	14.60	8207	10.11
Middle Education	Males	18230	15.24	2790	15.05	19063	14.64	329	15.13	83104	20.82	14141	17.42
Secondary Education	Males	4138	3.46	778	4.20	4079	3.13	96	4.42	25806	6.47	8077	9.95
Higher Education	Males	5867	4.90	1113	6.00	5533	4.25	213	9.80	36267	9.09	12291	15.14
Non-technical Diploma	Males	9	0.01	4	0.02	7	0.01	2	0.09	115	0.03	102	0.13
Technical Diploma	Males	95	0.08	65	0.35	46	0.04	10	0.46	675	0.17	822	1.01
Graduates and higher	Males	3477	2.91	994	5.36	2723	2.09	228	10.49	26128	6.55	17114	21.08
Total Males		119651	100.00	18538	100.00	130200	100.00	2174	100.00	399120	100.00	81184	100.00
Illiterate	Persons	142104	60.05	19805	53.87	165804	62.80	2097	47.75	344701	43.76	36592	23.42
Literate without grade	Persons	4838	2.04	885	2.41	5975	2.26	107	2.44	19553	2.48	4757	3.04
Below Primary Education	Persons	28162	11.90	4399	11.96	31635	11.98	440	10.02	100768	12.79	13696	8.77
Primary Education	Persons	21032	8.89	3697	10.06	21054	7.97	391	8.90	89493	11.36	16160	10.34
Middle Education	Persons	23844	10.08	3870	10.53	24222	9.17	518	11.79	120870	15.35	25167	16.11
Secondary Education	Persons	4841	2.05	1028	2.80	4794	1.82	147	3.35	32722	4.15	12953	8.29
Higher Education	Persons	7080	2.99	1569	4.27	6525	2.47	335	7.63	47670	6.05	20860	13.35
Non-technical Diploma	Persons	9	0.00	4	0.01	7	0.00	3	0.07	202	0.03	152	0.10
Technical Diploma	Persons	103	0.04	76	0.21	54	0.02	13	0.30	743	0.09	915	0.59
Graduates and higher	Persons	4017	1.70	1345	3.66	3089	1.17	322	7.33	30935	3.93	24984	15.99
Total Population		236648	100.00	36766	100.00	264007	100.00	4392	100.00	787657	100.00	156236	100.00

[Data Source: Census of India, 2011]

Table C

Literacy Rate by sex in rural and urban areas in the district of Purulia, 2011

Sub-Division/ C.D.Block/ M	*Rural*			*Urban*			*Total*		
	Male	*Female*	*Total*	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
Sadar (W) Sub-Division	73.85	42.78	58.63	81.35	59.06	70.59	74.47	44.10	59.62
Arsha	70.36	38.75	54.78	-	-	-	70.36	38.75	54.78
Baghmundi	72.14	41.42	57.17	-	-	-	72.14	41.42	57.17
Balarampur	71.89	41.69	57.19	84.45	64.77	74.98	74.18	45.82	60.40
Barabazar	77.26	47.27	62.41	88.66	70.77	80.15	77.84	48.37	63.27
Jaypur	71.67	41.74	57.21	76.54	55.26	66.32	72.06	42.80	57.94
Jhalda-I	80.60	52.14	66.66	73.56	43.61	59.07	80.15	51.61	66.18
Jhalda-II	72.53	35.97	54.6	72.56	39.79	56.54	72.53	36.29	54.76
Jhalda(M)	-	-	-	85.49	67.50	76.78	85.49	67.50	76.78
Sadar (E) Sub-Division	78.03	50.28	64.35	86.93	72.51	79.93	79.38	53.56	66.68
Bandowan	73.80	46.63	60.25	86.03	69.26	77.93	74.61	48.03	61.38
Hura	81.95	55.27	68.79	-	-	-	81.95	55.27	68.79
Manbazar-I	77.13	47.73	62.57	88.81	74.06	81.61	77.88	49.38	63.78
Manbazar-II	74.64	45.76	60.27	-	-	-	74.64	45.76	60.27
Puncha	81.16	54.82	68.14	-	-	-	81.16	54.82	68.14
Purulia-I	78.24	50.13	64.58	81.33	56.42	69.45	78.37	50.37	64.77
Purulia-II	77.03	49.51	63.55	72.54	49.50	61.25	76.72	49.51	63.39
Purulia(M)	-	-	-	88.40	75.39	82.09	88.40	75.39	82.09
Raghunathpur Sub-Division	79.25	52.21	66.08	83.98	65.84	75.23	80.03	54.42	67.58
Kashipur	81.84	56.33	69.29	89.31	75.69	82.59	82.83	58.91	71.06
Neturia	75.97	49.38	63.06	83.49	64.22	74.36	77.38	52.06	65.14
Para	79.71	49.70	65.17	79.08	56.13	68.00	79.61	50.73	65.62
Raghunathpur-I	76.48	51.03	64.18	88.41	73.33	81.23	78.73	55.14	67.36
Raghunathpur-II	80.72	52.31	66.93	85.10	61.57	73.79	80.95	52.79	67.29
Raghunathpur(M)	-	-	-	84.96	68.67	77.07	84.96	68.67	77.07
Santuri	77.25	52.42	65.09	63.83	37.88	51.38	76.32	51.45	64.15
District Total	76.83	48.06	62.73	84.63	67.15	76.18	77.86	50.52	64.48

Source: District Statistical Handbook, Purulia, 2011

Book Review

Mehta, Balwant Singh and Bharat Singh (2017), Labour Market Conditions in Information and Communication Technology Sector in India, New Delhi: Shivalik Prakashan, pp. 127, Price: INR 495/.

This book includes five chapters and describes the journey with a focus on current labour market conditions in the Indian Information and Communication Technology (ICT) Sector. In the first chapter, authors describe that the journey of India's ICT sector started way back in the 1960s, but the actual boost took place only after introduction of the 'New Computer Policy in 1984' and 'Economic Reforms in 1991'. These steps reduced import duties and facilitated exports of information technology and software products and services. Further, the government's several positive steps during the past two decades such as granting permission to foreign firms for setting-up wholly-owned, export-dedicated units and the chain of software parks with the availability of technically skilled &English speaking pool of youth, resulted in a phenomenon growth of the ICT sector in India.

The second chapter of the book explores key policy questions on the ICT sector's contribution in national income, export earnings, overall employment, objectives and methodology. Today, the ICT sector is regarded as the 'growth engine' of the Indian economy due to its growing contribution to the economy. Over the years, the ICT sector's direct as well as indirect contribution to India's Gross Domestic Product (GDP), export earnings and employment generation has increased many times. The third chapter discusses detail about employment scenario in the sector with a special focus on labour market conditions in two ICT sub-sectors includes-Information Technology (IT) and Information Technology Enabled Services (ITeS). The fourth chapter of the book presents labour market conditions for women in the sector. Finally, the fifth chapter highlights key policy issues in the ICT sector for the improvement of labour market conditions. The analysis of the first and second chapter is based on secondary data and information, while the third and fourth chapters are based on a detail field survey, which was conducted among IT and ITeS workers working in companies situated in one of the major ICT hub, e.g. Delhi and National Capital Region (NCR)--Noida, Gurugram, Ghaziabad and Faridabad.

In the survey finding discussed in the book,workers profile reveal that they were predominantly from metros or big cities,belonged to upper social category, from higher or middle income families, highly educated and employed as regular workers. The average monthly salary of workers in the ICT sector was relatively more than other traditional sectors of the economy. The nature of employment in ICT sector is more women friendly and also reflecting from their high representation in the sector. Women constitute more than one-third of the total workforce in the ICT sector. However, the women still largely concentrated at lower level of employment hierarchy, lower skilled and low paid jobs.

Overall, both favourable and non-favourable working conditions co-exist in the sector. Favorable conditions include high performance incentives, pick and drop facility, purified drinking water, cleanliness, refreshments and educational& training facilities. Non-favourable conditions have less number of annual leaves, high working hours, shift based work and safety issues in night shifts for women, high work pressure, target oriented jobs leading to high mental pressure and other health problems. Again, there were differences between ITeS and IT sub-sector with more favourable conditions exists in later than the former.

The other most important issues in the labour market is social security and protection of employment. The authors discussed that industry offered low level of social security and protection with only one-fifth availing social security benefits. Employers discourage formation of any union or association with only 4 per cent workers was members of some associations. There was also very little organised dialogue between employers and employees. Contractual appointment, high attrition rates and frequent job hopping in this sector made the employment situation most vulnerable. There is a fallacy of regular workers as most of them were on short term contracts of less than 3 years duration and could be fired any time without notice. The working conditions in Information Technology enabled Services(ITeS) segment are relatively poor compared to Information Technology (IT) segment.

The authors clearly pinpointed the exclusion of a large number of educated youth from rural areas or towns, low level of social security measures and adverse working conditions coupled with high rates of attrition are of serious concerns. This is more serious in ITeS compared to IT segment of the sector. Hence, they stated that there is a dire need to create more employment opportunities for rural and disadvantaged communities through skill trainings or upgrading their existing skill levels through training or retraining. In addition, the employers and governments should facilitate employers to create more favourable working conditions for women, like safety measures at night shifts, more flexible hours for work and life balance, family breaks so they can come back to work after starting a family, creating opportunities for rural and disadvantaged people by providing skills, training and retraining them. Extending social security benefits and favourable working conditions for both male and female employees and mobilization of workers for better job conditions are considered essential for the overall development of the Indian ICT sector.

This book gives valuable insights and is useful for academicians and policy makers. On the basis of these five chapters, the authors have come out with some insightful suggestions, which if adopted will provide better labour market conditions for working in this emerging and important sector.

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INDIAN JOURNAL OF AGRICULTURAL ECONOMICS

(Organ of the Indian Society of Agricultural Economics)

Vol. 73 April-June 2018 No. 2

CONTENTS

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Regd. No. 40528/83

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ISSN 0970-9061