Multidimensional Poverty Measurement in India:

Exploring Tools and Their Application to Assess Poverty and Deprivation

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Abbreviations

AAY	Antyodaya Anna Yojana
ADB	Asian Development Bank
APL	Above Poverty Line
AY	Annapurna Yojana
AYS	Average Years of Schooling
BMI	Body Mass Index
BPL	Below Poverty Line
CPI-AL	Consumer Price Index for Agricultural Labourers
CPR	Common Property Resources
DHS	Demographic and Health Survey
DSPI	Decomposition of Social Protection Programme
ED	Extreme Deprivation
FGT	Foster- Greer-Thorbecke
FI	Food Insecurity
FIG	Food Insecurity Gap
FIL	Food Insecurity Line
FISH	Food Insecurity Households
GCA	Gross Cropped Area
GDI	Group Dimension Index
GNI	Gross National Income
GoI	Government of India
HAGE	Age of the Household's Head
HCR	Head Count Ratio
HDI	Human Development Index
HDR	Human Development Report
HED	Education of Household's Head
HHs	Households
HHSIZE	Household Size
HMHC	Health Insurance
IAY	Indira Awaas Yojana
ICDS	Integrated Child Development Service
ICMR	Indian Councial of Medical Research
ICP	International Comparison Program
IGMSY	Indira Gandhi Matritva Sahyog Yojana
IGNDPS	Indira Gandhi National Disability Pension Scheme
IGNOAPS	Indira Gandhi National Old Age Pension
IGNWPS	Indira Gandhi National Widow Pension Scheme

IHDS	Indian Human Development Survey
ILO	International Labour Office
JSY	Janani Suraksha Yojana
LD	Low Deprivation
LOCN	Location of the Household
MCL	Manual Casual Labour
MD	Moderate Deprivation
MDG	Millennium Development Goal
MDGs	Millennium Development Goals
MDM	Mid-Day Meal
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MNL	Multinomial Logit
MPAT	Multidimensional Poverty Assessment Tool
MPI	Multidimensional Poverty Indicators
MSK	Madhyamic Siksha Karmasuchi
NAE	Non-Agricultural Enterprise
NFBS	National Family Benefit Scheme
NFHS	National Family Health Survey
NOAPS	National Old Age Pension Scheme
NREGA	National Rural Employment Guarantee Act
NREGP	National Rural Employment Guarantee Programme
NSS	National Sample Survey
NSSO	National Sample Survey Organisation
NTFP	Non-Timber Forest Produces
OBC	Other Backward Castes
OECD	The Organization for Economic Co-operation and Development
OPHI	Oxford Poverty and Human Development Initiative
PCLAND	Per Capita Cultivable Land
PCPDE	Per Capita Per Day Expenditure
PCPMI	Per Capita Per Month Income
PCPDI	Per Capita Per Day Income
PDS	Public Distribution System
PMAY	Pradhan Mantri Awas Yojona
RPHC	Rural Primary Health Care Service
RSBY	Rashtriya Swasthya Bima Yojana
SAGEH	Square Age of Head of the Households
SC	Scheduled Caste
SD	Standard Deviation
SECC	Socio-Economic Caste Census

SFIG	Square Food Insecurity Gap
SGRY	Sampurna Gramin Rojgar Yojana
SGSY	Swarnajayanti Gram Swarojgar Yojana
SHG	Self Help Group
SPBs	Social Protection Benefits
SPGP	Square Poverty Gap Ratio
SPI	Social Protection Index
SPP	Social Protection Programme
SPS	Social Protection Schemes
SPSS	Statistical Package for the Social Science
SSK	Shishu Shiksha Karmasuchi
ST	Scheduled Tribe
STATA	Statistical Software Package
TD	Time Dummy
TFR	Totally Fuzzy Relative
TPDS	Targeted Public Distribution System
TSC	Total Sanitation Campaign
TV	Television
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UNRISD	The United Nations Research Institute for Social Development
USAID	The United States Agency for International Development
UT	Union Territory
WHO	World Health Organization
WPR	Worker Participation Ratio

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Chapter 1

Introduction

"Human lives are battered and diminished in all kinds of different ways, and the first task… is to acknowledge that deprivations of very different kinds have to be accommodated within a general overarching framework." --- **A. K. Sen, Development as Freedom (2000).**

1.1 Introduction

Poverty, as a serious problem in most developing countries, has attracted a lot of attention among analysts in India too. The estimation of poverty in India is a much-debated issue during the recent years. However, most of the studies in India have tended to focus on poverty at a point of time and their methods of analyses have usually suffered from a uni-dimensional limitation (Filippone *et al* 2001), whereby they referred to only a unique proxy of poverty, namely equivalent income or consumption. They have also shared the traditional need to dichotomize the population into the poor and the non-poor by means of the so called poverty line. Thus, in the view of Satterthwaite (2001) uni-dimensional poverty measures, at best, can lead only to a partial understanding of poverty, and often to unfocused or ineffective poverty reduction programs. They failed to capture many aspects of deprivation. These limitations of uni-dimensional poverty measures are also compounded by other technical difficulties of income measurement, especially, in developing countries that reduce the value of such income based uni-dimensional poverty results. All these gives indications of serious limitations of the measures of poverty based on a single monetary indicator of resources (Atkinson and Bourguignon 1982, Maasoumi 1998) and underscore the strong need for a multidimensional approach to poverty analysis that widens the concept of poverty to reflect, for instance, dimensions other than just the monetary one.

India has sustained strong economic growth at over five percent on average during every five-year plan since 1980s. Although growth in gross national income (GNI) has been much higher than most of her neighboring countries, growth has not been as inclusive as some neighbors' – either in terms of reducing the proportion of income poor or in terms of improving many of the key social indicators. Granted, the share of people living below both the World Bank's $1.25/day poverty line and the national poverty line has fallen by nearly one percentage point per annum on average in the past two decades (GoI 2009, GoI2012; Deaton and Drèze 2002, Ravallion 2008), but this reduction has been much slower than the reduction in income poverty in Bangladesh, Pakistan and Nepal, despite these countries' having much lower GNI growth rates than India (Drèze and Sen 2011). Hence, understanding progress only in terms of income growth is not sufficient. Distinct measures are required to

ascertain whether rising national income translates into social gains or not. While discussing the prospects and policy challenges for the 12th five-year plan 2012–2017, Ahluwalia (2011) acknowledges the need for Indian growth to be more inclusive in terms of improving child and maternal health, quality of education through access to basic services and reducing disparity across social groups and states. Distinct measures are required because income poverty does not necessarily coincide with deprivations in other social indicators (Alkire and Seth 2013a). In India, very little work has been done hitherto by way of analyzing poverty in multi- dimensional sense.

1.2 Origin of the research problem

The past few years have seen a surge in mainstream multidimensional approaches to poverty and well-being in countries at variable levels of economic development as poverty reduction becomes a shared mandate across the world. In the academic literature, this trend can be seen for example in the two volumes on multidimensional poverty edited by Kakwani and Silber (2008) as well as the proliferation of empirical papers on multidimensional poverty and inequality in traditional journals. In the policy environment, examples of a mainstream interest in multidimensional approaches are exemplified by the Sarkozy commission's sub-group on Quality of Life measures called the Commission on the Measurement of Economic Performance and Social Progress. At the level of international institutions, since 1997 the World Bank has viewed poverty as a multidimensional phenomenon. The United Nations Development Programme (UNDP) has begun consultations to inform its 2010 report *Re-thinking Human Development* that almost certainly include a multidimensional measure to complement the Human Development Index (HDI).

The impetus to develop a multidimensional framework has a range of diverse sources, which gives it a distinctive strength and stability. Amartya Sen, Robert Fogel, and other leading social scientists have given a normative account of the need for broader approaches, while Inglehart, Kahnemann, Layard and others have documented the lack of satisfaction resulting from development based on income alone. At the same time, empirical research has clarified the reach and limitations of income-based measures as well as the flaws in foundational assumptions regarding human preferences and behaviour. In practical terms, relevant data sources have expanded greatly, and better computer infrastructure enables better multidimensional analyses. In terms of policy space, the launch of the Millennium Development Goals (MDGs) in the year 2000 drew attention to eight interconnected aspects of human suffering and achievement which have formed the basis of campaigns that are ongoing in many countries. National and international interest in multidimensional measures

of poverty and well-being has sharpened post-2009, as the economic downturn led to political incentive to focus on dimensions of well-being that can grow even during economic recession (Alkire and Sarwar 2009).

Poverty in India has traditionally been measured in terms of consumption and expenditure. The measurement of poverty remains centered on the ability to spend on goods and services rather than the capability to enjoy valuable beings and doings (Sen 1985), despite methodological revisions, debates (GoI 2009; Deaton and Drèze 2002), acknowledgement of the multidimensional nature of poverty and of the need for inclusive growth (Ahluwalia 2011). Poverty is multifaceted and deprivation in per-capita expenditure is the important dimension of poverty but perhaps more surprisingly, income poverty does not accurately proxy other deprivations. Empirical studies have shown that significant percentages of those who are multidimensionally deprived are not income poor and vice versa. There is a need to supplement India's long and august tradition of monetary poverty measurement with multidimensional poverty measures that capture the joint distribution of deprivations across the population. Such measures can be used to track national poverty levels; to monitor changes by region, caste, and dimension; and to inform the Below Poverty Line (BPL) targeting methodologies that are commonly on-monetary in nature (Alkire and Seth 2013a).

1.3 Review of Literature

For a long time, particularly, since the introduction of the economic concept of poverty, together with that of the poverty line and head count ratio, by Booth (1892) and Rowntree (1901), the reference indicator for poverty has almost always been the equivalent income or consumption. But whilst these indicators act as a reasonably accurate and useful measure of economic performance, and thus can give a workable impression of material wellbeing, they are by far no precise indicators of poverty. This has engendered attempts to find appropriate multi-dimensional indicator, which can portray the different and multi-dimensional pictures of poverty in any particular country, and in poverty comparisons between countries (Kolm 1977). Contributing to this increased interest on multidimensional poverty measures, the evolution in conceptual thinking on poverty towards *functioning* and *capabilities w*as initiated by Amartya Sen's (1993) well known critique of an income-based analysis of poverty. The consequence is a broadened notion of poverty to include even vulnerability and exposure to risk — and voice less ness and powerlessness— on the basis that considerations of risk and uncertainty are key to understanding the dynamics leading to and perpetuating

poverty (Rosenzweig and Binswanger, 1993; Banerjee and Newman, 1994). Hence today poverty is no more confined to lack of the ability of people to command sufficient resources to satisfy their basic needs (Piachaud 1987; Townsend 1993) or as a mere economic and monetary dimension but increasingly considered as human deprivation that people suffer throughout their lives.

After this brief background the important research works relating to multidimensional poverty are summarized below.

1.3.1 International status

Rowntree (1901) in his famous study "Poverty: A Study of Town Life", is generally recognized as the first author who have seriously analyzed and measured the concept of basic needs. This school of basic needs considers that the thing missing in the lives of the poor is a small subset of goods and services specifically identified and perceived as meeting the basic property of all human beings. They are called "base" as their satisfaction is considered a prerequisite for achieving a certain quality of life and are not necessarily perceived as contributing to the welfare.

The capabilities approach by Sen (1985) indicates that if income is instrumentally important, other measures of welfare, such as nutritional status, are intrinsically important. To this end, according to this approach, the study of poverty should identify and analyze other attributes not necessarily monetary, which act directly on the individual welfare.

Mack and Lansley (1985), similarly, point out that it is likely that there is a continuum of living standards from the poor to the rich that makes any cut-off point somewhat arbitrary. This calls for a mathematical vague theoretical approach such as fuzzy sets theory, which can also reduce the level of arbitrariness found in ordinary uni-dimensional approaches. This has led to the rising interest in the application of the fuzzy sets theory for poverty analysis (Cerioli and Zani (1990).

The fuzzy sets theory, despite its increasing application in poverty analysis, has been criticised as ordinal measures whose values do not have any intrinsic meaning and so put limits both on their interpretability and the possibility of comparing the indices that account for different aspects of poverty with one another. Successive refinements such as the totally fuzzy relative (TFR) proposed by Cheli and Lemmi (1995), have led to alternative specifications of membership functions leading to expanded interpretability framework of fuzzy indices, and so made aggregation measures relative to different aspects of poverty less controversial.

Ravalion (1996) pointed out that implementing a genuinely multidimensional approach will often make the welfare rankings of social states more difficult, but that fact points to the non-robustness of low-dimensional rankings. He also argued that this may have its own policy ramifications, with the possibility of correspondence between policy instruments and welfare objectives. The model types used to understand the poverty and inequity determination processes will be affected. Not only will there be more dependent variables to consider, but variables will have potentially complex relationships. These relationships will often be hard to empirically disentangle, despite richer integrated and longitudinal data sets. Such data open rich and relevant agenda for research into the dynamics of poverty along multiple dimensions. A simultaneous attack on these issues from all three fronts - measurement, modeling, and data - offers hope of establishing a credible empirical foundation for public action in fighting poverty.

In reviewing the literature on composite indices, we noticed that Chakravarty *et al* (1998) have developed an interesting literature. The construction of the index is based on the definition of a poverty threshold for each primary indicator used to calculate the index i.e. a first aggregation of different indicators for each unit of the population (equivalent to a composite indicator) and a second aggregation of the entire population of the composite indicator obtained to give a general measure of poverty.

Adams and Page (2001) analyzed data from the World Bank for some Middle East and North African countries using multidimensional approach. They observed that there is no clear relationship between a reduction in monetary poverty and an improvement in other welfare indicators. It was noted that to reach important conclusions, there was a need to compute an overall index of multidimensional poverty from the identified composite indicators of welfare.

Atkinson *et al* (2002) classified the social indicators used most commonly in European member states along the following seven dimensions: financial, education, employment, health, social participation and housing. The trend towards social indicators had been underpinned by the work carried out by the European Commission. Globally, international agencies such as the World Bank, USAID, UNRISD, OECD, WHO, UNICEF, and UNDP has contributed to the development of social indicators.

Bourguingnon (2002) proposed an econometric approach for multidimensional poverty ordering and asserted that there was a need to consider poverty from the multidimensional point of view because in addition to insufficient income, other attributes like literacy and access to health care can determine the level of economic well being. It was stressed that a genuine measure of poverty should be based on monetary as well as non-monetary attributes.

Dagum (2002) compared unidimensional and fuzzy set estimated multidimensional poverty indicators using the Bank of Italy sample data for 1993, 1995, 1998 and 2000. The multidimensional analysis identified educational level of the house head and his/her father, housing condition, and educational level of the spouse as the most important cause of poverty. The superiority of the multidimensional over the unidimensional approach was judged by the low correlation coefficient, implying that those classified as poor by the two approaches differ.

Tsui (2002) explored the axiomatic foundation of multidimensional poverty indices. Departing from the income approach which measures poverty by aggregating shortfalls of incomes from a pre-determined poverty-line income, a multidimensional index is a numerical representation of shortfalls of basic needs from some pre-specified minimum levels. The class of subgroup consistent poverty indices introduced by Foster and Shorrocks (1991) is generalized to the multidimensional context. New concepts necessary for the design of distribution-sensitive multidimensional poverty measures was introduced. Specific classes of subgroup consistent multidimensional poverty measures were derived based on the sets of reasonable axioms. She also highlighted the fact that domain restrictions may have a critical role in the design of multidimensional indices.

Costa (2003) also compared unidimensional and multidimensional poverty indices for 12 European countries. Using the Bravais-Person, Kendall's, Spearman, and Gini rank correlation indices, it was found that there was low correlation between the two. It was concluded that any socio-economic policy to reduce poverty which was developed based on the income information was likely not to achieve the goals set without considering the multidimensional aspect of deprivation.

Atkinson (2003) pointed out that adoption of a multidimensional approach to deprivation poses the challenge of understanding the interaction between different dimensions. He addressed the issues like the union of all those deprived on at least one dimension or with the intersection of those deprived on all dimensions and the approach of counting deprivations relate to approaches based on social welfare. The paper brings out key features of different approaches and sets them in a common framework.

Bourguignon and Chakravarty (2003) argued that many authors have insisted on the necessity of defining poverty as a multi-dimensional concept rather than relying on income or consumption expenditures per capita. Yet, not much has actually been done to include the various dimensions of deprivation into the practical definition and measurement of poverty. Existing attempts along that direction consist of aggregating various attributes into a single index through some arbitrary function and defining a poverty line and associated poverty

measures on the basis of that index. All these are merely redefining the more general concept of poverty, which essentially remained a uni-dimensional concept. On the contrary, they suggested that the only way to truly take into account the multi-dimensionality of poverty is to specify a poverty line for each dimension of poverty and to consider that a person is poor if he/she falls below at least one of these various lines. They also explored ways to combine various poverty lines and associated one-dimensional gaps into multi-dimensional poverty measures to be evaluated on samples of individuals or households.

Maggio (2004) provided new evidence on income poverty and lifestyle deprivation with cross sectional data collected in Great Britain between 1991 and 2000. He concluded that income cannot be the only indicator for analyzing poverty and the multivariate analysis seems to be the most proper choice if poverty and deprivation are to be investigated in a population.

Deutsch and Silber (2005) compared empirical approaches for multidimensional poverty analysis using the fuzzy set, information theory, efficiency analysis and axiomatic derivation of poverty indices. Using the 1995 Israeli data, they found that there was a fair degree of agreement between the approaches on identification of the poor. The approaches showed that multidimensional poverty decreased with educational level of the house head, increases with age and household size, being a Muslim, migrated house heads, and single house heads.

Silber and Sorin (2006) used data from the 1992-1993 Israeli Consumption Expenditures Survey and attempted to compare results based on a fuzzy approach with the more traditional approach using directly consumption or income data. For the fuzzy approach, the variables that were taken into account included non-ownership of an oven or a microwave oven, non-ownership of a refrigerator, non-ownership of a TV set, non-ownership of at least two of the following durables: washing machine, vacuum cleaner, air conditioning, videotape, stereo and phone, non-ownership of a car, non-ownership of an apartment (house) and negative savings.

Duclos (2006) demonstrated how to compare poverty using multidimensional indicators of well-being, showing in particular how to check whether the comparisons are robust to aggregation procedures and to the choice of multidimensional poverty lines. In contrast to earlier work, his methodology applied equally well to what can be defined as 'union', 'intersection' or 'intermediate' approaches to deal with multidimensional indicators of well-being. To make the procedure practically usefull, the article also derived the sampling distribution of various multidimensional poverty estimators, including estimators of the 'critical' poverty frontiers outside which multidimensional poverty comparisons can no longer

be deemed ethically robust. The result was illustrated using data from a number of developing countries.

In their book Kakwani and Silber (2008a) analysed the multidisciplinary approach to poverty, including five different perspectives from the disciplines of economics, sociology, anthropology, psychology and institutional economics. The book also explored the link between poverty and the concept of freedom, as articulated by Amartya Sen, in terms of capabilities that are valuable to people. They also studied the chronicity of poverty, the concept of vulnerability, the political economy of poverty alleviation and the pro-poorness of government programs. The book presents a panorama, as large as possible, of the many facets of poverty. The broad view of poverty that the book offers is likely to orient research on poverty in directions neglected hitherto and to help those in charge of implementing poverty reduction policies.

Kakwani and Silber (2008b) also edited the book on the most important quantitative approaches to multidimensional poverty measurement, gathering in one place the various techniques of measurement, as well as offering both a simple introduction to the non-specialist reader of each quantitative approach and an illustration based on empirical applications to various countries.

Alkire and Sarwar (2009) surveyed current interest in and adoption of multidimensional approaches to poverty and well-being by governmental and intergovernmental actors in developing and developed countries. They identified crucial issues which are still to be resolved, and also illustrated the different policy contexts in which multidimensional measures are relevant.

Venkatanarayana (2009) analysed the causes of educational deprivation among children at the elementary school level. He pointed out that it is not the dropout rate, rather the high rate of non-enrolment which is the real reason for education deprivation. He argued that the goal of universalisation of elementary education is to be achieved and there is a strong need for an enrolment drive and an action plan to ensure the attendance and retention of those enrolled.

Cohen (2010) proposed the Multidimensional Poverty Assessment Tool (MPAT) that measure fundamental dimensions of rural poverty in order to support poverty-alleviation efforts in the less developed world. He introduced MPAT and described its theoretical rationale. He also addressed some of the advantages and shortcomings of surveys and indicators as means of measuring poverty, and concluded with few caveats on using MPAT, and also focused on its added value to practitioners and academics.

Saisana and Saltelli (2010) used the Multidimensional Poverty Assessment Tool (termed MPAT) for local-level rural poverty assessment. Since its conception in 2007, the MPAT has gone through a series of revisions and modifications based on the feedback received from Workshops and on-site tests in several provinces of China and India. China and India were chosen as the testing grounds for this initiative mainly due to the extent of rural poverty in these nations and in part because one third of the world's population resides in these two countries. However, the MPAT was developed with the view to be of help in rural regions around the globe.

Alkire and Foster (2011) proposed a new methodology for multidimensional poverty measurement consisting of an identification method that extends the traditional intersection and union approaches, and a class of poverty measures. Their identification step employs two forms of cutoff: one within each dimension to determine whether a person is deprived in that dimension, and a second across dimensions that identifies the poor by counting the dimensions in which a person is deprived. The aggregation step employs the FGT measures, appropriately adjusted to account for multidimensionality. The axioms are presented as joint restrictions on identification and the measures, and the methodology satisfies a range of desirable properties including decomposability. The identification method is particularly well suited for use with ordinal data, as is the first of their measures, the adjusted headcount ratio. They presented some dominance results and an interpretation of the adjusted headcount ratio as a measure of unfreedoms.

Alkire and Foster (2011) attempted in their study to offer a practical approach to identify the poor and measure aggregate poverty. To a certain extent a departure from traditional uni-dimensional and multidimensional poverty measurement, particularly with respect to the identification step may be warranted. This paper analysed the strength, limitations, and misunderstandings of multidimensional poverty measurement in order to clarify the debate and catalyze further research. They established the general definitions of uni-dimensional and multidimensional methodologies for measuring poverty and provided an intuitive description of our measurement approach, including a 'dual cut-off' identification step that views poverty as the state of being multiply deprived, and an aggregation step based on the traditional FGT measures.

Alkire and Yalonetzky (2011) pointed out that traditional monetary measures do not fit that well with the notion of poverty as capability deprivation. A good multidimensional sensitive measure can work in tandem with a dashboard approach. One generates the interest for looking into the other. Sensitivity to the joint distribution is helpful in order to measure different degrees of poverty acuteness. A summary measure can provide a bird's eye view

and generate political and public interest. They further appeal that the measure can be decomposed according to the groups, indicators, and their respective changes over time.

Kirsten and Jürgen (2012) analyzed the situation of children and their family. They emphasized on capability approach takes into account this multidimensionality of well-being and deprivation of children. They focused on the multidimensional deprivation and poverty analysis in the capability perspective of 5-6 years old children on the basis of domains of Education/Leisure, Health and Social Participation.

Alkire and Santos (2013b) have analysed Multidimensional Poverty Index (MPI), a measure of acute poverty, understood as a person's inability to meet simultaneously minimum international standards in indicators related to the Millennium Development Goals and to core functioning. They pointed out that it constitutes the first implementation of the direct method to measure poverty for over 100 developing countries. They also analysed its scope and robustness with a focus on the data challenges and methodological issues involved in constructing and estimating it. They concluded that a range of robustness tests indicate that the MPI offers a reliable framework that can complement global income poverty estimates.

1.3.2 National Status

Sundaram and Tendulkar (1995) used a comprehensive composite index of shelter deprivation for the rural and urban households in the major states of the Indian Union for the recent period. They combined indicators relating to four dimensions of shelter deprivation: (a) stark house lessness, (b) deprivation with respect to certain basic amenities, (c) deprivation in terms of quality of dwelling structure, and (d) overcrowding within a dwelling structure as well as overcrowding of dwelling structures in a limited space. At the all-India level (excluding Assam and Jammu and Kashmir) and considering the rural and the urban areas, 0.28 per cent and 0.55 per cent respectively were houseless households in 1991. The deprivation of basic amenities was calculated using three indicators i) Safe drinking water, ii) Toilet facility and iii) Electricity. In rural and urban India, 26.83 per cent and 8.14 per cent households were deprived in basic amenities in 1991. In rural India, 72.88 per cent households were deprived in terms of quality of dwelling structure in 1991 and it was 10.29 per cent in urban area. On the basis of overcrowding, 6.25 per cent rural households were deprived at locality level and 47.24 per cent were deprived within house. Shelter deprivation index of rural India was 13.41. On the basis of overcrowding, 14.68 per cent urban households were deprived at locality level and 46.31 per cent were deprived within house. Shelter deprivation index of India was 8.27.

Kiran (1998) explained her paper on the basis of a survey of field level investigations and addresses the issues of economic constraints, schooling quality and parental motivation as a set of possible influences determining the educational decisions within a household and contributing to the overall picture of economic deprivation at the national level of India. The author observed that an exaggerated emphasis has been placed on child labour and inadequate motivation among poor parents as the major obstacles to universalisation of primary education. Rather, it was the direct costs of schooling, which reduce the child's and their parent's interest in education, that primarily accounts for educational deprivation.

Mehta *et al* (2002) applied the exploratory spatial approach to multidimensional poverty measurement in India. They found that spatial estimates at various disaggregating levels reflect convergence of deprivation in multiple or multidimensional poverty. Also, those in poverty are unevenly distributed across India with concentration of poverty being largely found in some States. Poverty related estimates for 59 regions in 16 large states showed that between 20 percent and 43 percent of the population living in rural areas of 12 regions and urban areas of 21 regions suffer from severe poverty. Indicators that contributed most to multidimensional poverty were incidence of child mortality, literacy, access to infrastructure such as electricity, toilet facilities, and postal and telegraphic communications.

Dubey and Hunn (2005) analysed the extent and nature of disparities within Orissa, particularly regional, social and gender disparities, needs no emphasis. Drawing on concepts of social exclusion, and on both quantitative and qualitative evidence, they looked at poverty in its multidimensional nature, ranging from income poverty to human development indicators of health and education, and assess the social processes responsible for deprivation, including those relating to discrimination, voice and representation.

Rao *et al* (2007) examined the incidence of rural poverty in Madhya Pradesh based on a field survey of 2,208 rural households spread over 11 districts. The issues of poverty was examined in a multidimensional perspective with emphasis given to issues related to access to publically provided services like health and education. They argued that there is a need for greater and more effective fiscal intervention for poverty reduction and employment generation. The implementation of the National Rural Employment Guarantee Act may prove to be an effective intervention in reducing poverty in rural areas of the state.

According to Ravallion (2008) in 2005, one in three of the people in the world who consumed less than $ 1.25 a day (at 2005 purchasing power parity) lived in India - more than any other country. They accounted for about 40 per cent of India's population. Twenty-five years earlier, 60 per cent of India's population lived below the same real line. While this is a clear progress, India's long-term pace of poverty reduction by this measure is no more than

average for the developing world, excluding China. This article first discussed the methodology underlying the World Bank's recent revised estimates of global poverty and then analysed the Indian numbers.

Ravi and Dev (2008) pointed out that one of the criticisms of the official poverty line is that it does not capture the cost of basic necessities, particularly non-food components such as health and education. This issue gains importance due to an increase in household private expenditure on education and health services in recent years. They estimated poverty ratios at the all India level and for the states in 2004-05 by including the minimum private expenditure on health and education. The estimated poverty ratios were substantially higher than the official poverty ratios.

Kavi Kumar and Abraham (2008) realised that the poverty of an entity is manifested in her deprivation not only in income but also in other dimensions such as health, nutrition and sanitation. Hence, they argued in favour of a comprehensive measure of poverty which must ideally take into account the performance of an individual across multiple dimensions. Vulnerability to poverty captures the likelihood of an entity falling into poverty, given the current status of the household. Unlike poverty, which describes the status of an entity at a point of time, vulnerability is predictive in nature. In their study they have made an attempt to rank 15 major states in terms of multidimensional poverty and vulnerability to multidimensional poverty at two time points in 1990s. The results showed that both multidimensional poverty and vulnerability provide additional insights for prescriptive policies.

According to Himanshu (2008) the World Bank's recent estimates of poverty in the developing world have led to an upward revision of the number of poor in the world by 400 million. These adjustments are made on the basis of the revision in purchasing power parity estimates as part of the International Comparison Program (ICP) exercise. Using the same ICP exercise, the Asian Development Bank claims an even higher estimate of the poor in Asia. A proper examination of the underlying database and the methodology for estimating poverty across countries suggests that though these estimates are better than the earlier ones, the assumptions behind the adjustments and the quality of data obtained from the ICP limit the usefulness of such an exercise for cross-country poverty comparisons. For India, both these estimates suggest severe underestimation in the official numbers on poverty.

Tendulkar (2009) criticized the official poverty line on various count and suggested new methodology to arrive at state wise and all India rural and urban poverty lines for 2004-05. With the help of this new methodology poverty at all India level in 1993-94 was 50.1% in rural areas, 31.8 per cent in urban areas and 45.3 per cent in the countries as a whole

compared to the 1993-94 officials estimates of 37.2 per cent in rural areas, 32.6 per cent in urban areas and 36 per cent in combined. According to this new poverty line, poverty was 41.8 per cent in rural areas & 25.7 per cent in urban area in the year 2004-05.

Jayaraj and Subramanian (2010) pointed out that in assessing multidimensional deprivation, often the only information available to the analyst is the range of deprivation, and that is, the number of dimensions in which each individual is deprived. They considered a simple procedure for sensitising both the identification and the aggregation problems to the range of deprivation. It provides an exposition of a class of headcount indices which were earlier investigated as a class of indices of social exclusion by Chakravarty and D'Ambrosio. They also presented a graphical device called the 'D'-curve which serves as a representation of 'binary-valued' multidimensional deprivation, and a measure 'M' based on this curve. Finally, they estimated multidimensional deprivation in the Indian context, employing data from the 1991-92 and 2005-06 rounds of the National Family Health Surveys.

Swaminathan (2010) discussed the report of the expert group to review the methodology for estimating poverty. The report recommended the use of the existing official urban poverty line as the poverty line for rural and urban India. The new poverty line, as claimed, also provides for minimum nutritional, health, and educational outcomes. In respect of nutrition the new poverty line lower the calorie intake than used in the earlier estimates and in case of health & education he criticized that expenditure at the poverty line on education and health equals the median expenditure and does not ensure adequate outcomes in terms of education and health.

With the help of the 2004-05 NSSO unit level consumption expenditure data, Mahamallik and Sahu (2011) estimated the extent of inclusion and exclusion errors in the identification of BPL households. In spite of continuous efforts towards improving the methodology of the BPL census a significant difference between the estimated and identified poor still persist. They developed an alternative method based on “vulnerability criteria” for the identification of poor. Their estimation showed that the prescribed criteria not only reduce the exclusion error but also suggests inclusion of a larger number of vulnerable households in the BPL list.

Gangopadhyay and Sing (2013) argued that the poverty line in India is usually associated with a calorie threshold. This calorie threshold approach suffers from many problems. They suggested an alternative, i.e. revealed preference-based approach which was provided by Jensen and Miller. In the JM approach, the staple calorie share reveals whether a household is calorie deprived or not. They used this approach to estimate the extent of poverty in India. They found that their poverty estimates were very close to the Tendulkar Committee

estimates for the urban sector but for the rural sector their estimates were considerably lower. They also found remarkable rise in urban poverty between 2004-05 and 2007-08.

Bisiaux (2013) manifested that the definition of poverty has drawn closer to multidimensionality within various theoretical frameworks. However, even though basic individual needs are intrinsic to human nature regardless of historical and social contexts, the issue of defining poverty in a universal manner may be impeded by the network of interrelations that is specific to the social background of poverty. Examining micro-level evidence from two slums in Delhi, he explored the differences in practice of different definitions of poverty - monetary poverty, primary good deprivation and lack of capabilities - to measure the extent of poverty according to each approach. The results showed little evidence of a perfect match between the three definitions of poverty.

Alkire and Seth (2013) pointed out that India has witnessed high economic growth since 1980s, and a reduction in the share of income poor, the measured extent of this reduction varies has been confirmed by different methods. They have analysed the change in multidimensional poverty in India between 1999 and 2006 using National Family and Health Survey data. They found a strong reduction in national poverty driven relatively more by some of the standard of living indicators, such as electricity, housing condition, access to safe drinking water and improved sanitation facilities, than other social indicators. The reduction, however, has not been uniform across different population subgroups and the pattern of reduction across states has been less pro-poor than that of income poverty. In addition, the poorer subgroups have shown slower progress, widening the inter-group disparity in multidimensional poverty.

Multidimensional Poverty has under gone methodological changes over the years. Alkire and Seth (2013) examined empirically from their paper, the Socio-Economic caste Census methodology and compared it empirically with alternative proposals to show the choice of a particular methodology. They also pointed out how state-level BPL poverty gaps varies if they reflect multiple deprivations such as malnutrition and housing rather than only expenditure-based poverty rates. In their study, there is a comparison between three methods of poverty estimation like SECC 2011 methodology, Saxena (2009) and an alternative method. Where these three methods identify 55 per cent, 57 per cent and 59 per cent of households as BPL respectively, 41.49 per cent households as poor and 26.8 per cent as non-poor.

Vaidyanathan (2013) noted that irrespective of how the poverty line is defined, it is not possible to arrive at a definitive estimate of the incidence of poverty. Nor can strategies to address the myriad and varied disabilities of the poor be decided on the basis of the overall

incidence of income poverty alone. It holds that it makes more sense to focus on gaining a fuller picture of the living conditions of the poor with the Planning Commission preparing a comprehensive report on the state of poverty every five years, as suggested by the Lakdawala Committee in 1993.

Mishra and Ranjan (2013) examined the recent approach of multidimensional deprivation measures to provide a comprehensive and wide-ranging assessment of changes to living standards of India during the period, 1992-93 to 2004-05. It covers the reform and the immediate post-reform time periods. The study is the first to be based on the simultaneous use of two parallel data sets, namely the National Sample Survey (NSS) and National Family Health Survey (NFHS) data sets, covering proximate rounds and near identical time periods. The results allow a check of consistency on the picture of deprivation in India between these two data sets. The study is conducted both at regionally disaggregated levels and by socio economic groups. The deprivation dimensions range widely from the conventional expenditure dimensions to non-expenditure dimensions such as access to drinking water and clean fuel, to health dimensions such as child stunting and the mother's BMI. The use of decomposable deprivation measures allows the identification of regions, socio economic groups and deprivation dimensions that are contributing more than others to total deprivation.

Dehury B and Mohanty S (2015) used unit data from the Indian Human Development Survey (IHDS), 2004-05 and estimated and decomposed the multidimensional poverty dynamics in 84 natural regions of India. The unique contributions of their paper was inclusion of a direct economic variable (consumption expenditure) to quantify the living standard dimension, decomposition of MPI across the dimensions and the indicators and provide estimates at sub-national level.

1.4 Objectives

The present study sets the following objectives:

1) To explore the tools of measurement of Multidimensional Poverty and deprivation in India.
2) To estimate the multidimensional poverty and deprivation of the different groups like the natural regions, administrative regions, area of residence, caste, religion, and households' size in India.
3) To analyse the relationship between monetary poverty and multidimensional poverty in India.
4) To investigate the poverty and deprivations of the rural households on the basis of detailed field survey data in the context of West Bengal.

5) To evaluate the role of social protection programmes which are introduced for reducing poverty and deprivations in the context of West Bengal.

1.5 Database

While the overall objective of the present study is to estimate and analyze the multidimensional poverty and deprivation we have tried to develop a comparative analysis according to the main attributes selected. For this purpose, we have taken resort to the secondary data. Secondary data have been collected mainly from two sources, namely *National Sample Survey Organisation* (*NSSO*), *National Family and Health Surveys (NFHS) and Socio-Economic Caste Census (SECC) 2011*.

NSSO Unit Level data relating to the *Level and Pattern of Consumption Expenditure* for the years 2004-05, 2009-10 and 2011-12 have been used to estimate the status of poverty and food insecurity across States in India.

NFHS Unit level data for the years 2005-06 (NFHS-3) and 20015-16 (NFHS-4) have also been used to estimate the multidimensional poverty across states in India.

1.5.1 Primary Data and Sample Design

However, on account of the limitations of the secondary data and for the sake of an in-depth and detailed study we have tried to collect and use primary data to analyze our research objectives. West Bengal is purposely chosen for the primary survey in the present study. Primary data have also been collected from the households who were selected on the basis of multistage stratified random sampling.

Preparation of Schedules

We have prepared two separate questionnaires – one for village survey which is general in nature and other for household survey. The questionnaire for household survey is specially designed to address the issues of social protection, status of livelihood and multidimensional framework of poverty.

Pilot Survey

A pilot survey has been conducted to test the correctness of the instructions as whether all the respondents in the pilot sample were able to follow the directions as indicated or not. The respondents were asked for giving their feedback about the questionnaire, specifically their reactions, comments and suggestions. For instance, we asked them about how clear the instructions were or which questions were hard to answer. Internal and participatory pilot

survey methods had been used. Therefore, the respondents in the pilot survey were the first participants in the main survey.

After obtaining and analyzing the results of the pilot survey, logistical, technical and other issues or problems were addressed. The questionnaire or interview format had been revised. After the revision of the questionnaire, we have conducted a second pilot survey to determine whether the errors and issues were effectively solved or not. After the confirmation that the problems were minor we have proceeded the large-scale survey. The final questionnaire is appended in Appendix 2.

Selection of Sample Frame

Primary data was collected from the households who were select on the basis of multistage stratified random sampling. West Bengal is purposely chosen for the present study. Districts of West Bengal are classified on the basis of a number of socio-economic and geo-political indicators. On the basis of this classification three backward regions were identified. These regions are Jangal Mahal, Costal, Hill. Among these three regions of West Bengal the Jangal Mahal region is relatively more backward. Therefore, we have selected three districts namely Paschim Midnapore, Bankura and Purulia from the Jangal Mahal region. From the rest of the two regions we have selected one district form each region – Darjeeling from Hill region and South 24-Parganas from the Coastal region. These 5 districts constitute the 1st stage unit. Four blocks have been selected randomly from each sample district of Jangal Mahal region while two blocks have been selected from each of the sample district of other two regions. These 16 blocks constitute the 2nd stage unit. While villages (32 villages, 2 from each block) were the 3rd stage. For each village we have randomly selected 25 households. Households of each of these 32 villages have been surveyed on the basis of specially designed questionnaire. The sample frame is shown in Appendix Table A2. From the above sample design 800 households were selected for detailed survey. Reference period for the study is the financial year 2016-17.

Data Collection

The necessary information is collected from the sample households on the following socio-economic heads:

a) *General information of households:* General information of households includes caste, sub-castes, BPL status, housing condition, assets etc. and age, sex, income earner, education level, status of the ration card, etc. of the members of household.
b) *Occupation and earnings of the Households:* It includes i) own labour entitlement: employment pattern of the household members includes main, marginal or non-workers; working time, wage rate, status of employment either casual labour, regular employment

or self-employed and earnings; ii) production-based entitlement: pattern of agricultural land, Goss cropped area, agricultural production, estimates cost of production, net income from agriculture, agri-allied production, non-farm production and production process of sample households etc.; iii) trade-based entitlement: investment, labour use and net income, iv) asset-based entitlement: value of livestock, machinery and other assets and net earnings, v) use of common property resources: nature of use, earnings etc.

c) *Coverage of Social Protection Schemes of Government*: nature of scheme, detailed information of the schemes, eligible and benefited households, benefits of social protection schemes, options for extension of their coverage, social protection expenditure and the estimated cost of increasing the coverage.

d) *Expenditure of the Households to Estimate Poverty*: cost on basic consumption, expenditure on education, expenditure on health, expenditure on clothing, energy consumption, other miscellaneous expenditure, information of ICDS and mid-day meals taken by the households.

e) *Multidimensional Poverty Indicators:* status of the households in respect of food security, domestic water supply, health and health care, sanitation & hygiene, housing & energy, education, agricultural assets, non-agricultural assets, exposer & resilience to shocks and gender inequality.

*1.*6 Plan of the Study

The rest of the present work is divided into eight chapters. Chapter 2 explores the tools of measurement and analysis of multidimensional poverty and deprivation. Chapter 3 analyses the monetary poverty v/s multidimensional poverty in India on the basis of NSSO Unit Level Data. Chapter 4 estimates multidimensional poor, non-poor and deprived rural households across states of India on the basis of SECC 2011. Chapter 5 analyses the multidimensional poverty and deprivations in India and her states on the basis of NFHS. Chapter 6 analyses multidimensional deprivation in West Bengal based on SECC 2011 with special emphasized on social castes. Chapter 7 explores the status of poverty and the deprivation of the rural sample households in West Bengal. Finally chapter 8 evaluates the role of social protection programme on poverty and deprivation of the sample households in the backward region of West Bengal.

Chapter 2

Tools of Measurement and Analysis of Multidimensional Poverty and Deprivation

The present chapter explores the methodology of measurement of multidimensional poverty, head count ratio of multidimensional deprivations, monetary poverty, food insecurity, social protection index etc. It also presents the methodology of analysis of monetary as well as multidimensional poverty.

2.1 Measurement of Multidimensional Poverty

A) Multidimensional Poverty Index

The main variables associated with our measurement of multidimensional poverty and deprivations are identified in OPHI and MPAT. The Oxford Poverty and Human Development Initiative (OPHI) has developed a new international measure of poverty – the Multidimensional Poverty Index (MPI) – for the 20th Anniversary edition of the UNDP's flagship Human Development Report (HDR). In MPI the indicators and the criteria for someone to be considered deprived in each indicator are: A). **Education** (each indicator is weighted equally at 1/6): 1) *Years of Schooling*: deprived if no household member has completed five years of schooling, 2***)*** *Child Enrolment*: deprived if any school-aged child is not attending school in years 1 to 8, B)**. Health** (each indicator is weighted equally at 1/6): 1) *Child Mortality*: deprived if any child has died in the family 2) *Nutrition*: deprived if any adult or child for whom there is nutritional information is malnourished. C) **Standard of Living** (each indicator is weighted equally at 1/18): 1) *Electricity*: deprived if the household has no electricity, 2) *Drinking water:* deprived if the household does not have access to clean drinking water or clean water is more than 30 minutes walk from home, 3*)Sanitation***:** deprived if they do not have an improved toilet or if their toilet is shared, *4) Flooring*: deprived if the household has dirt, sand or dung floor, 5) *Cooking Fuel:* deprived if they cook with wood, charcoal or dung, 6) *Assets:* deprived if the household does not own more than one of: radio, TV, telephone, bike, or motorbike, and do not own a car or tractor. (It is to note that except electricity and flooring other eight indicators were specified in MDG). The techniques of the measurement of MPI are given in Box 1.

Box 1

Measurement of MPI

Scoring

- Each person is assigned a deprivation score according to his or her household's deprivations in each of the 10 component indicators.
- The maximum score is 100 per cent, with each dimension equally weighted; thus, the maximum score in each dimension is 33.3 per cent.
- The education and health dimensions have two indicators each, so each component is worth 33/2, or 16.7 per cent.
- The Standard of living dimension has six indicators, so each component is worth 33.6/6, or 5.6 per cent.

Cut-off for Poverty, Vulnerability and Severity

- To identify the multidimensionally poor, the deprivation scores for each household are summed to obtain the household deprivation, c.
- A cut-off of 33.3 per cent, which is the equivalent of one-third of the weighted indicators, is used to distinguish between the poor and non-poor.
- Households with a deprivation score (c) greater than or equal to 20 per cent but less than 33.3 per cent are vulnerable to or at risk of becoming multidimensionally poor.
- If c is 33.3 per cent or greater, that household (and everyone in it) is multidimensionally poor.
- Households with a deprivation score of 50 per cent or higher are severely multidimensionally poor.

The MPI

- *Multidimensional Headcount Ratio* (H) is the proportion of the population who are multidimensionally poor and $\boldsymbol{H} = \frac{\boldsymbol{q}}{\boldsymbol{n}}$ **,** where q is the number of persons who are multidimensionally poor and n is the total population.
- *Multidimensional Intensity of Poverty* (A) reflects the proportion of the weighted component indicators in which, on average, poor people are deprived. For poor households only (c greater than or equal to 33.3 per cent), the deprivation scores are summed and divided by the total number of poor persons. That is $\boldsymbol{A}=\sum_{\boldsymbol{i=1}}^{\boldsymbol{q}} \boldsymbol{c_i q}$, where c is the deprivation score that the poor experience.
- The MPI can be expressed as the product of H and A, i.e., ***MPI = A×H.***

The Contribution of Dimension j

The deprivation score c of a poor person can be expressed as the sum of deprivations in each dimension j (j = 1, 2, 3), $c=c_1+c_2+c_3$. The contribution of dimension j to multidimensional poverty can be expressed as $\boldsymbol{Contri_j} = ((\sum_{\boldsymbol{1}}^{\boldsymbol{q}} \boldsymbol{cj})/\boldsymbol{n})/\boldsymbol{MPI}$

Source: HDR 2013, UNDP.

The formation of MPI (as measured by OPHI) involves the following steps:

Achievement Matrix

Let X is $n \times d$ dimension achievement matrix, where x_{ij} is the achievement of person i in dimension j.

Deprivation Cut-off

A threshold z_j is defined as the minimum required in order to be non-deprived. If $x_{ij} < z_j$, the person is said to be deprived in that dimension.

Deprivation Matrix

We obtained a deprivation matrix g^0 such that

$g_{ij}^0 = 1\ when\ x_{ij} < z_j$

= 0 otherwise, $\forall\ z = 1, \dots\dots, d\ and\ \forall\ i = 1, \dots\dots, n.$

Weights and Deprivation Score

A vector $w = (w_1, \dots\dots, w_d)$ of weights is used to indicate the relative important of deprivation in each dimension.

The deprivation value attached to dimension j is denoted by $w_j > 0$.

The deprivation score is given by

$$c_j = \sum_{j=1}^{d} w_j g_{ij}^0$$

C_j increases as the number of deprivations a person experience increases and vice-versa

Poverty Cutoff

The poverty cutoff, ***k,*** is used to identify the multidimensional poor. ***K*** is implemented using an identification function ρ_k.

Notionally $\rho_k(x_i; z) = 1\ if\ c_i \geq k$, the person is poor

= 0 otherwise, the person is not poor

By ∪ approach the person *i* is identified as multidimensionally poor if she is deprived in least one dimension ($c_i > 0$).

By ∩ approach the person *i* is identified as multidimensionally poor if she is deprived in all dimension ($c_i = 0$).

Multidimensional Poverty Index (MPI)

MPI is the mean of the censored deprivation score vector

$$\boldsymbol{MPI = \mu\big(c(k)\big) = \frac{1}{n}\sum_{i=1}^{n} c_i(k) = \frac{1}{n}\sum_{i=1}^{n}\sum_{j=1}^{n} w_j\, g_{ij}^0}$$

$$\boldsymbol{= \frac{q}{n} \times \frac{1}{n}\sum_{i=1}^{n} c_i(k)}$$

$$\boldsymbol{= H \times A}$$

Subgroup Decomposition

The population share and the achievement matrix of sub group ρ are denoted by $v^l = \frac{n^l}{n}$ and x^ρ, respectively.

We express the overall MPI as:

$$M_0(X) = \sum_{l=1}^{m} v^l \, M_0(X^l)$$

Headcount Ratio of Multidimensional Deprivation

The terms 'multidimensional deprivations' and 'multidimensional poverty' are synonymous in the literature but the former is a measure of the dimensions failure of all households and the latter measures the deprivation of only subset of households that is poor. In the present study we have used the measurement of multidimensional deprivation that requires only a dimension specific cut-off (Chakravarty & D'Ambrosio 2006, Jayaraj &Amanian 2010, Roy and Sinha 2011). Following the notation used by Jayraj and Subramanian (2010), let n_j denote the number of households that are deprived in exactly j dimensions, j € {1,....K}and number of households be denoted by *n*. Then, three possible headcount ratios of deprivation are as follows:

$$H^I = \frac{n_k}{n}$$

$$H^U = \frac{n_1 + n_2 + \cdots + n_K}{n} = \sum_{j=1}^{K} H_j \, , where H_j = \frac{n_j}{n}, \quad j \epsilon \{1, \ldots \ldots, K\}$$

$$H_{j*} = \frac{n_{j^*} + \cdots + n_K}{n} = \sum_{j=j^*}^{K} H_j$$

H^I, H^U and H_j* are the headcount ratios of multidimensional deprivation.

- H^I denotes the headcount deprivation ratio of households who are deprived in all the K dimensions, and is referred to as the "intersection method". This type of deprivation is called "Extreme Deprivation (ED)".
- H^U denotes the corresponding headcount ratio of households that are deprived in at least 1 dimension and is referred as the "union method". This type of deprivation in our study is called "Low Deprivation (LD)"
- H_{j*} denotes the corresponding headcount ratio of households at *j** specific indicators cut-off. In the present study the specific cut-off (j*) is three. That is the household is treated as multidimensionally deprived if she is deprived in at least three out of seven indicators. In the present study the deprivation by specific indicators cut-off is called "Moderate Deprivation (MD)".

2.2 Measurement of Food Insecurity and Poverty

The status of food insecurity is measured by using the methodology of Foster, Greer and Therbecke (1984) as

$$FI_{\propto} = \frac{1}{N} \sum_{i=1}^{q} \left(\frac{Z_F - E_i}{Z_F} \right)^{\propto} \quad ; \propto = 0, 1, and \; 2$$

where, Z_F is the food security line, E_i is the expenditure of the *i-th* household, N is the total number of individuals in the population, q is the number of poor individuals having expenditure less than Z_F and α is a measure of sensitivity such that

α = 0, FI_0 implies the incidence of food insecurity (FI)

α = 1, FI_1 (= Food Insecurity Gap (FIG)) implies the depth of food insecurity

and α = 2, FI_2 (= Square Food Insecurity Gap (SFIG)) implies the severity of food insecurity

The measure can be decomposed into sub-groups as

$$FI_{\propto} = \sum_{k=1}^{K} \left(\frac{N_k}{N}\right) FI_{\propto k};\ \propto = 0, 1, and\ 2$$

where N_k/N and FI_α are the k-th subgroups' population share and food insecurity measure respectively (Pathak and Mishra, 2013). A sub group food insecurity risk (R) is the ratio of its share of food insecurity to its share of population:

$$R_k = \frac{N_k FI_{\propto k}/NFI_{\propto}}{N_k/N} = \frac{FI_{\propto k}}{FI_{\propto}}$$

Similarly, we can measure Incidence of Poverty (HCR), Poverty Gap and Square Poverty Gap as well as decomposition of poverty and risk of poverty.

2.3 Analysis of Food Insecurity and Poverty by Heckman Selection Model (Two-Step)

Heckman selection model (two-step) is used here to analyze the effect of social protection benefits along with other characteristics of the households on the status of food insecurity and poverty of the households (Das 2015).

Consider a model with two variables d_i and y_i which linearly depend on observable independent variables x_i and z_i, respectively

$$\boldsymbol{d_i = z_i\gamma + v_i}$$

$$\boldsymbol{y_i = x_i\beta + \varepsilon_i}$$

The error terms $\boldsymbol{v_i}$ and $\boldsymbol{\varepsilon_i}$ are independently (across observations) and jointly normally distributed with covariance $\boldsymbol{\rho\delta_{\varepsilon.}}$

In the present case $\boldsymbol{d_i}$ indicates whether i-th household is food insecure or not and $\boldsymbol{y_i}$ indicates the food insecurity gap of the i-th household. We only observe an indicator $\boldsymbol{d_i}$ when the latent variable $\boldsymbol{d_i^*}$ (food consumption expenditure) is less than the expenditure of food insecurity line (Rs. 524.5 per capita per month in 2012-13). Similarly, the value of the variable $\boldsymbol{y_i = y_i^*}$ is only observed if the indicator is 1:

$$\boldsymbol{d_i = 1\ if\ d_i^* < Rs.524.5}$$

$$0 \text{ otherwise}$$

$$y_i = y_i^* \text{if } d_i = 1$$

$$n.a. \text{ otherwise}$$

Heckman's (1979) two-step procedure involves the estimation of a standard probit and linear regression model.[6] The two-step procedure draws on the conditional ($d_i = 1$) mean

$$E(y_i/x_i, z_i) = E(y_i^*/d_i = 1, x_i, z_i) = x_i\beta + \rho\delta_\varepsilon [\phi(z_i\gamma)/\psi(z_i\gamma)]$$

$$= x_i\beta + \rho\delta_\varepsilon\lambda (z_i\gamma)$$

of the fully observed y's.

Step 1 is the consistent estimation of γ by ML using the full set of observation in the standard probit model

$$d_i^* = z_i\gamma + v_i \qquad \text{(First Equation)}$$

$$di = 1 \text{ if i-th household is food insecure, } 0 \text{ otherwise}$$

We can use this and consistently estimate the Inverse Mills Ratio $\lambda_i = \phi(z_i\gamma)/\psi(z_i\gamma)$ for all observations.

Step 2 is the estimation of the regression equation with the Inverse Mills Ratio as an additional variable

$$y_i^* = x_i'\beta + \beta_\lambda\lambda_i + u_i \qquad \text{(Second Equation)}$$

for the sub sample of full observations. Here y_i^* is the food insecurity gap (FIG) of the i-th household. The OLS regression yields $\beta, \beta_\lambda, \delta_\varepsilon$ and thus the correlation $\rho = \beta_\lambda / \delta_\varepsilon$.

There is often a practical problem of identification (almost multicolinearity) when the variables in both equations are the same, i.e. $x_i = z_i$ (Vella, 1998). The parameters β and β_λ are theoretically identified by the non-linearity of the Inverse Mills Ratio $\lambda()$. It is therefore strongly advised that at least one independent variable of the first equation is not included in the second equation. Here the x_i is the matrix of independent variables that includes the characteristics, entitlements and consumption pattern of the households and z_i is the subset of x_i.

Similarly, the Heckman selection model (two-step) is used here to analyze the effect of social protection benefits along with other characteristics of the households on the status of poverty of the households.

2.4 Analysis of Multidimensional Poverty by Multinomial Logit Model

The multinomial logit (MNL) model is used when all the regressors are case specific, the MNL model specifies that

$$p_{ij} = \frac{\exp\,(x_i'\beta_j)}{\sum_{l=1}^{m} \exp\,(x_i'\beta_l)}$$

Where X_i are case-specific regressors. Clearly, this model ensures that $0<p_{ij}<1$ and $\sum_{j=1}^{m} P_{ij} = 1$. To ensure model identification, β_j is set to zero for one of the categories, and coefficients are then interpreted with respect to that category, called the base category.

Coefficient in a multinomial model can be interpreted in the same way as binary logit model parameters are interpreted, with comparison being to the base category. This is a result of the multinomial logit model being equivalent to a series of pairwise logit models. For simplicity, we set the base category to be the first category. Then the MNL model defined in implies that

$$\Pr(y_i = j \backslash y_i = j \; or \; 1) = \frac{\Pr(\,y_i = j)}{\Pr(\,y_i = j) + \Pr(\,y_i = 1)} = \frac{exp(x_i'\beta_j)}{1 + exp(x_i'\beta_j)}$$

Using $\beta_1 = 0$ and cancellation of $\sum_{l=1}^{m} \exp\,(x_i'\beta_l)$ in the numerator and denominator.

Thus, $\widehat{\beta_j}$ can be viewed as parameter of binary logit model of alternative *j* compare to the alternative 1. So a positive coefficient from m-logit means that as the regressor increases, we are more likely to choose alternative j than alternative 1. This interpretation will vary with the base category and is clearly most useful when there is a natural base category.

Some researchers find it helpful to transform to odds ratios or relative- risk ratios, as in the binary logit case. The odds ratio or relative-risk ratio of choosing alternative j rather than alternative 1 is given by

$$\frac{\Pr(\,y_i = j)}{\Pr(\,y_i = 1)} = exp(x_i'\beta_j)$$

So $e^{\beta_{jr}}$ gives the proportionate change in the relative risk of choosing alternative *j* rather than alternative 1 when x_{ir} .

Chapter 3

Monetary Poverty v/s Multidimensional Poverty in India

An Analysis based on NSSO Unit Level Data

Poverty is defined as the deprivations in various aspects of life which is affecting the well-being and causing the inability of an individual to satisfy the basic necessities of survival (World Bank 2000). Poverty is measured by using the quantitative measurement of income and consumption necessary to spend on the basic needs (to stay above the poverty line), including food and non-food needs (Haughton and Khandker 2009). The food poverty line is usually based on the market price of 2100 calories per person per day in the urban area and 2400 calories per percent per day in the rural area. Nonfood needs include the basic needs for clothing, housing, etc.

Poverty or lack of well-being spares none. Both the monetary and non-monetary aspects are considered. According to Sen, poverty is not only the lack of the subsistence amount of income to fulfill the basic requirements, but a simultaneous presence of deprivation in basic human capabilities (Sen 1992).

Most countries of the world define poverty in a uni-dimensional way, using income or consumption levels. But poor people go beyond income in defining their experience of poverty. These often include a lack of education, health, housing, empowerment, humiliation, employment, personal security and more. Income or consumption is not uniquely able to capture the multiple aspects that contribute to poverty. Furthermore, levels and trends of income poverty are not highly correlated with trends in other basic variables such as child mortality, primary school completion rates, or undernourishment (Bourguignon *et al* 2010). A person or household can be poor in monetary terms but non-poor in multidimensional measurement, or she may also be income rich but multidimensional poor. Hence, the estimation of poverty both in monetary term as well as in multidimensional mechanism are equally important to analyse the status of poverty and deprivations of the households.

The main objectives of this chapter are to estimate the monetary poverty and multidimensional poverty in India and her states for the years 2004-05 and 2011-12 and to analyse the status of multidimensional poverty in India.

The chapter contains six sections. Section 3.1 presents the estimation of the incidence (i.e. Head Count Ratio), depth (i.e., Poverty Gap) and severity (i.e., Square Poverty Gap) of monetary poverty in India during the period 2004-05 and 2011-12. This section also presents the status of monetary poverty by social castes. Section 3.2 discusses the estimation of multidimensional poverty in India and distribution of population by different level of

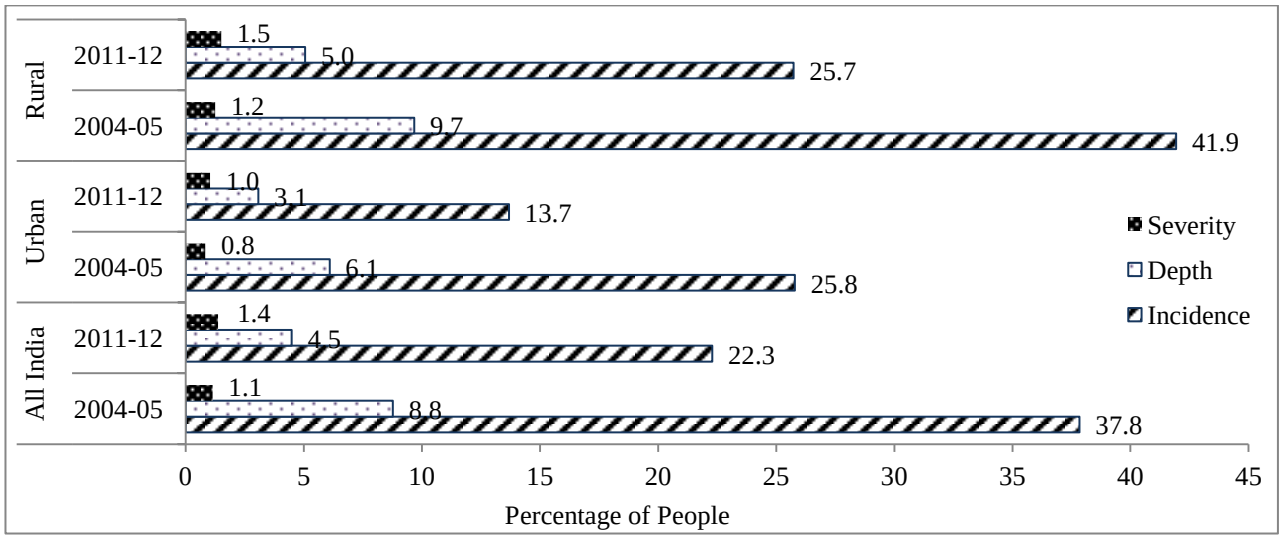
multidimensional poverty. The comparative analysis of monetary poverty and multidimensional poverty is presented in sections 3.3. Sections 3.4 analyses the status of monetary poverty across states in India. Section 3.5 discusses the status of multidimensional poverty across states in India. Econometrics analysis of multidimensional deprivation across households in India is analyzed in section 3.6. Finally, section 3.7 summaries the main findings.

3.1 Estimation of Monetary Poverty

The Planning Commission of India in cooperation with the National Sample Survey Office, determines the poverty lines from time to time, the latest being for the year 2011-12. Poverty is usually measured in India using the concept of Poverty Line and estimates the proportion of people having monthly per capita expenditure below such levels. It is thus related with Monthly Per-capita Consumption Expenditure (MPCE). The planning commission has also estimated the state and region-specific poverty lines. The estimated poverty line for India was Rs. 447 for the rural area and Rs.579 for the urban area in 2004-05 whereas in 2011-12 it was Rs. 816 for the rural area and Rs. 1000 for urban area respectively. The estimation of poverty based on monetary value of MPCE is basically treated as monetary poverty.

Using the FGT (Foster, Greer and Therbecke) method, the different degrees of poverty are calculated for India and separately in rural and urban areas on the basis of rural and urban poverty lines. The estimated results of the status of poverty in terms of incidence, depth and severity for the rural and the urban areas of India are given in Figure 3.1. The incidence that is the head count ratio by monetary measurement of poverty in India declined from 37.8 per cent in 2004-05 to 22.3 per cent in 2011-12. It is observed that the poverty ratio in the rural India was higher than that of the urban India. The HCR in the rural India decreased from 41.9 per cent in 2004-05 to 25.7 per cent in 2011-12.

Figure 3.1 Status of Monetary Poverty in India, 2004-05 and 2011-12



Source: Author's estimation from NSSO Unit Level Data of *Consumer Expenditure Survey*, 61st Round (2004-05) and 68th Round (2011-12).

Among the social castes the head count ratio, poverty gap and square poverty gap of STs and SCs were higher than non-SC/STs (Table 3.1). This indicates relatively poorer consumption situation in the SCs and STs population as compared to non-SC/ST.

Table 3.1 Status of Monetary Poverty by Castes in India, 2004-05 and 2011-12

Social Castes	2004			2011		
	Incidence	Depth	Severity	Incidence	Depth	Severity
ST	59.9	16.5	6.2	43.1	9.5	3.1
SC	50.9	11.8	3.8	29.4	5.5	1.5
OBC	37.8	7.9	2.4	20.7	3.6	1.0
Other	23.0	4.6	1.3	12.5	1.9	0.5

Source: As in Figure 3.1.

3.2 Estimation of Multidimensional Poverty

3.2.1 The Dimensions and Indicators of Multidimensional Poverty

In this chapter, the MPI is based on nine indicators grouped into three dimensions as reported in Table 3.2. The selection of dimension and indicators are mainly related to the availability of data in the NSSO surveys. The first column reports three dimensions: education, food & nutrition and living condition. The second column reports the nine indicators. The dimensions and the indicators within each dimension have equal weights. The third column reports the criteria of the deprivation cut-off of each of the nine indicators.

Table 3.2 Dimensions, Indicators, Deprivation Cut-offs and Weights of the International MPI

Dimension	Indicator (Weight)	Deprivation Cut-off
Education (1/3)	Schooling (1/6)	No one has completed six years of schooling
	School Attendance (1/6)	At least one school-age child not attend the school
Food & Nutrition (1/3)	Food Security (1/6)	The level of food consumption of the household is less than food security line
	Nutritional Security (1/6)	The level of calorie consumption of the household is less than calorie line
Living Condition (1/3)	Electricity (1/15)	Households has no electricity
	Cooking Fuel (1/15)	Households has not cooked with the help of dung, wood or charcoal
	Own House (1/15)	The household has not owned any house
	Own Land (1/15)	The household doesn't own any land
	Assets (1/15)	Household has no assets

Source: As in Figure 3.1

The indicators and their deprivation cut-offs are now discussed as follows:

Schooling: If no one of a family member with age 15 years and above has completed six years of schooling then the people living in the household is deprived.

School Attendance: The people living in the household is deprived in school attendance if at least one school age child (age group 4 years to 14 years) did not attend school.

Food security: Food consumption level is the sum total of the consumption of food items given in the consumption expenditure schedule of NSSO. In the present study the food insecurity line is estimated from the poverty line. Poverty line is given by the Expert Group under the chairmanship of Rangarajan on behalf of the Planning Commission of India. The methodology is based on an exogenously determined poverty line expressed in terms of per capita consumption expenditure in a month. The Expert Committee gave two separate consumption baskets for the rural and urban areas in India as well as the state specific rural and urban poverty lines for the years 2004-05 and 2011-12. The budget share of food items of the poverty line class is considered as a food insecurity line (FIL). The FIL is the minimum amount of monetary value for a person's minimum food requirement during a month. The food insecurity line (FIL) is derived from poverty line as follows

$$FIL_{ij} = PL_{ij} \text{ X } SF_{ij}$$

Where, $FIL_{ij}$is the food insecurity line of the i-th state in the j-th region.

$PL_{ij}$is the poverty line of the *i-th* state in the j-th region and

$SF_{ij}$is the share of food of the *i-th* state in the j-th region.

In India, food insecurity lines in rural and urban areas were Rs 258.8 and Rs 302.8 per capita per month respectively in 2004-05. In 2011-12, it became Rs 450 and Rs 523 per capita per month in the rural and urban areas respectively (Basar and Das 2018).

Nutritional Security: The estimation of calorie intake based on NSSO unit level data involves converting the reported quantity of consumption of specific food items into calorie figures, using pre-specified conversion factors and adding up all the food items. The conversion factors are (with minor qualifications) fixed over time, and are based on widely-used estimates of the "Nutritive Value of Indian Foods" published by the National Institute of Nutrition (Gopalan et al 1980) , revised and updated by B.S. Narasinga, Y.G. Deosthale and K.C. Pant (1991); and also followed the ICMR norms 2010. The calorie value of all listed food items are also given by NSSO in their secondary reports of every Round. There are food consumption items in NSSO Consumption Expenditure schedule. To find out the calorie intake we have multiplied the amount of consumption of each of the items with their specific calorie value. For example, let X_i is the amount of consumption of i-th item of the households and K_i is the calorie value per unit of *i-th* item (*i*=1,2,3.....n), then $\sum K_i X_i$ is the total calorie consumption of the households.

Electricity: If the primary source of energy of the household for lighting is electricity than the household is treated as electrified. The household is deprived if she has no electricity.

Cooking Fuel: The household cooks using dung, wood, natural gas, kerosene, biogas, coal or charcoal as fuel. The household is deprived if the primary source of energy for cooking is either dung or wood or charcoal. These means of cooking fuel emits more CO_2 and therefore they are more polluting.

Own House: A household is deprived if the household has not owned any house and vice versa.

Own Land: If a household has owned any land, the household is non-deprived and vice versa.

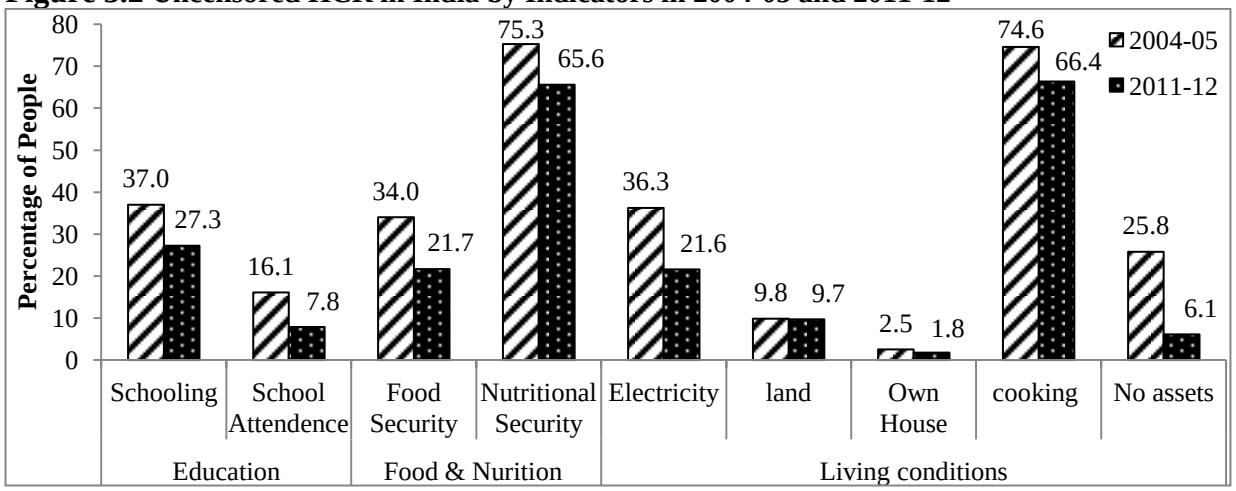
Asset: The household is deprived in assets if he or she does not own bi-cycle or radio or tape recorder or TV or Motor Cycle or Refrigerator. Whether the household possessed either bi-cycle or radio or tape recorder or TV or Motor Cycle or Refrigerator or not is observed from the expenditure pattern of durable goods for domestic use.

In the *NSSO Unit Level Data of Consumer Expenditure Survey, 61st Round (2004-05) and 68th Round (2011-12),* there is absence of information relating to health status of the households but the status of health and hygiene of members of the households is indirectly reflected by the status of food security and nutritional security.

3.2.2 Uncensored and Censored Deprivation by Indicators in India, 2004-05 and 2011-12

Figure 3.2 describes the deprivation across sample households in nine indicators. Uncensored deprivations basically the deprivation of people living in the household. The largest absolute reductions have taken place in a number of living condition indicators. The percentages of people living in households deprived in 'Assets' and 'Electricity' have gone down by 19.7 percentage point and 14.7 percentage point respectively during 2004-05 and 2011-12. The deprivation of people in 'Land' and 'Own house' have been marginally reduced. In the year 2004-05 and 2011-12, the deprivation in 'Nutrition' and 'Cooking Fuel' were relatively higher as compared to other indicators. In 2004-05, 75.3 per cent of people were deprived in 'Nutrition' which decreased to 65.6 per cent in 2011-12. Over the same period of time the percentage of people living in the household who were deprived in 'Schooling' also decreased from 37.0 per cent to 27.3 percentage point. The 'School Attendance' (Age 4 to 14) indicator too showed a reduction of 8.3 percentage points. India's performance in food security was relatively better as near about 80 per cent people were food secure in 2011-12, i.e., the percentage share of deprived people were 21.7 per cent.

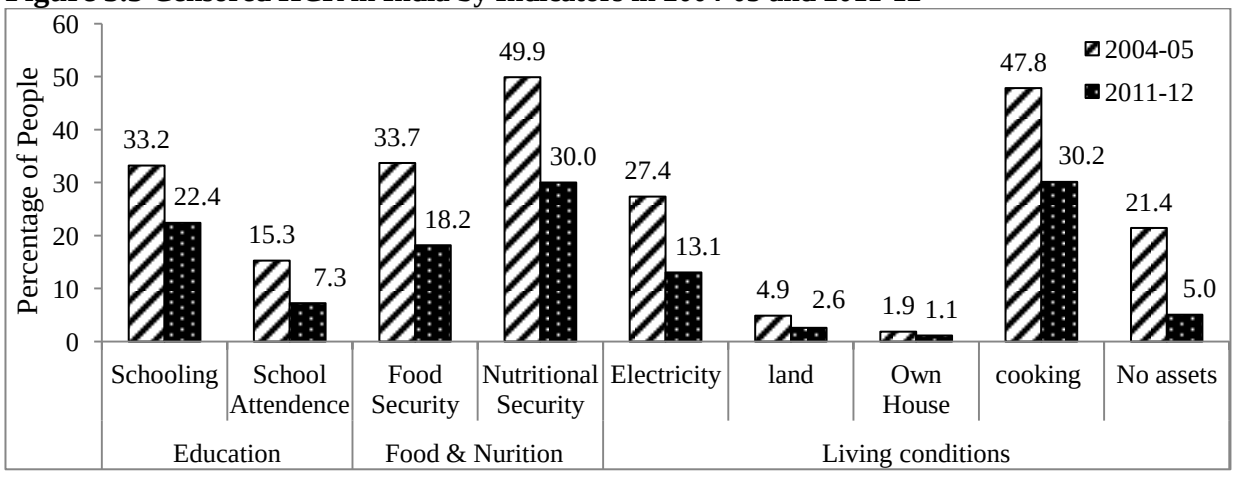
Figure 3.2 Uncensored HCR in India by Indicators in 2004-05 and 2011-12



Source: As in Figure 3.1.

Figure 3.3 explains Censored Head Count Ratio i.e., the percentage share of deprived people after poverty cut-off (deprivation score is 33.3 per cent and more) in India using the same nine indicators. In 2004-05, the percentage share of deprived people of the indicator 'Nutrition Security' after using poverty cut-off was highest that is 49.9 per cent and it decreased to 30 per cent in 2011-12. Censored HCR was 47.8 per cent and declined to 30.2 per cent during 2004-05 to 2011-12. It was observed from this figure that in Education more than 10 percent point reduction in deprivation took place in schooling indicator where it reduced from 33.2 per cent in 2004-05 to 22.3 percent from 2004-05 to 2011-12 followed by attendance indicator. In case of Food & Nutrition, Food Security indicator declined from 15.3 per cent in 2004-05 to 7.3 per cent in 2011-12. In case of Standard of Living it was found that deprivation in the Asset indicator reduced drastically by 19.7 percent point followed by electricity indicator where the reduction was by 14.3 percent point. Land and Own house had very low reduction in deprivation whereas in case of Cooking fuel indicator, deprivation decreased by 8 percentage point.

Figure 3.3 Censored HCR in India by Indicators in 2004-05 and 2011-12



Source: As in Figure 3.1

3.2.3 Estimation of Multidimensional HCR, Intensity and MPI

Table 3.3 Multidimensional Poverty Estimation in India, 2004-05 and 2011-12

	2004-05			2011-12			Change	
	H	*A*	*MPI*	*H*	*A*	*MPI*	*H*	*MPI*
Rural	60.1	55.6	0.334	41.1	48.9	0.201	-18.9	-0.133
Urban	32.2	48.8	0.157	16.5	44.4	0.073	-15.7	-0.084
All India	53.0	54.6	0.289	34.1	48.2	0.164	-18.9	-0.125

Source: As in Figure 3.1.

Using Alkire Foster (2011) method for the measurement of multidimensional poverty in the forms of 'H', 'A' and MPI are estimated for whole of India and separately for the rural and urban areas. In 2004-05, multidimensional head count ratio (H), intensity of poverty among multidimensional poor (A) and multidimensional poverty index (MPI) were 53.0 per cent, 54.6 per cent and 0.28 which reduced to 34.1 per cent, 48.2 per cent and 0.164 in 2011-12 respectively. A comparison of the multidimensional poverty for the rural and the urban area shows that HCR, intensity and MPI in the rural India were higher than the urban India (Table 3.3). The H and MPI were almost double in the rural India in comparison to the urban India. It is to be noted that the reduction of H and MPI were higher in the rural area than the urban area during the period 2004-05 to 2011-12 but the rural urban disparity in multidimensional poverty has gone down. Now to get a glimpse of the variation in multidimensional poverty across the social castes we have categorised them into four groups viz., ST, SC OBC and Other. The 'Other' category is mainly incorporated general caste people along with a few non-specified people. We have observed from the NSSO sample households that the HCR, Intensity and MPI of ST and SC were higher than Non-ST/SC in both the years. Absolute change in SC category was higher than the rest three castes. The reduction of multidimensionally poor people of SC category was the highest in comparison with ST, OBC and 'Other' categories people (Table 3.4).

Table 3.4 Status of Multidimensional Poverty by castes in India, 2004-05 and 2011-12

	2004-05			2011-12			Change	
	H	*A*	*MPI*	*H*	*A*	*MPI*	*H*	*MPI*
ST	74.2	59.7	0.443	53.3	50.5	0.269	-20.9	-0.173
SC	67.1	56.2	0.377	44.7	49.1	0.219	-22.4	-0.157
OBC	55.1	53.9	0.297	34.3	48.2	0.165	-20.8	-0.132
Other	35.3	50.8	0.180	20.4	45.1	0.092	-14.9	-0.088

Source: As in Figure 3.1.

3.3 Comparative Analysis of Monetary Poverty and Multidimensional Poverty

Linkages and Discrepancies between Monetary Poverty and Multidimensional Poverty

A comparison of linkages and discrepancies has been made between monetary poverty and multidimensional poverty which is shown in Table 3.5. Out of total population in India 33.9 per cent people in 2004-05 were poor in both monetary and multidimensional measurements of poverty. This share declined to 16.5 per cent in 2015-16. In contrary 43.1 per cent people were non-poor in 2004-05 in both measurement of poverty and the share increased to 60.1 per cent in 2011-12. That is there is a similarity, 77 per cent in 2004-05 and 76.6 per cent in 2011-12, in the measurement of poor and non-poor in the two methods. According to the poverty line, 19.1 per cent and 17.6 per cent people in 2004-05 and 2011-12 respectively in India have shaken off monetary poverty, but they are multidimensionally poor in at least at one third of the dimensions. In terms of the multidimensional poverty measurement, only 4% people in 2004-05 had shaken off multidimensional poverty but are still in monetary poverty where in 2011-12 it increased to 6 per cent. Therefore, in both the years, the discrepancy in the measurement of monetary poverty and multidimensional poverty were more or less same. If the poverty-reduction policies were undertaken targeting only at those in monetary poverty, then about 19.1 per cent people in 2004-05 and 17.6 per cent people in 2011-12 will continue to live in multidimensional poverty of various degrees. Therefore, the poverty-reduction policies should cover not only monetary poverty but also multidimensional poverty and deprivation.

Table: 3.5 Matching and Miss Matching between Monetary and Multidimensional Poverty, 2004-05 and 2011-12

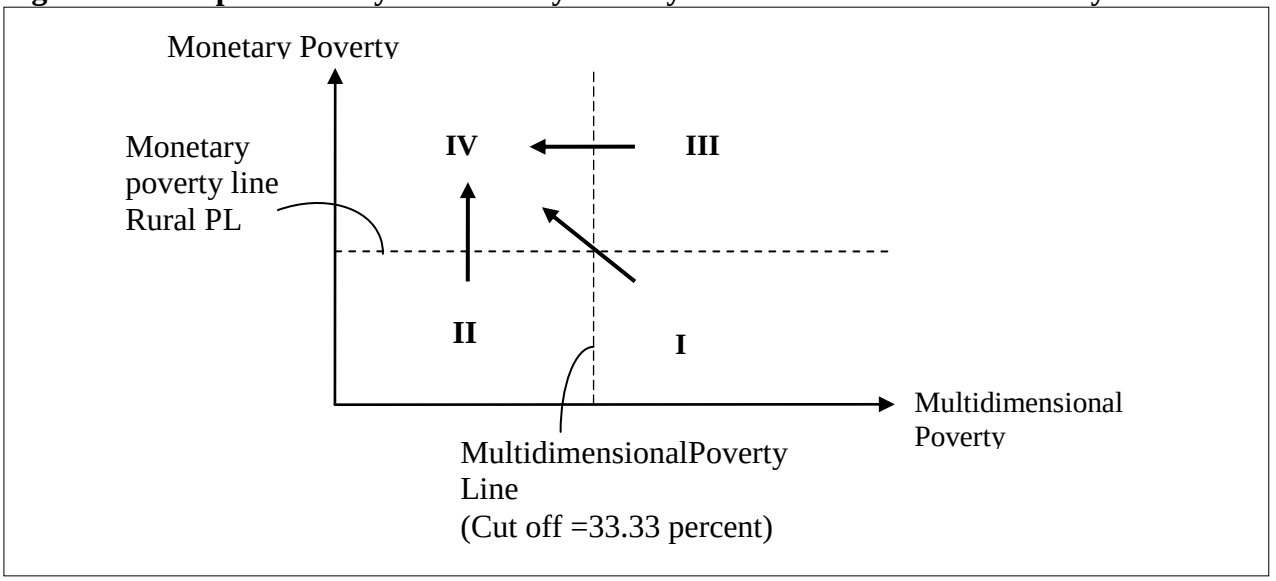
		2004-05		2011-12	
		Monetary Measure		Monetary Measure	
		Poor	Non-Poor	Poor	Non-Poor
Multidimensional Measurement	Poor	***33.9***	19.1	***16.5***	17.6
	Non-Poor	3.9	***43.1***	5.8	***60.1***
Status Match*		77.0		76.6	

Source: As in Figure 3.1.

This is shown graphically in Figure 3.4 which divides households into four types – I: households in both monetary poverty and multidimensional poverty; II: households in monetary poverty but not in multidimensional poverty; III: households not in monetary poverty but in multidimensional poverty; IV: households in neither monetary poverty nor multidimensional poverty. We may overlook some poor households if we use either the monetary poverty line or the multidimensional poverty line. When we use the monetary poverty line exclusively, the households in Zone II will not be poor, but they are actually in multidimensional poverty. Table 3.8 showed that 33.9 per cent peoples in 2004-05 and 16.5 per cent people in 2011-12 were in Zone II. When a multidimensional poverty cut off is used as the poverty measurement standard, the households in Zone III will not be poor, but they are actually in monetary poverty. Table 3.8 shows that 4 per cent and 6 per cent of total population

in 2004-05 and 2011-12 respectively were in Zone III. Thus, the aim of poverty alleviation policies should be to shift those households in Zones I, II and III to Zone IV, in which households have shaken off not only monetary poverty but also multidimensional poverty. Thus, the best way to achieve this poverty reduction goal is to combine these two poverty lines rather than ignore either.

Figure 3.4 Complementarily of Monetary Poverty and Multidimensional Poverty



Source: As in Figure 3.1.

3.4 Status of Monetary Poverty across States in India

In this section an attempt has been made to analyse the status of monetary poverty across the major 21 states in India between 2004-05 and 2011-12. The incidence, depth and severity of poverty have declined in every state but this decline is not uniform across these states. It is evident from the fact that monetary poor in 2004-05 was the highest in Orissa followed by Bihar, Chhattisgarh and others whereas in 2015-16 the scenario changed as Jharkhand took the lead followed by Bihar and Orissa. This shows that Orissa over this period managed to reduce the monetary poor by 24.8 percentage points. Bihar though reduced its monetary poor but retained its position. On the other extreme in 2004-05, Jammu & Kashmir was in the best condition as it had the least monetary poor which was 12.84 per cent followed by Kerala and Punjab. While in 2011-12 Himachal Pradesh took the lead as it managed to have the least monetary poor followed by Kerala and Punjab.

Moving to the depth of poverty we come across the fact that in 2004-05 the depth of poverty was the highest in Orissa followed by Chhattisgarh and Bihar. While it was the least in Jammu and Kashmir followed by Punjab and Himachal Pradesh. Whereas in the years 2011-12 depth of poverty has also decreased drastically. The highest depth of poverty was observed in

Chhattisgarh which was only 8.18 as compared to 16.33 in Orissa and the least depth was observed in Himachal Pradesh followed by Punjab, Uttarakhand and Andhra Pradesh.

The risk of poverty has also considerably declined across these states over the considered time period. As it varied in 2004-05 from 0.48 to 6.21 but in 2011-12 it varied from 0.25 to 2.54. In 2004-05 the risk of poverty was the highest in Orissa followed by Chhattisgarh and Madhya Pradesh. On the other hand, the risk was least in states like Uttarakhand, Punjab, and Andhra Pradesh (Table 3.6).

Table 3.6 Status of Monetary Poverty across top 21 States in India

		Monetary poor		Poverty gap		Square Poverty gap	
		2004-05	2011-12	2004-05	2011-12	2004-05	2011-12
Andhra Pradesh	AP	29.88	9.27	6.4	1.36	2.06	0.33
Assam	ASM	35.14	32.5	6.83	5.59	1.95	1.4
Bihar	BHR	54.48	34.06	12.52	6.3	3.89	1.69
Chhattisgarh	CG	51.06	40.2	12.71	8.18	4.57	2.54
Gujarat	GR	32.57	16.95	7.49	2.61	2.47	0.64
Haryana	HR	24.09	11.23	4.77	1.98	1.4	0.5
Himachal Pradesh	HP	23.04	8.03	3.91	1	1.04	0.19
Jammu & Kashmir	JK	12.84	10.57	1.96	1.69	0.48	0.42
Jharkhand	JKH	47.16	37.48	10.3	6.52	3.15	1.69
Karnataka	KRT	33.92	21.18	6.42	3.2	1.81	0.77
Kerala	KR	19.71	8.08	4.29	1.39	1.44	0.41
Madhya Pradesh	MP	49.18	31.98	11.61	7.19	3.86	2.35
Maharashtra	MH	38.93	17.31	9.75	3.23	3.47	1.04
Odisha	OR	57.71	32.91	16.33	6.43	6.21	1.85
Punjab	PN	21.09	8.23	3.58	1.32	0.91	0.32
Rajasthan	RJ	34.47	14.78	6.73	2.82	1.93	0.86
Tamil Nadu	TN	30.69	11.71	6.16	1.86	1.79	0.48
Tripura	TP	41.34	14.88	8.74	2.1	2.61	0.46
Uttar Pradesh	UP	40.99	29.5	8.89	5.59	2.72	1.59
Uttarakhand	UTK	33.04	11.39	5.62	1.32	1.41	0.25
West Bengal	WB	34.72	20.43	7.26	3.44	2.17	0.88

Source: As in Figure 3.1

Status of monetary poverty across States by Sectors in India, 2004-05 and 2011-12

In 2004-05 it was observed that incidence, depth and severity of poverty was higher in the rural area compared to the urban area except Haryana where the depth and severity of poverty was high in the urban areas as compared to rural areas. Whereas in Karnataka severity or risk of poverty was high and in Bihar and Uttarakhand the severity is same for both rural and urban areas.

In 2011-12 also we observe that the incidence, depth and severity of poverty was higher in rural area as compared to urban area except for Bihar and Uttarakhand where the depth was higher in urban areas as compared to rural areas. Whereas in Bihar, Karnataka and Uttarakhand the severity of poverty was higher in Urban area as compared to rural area.

Table 3.7 Status of Monetary Poverty by Sector across top 21 states in India

	2004-05						2011-12					
	Monetary poor		Poverty gap		Square Poverty gap		Monetary Poor		Poverty gap		Square Poverty gap	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
Andhra Pradesh	32.1	23.4	6.9	4.8	2.3	1.5	11	5.8	1.6	0.87	0.38	0.22
Assam	36.5	21.8	7.1	4.3	2	1.2	33.9	20.6	5.79	3.83	1.44	1
Bihar	55.6	43.7	12.6	11.4	3.9	3.9	34.4	31.2	6.24	6.8	1.64	2.14
Chhattisgarh	55.2	28.4	13.7	7.2	4.9	2.6	44.6	23.9	8.98	5.2	2.71	1.92
Gujarat	39.2	20	9.4	3.9	3.2	1.1	21.5	10.2	3.27	1.64	0.8	0.4
Haryana	24.7	22.4	4.7	4.9	1.3	1.6	11.6	10.3	2.08	1.76	0.52	0.45
Himachal Pradesh	25	4.6	4.2	1.1	1.1	0.4	8.5	4.3	1.03	0.76	0.18	0.21
Jammu & Kashmir	14.1	8.9	2	1.7	0.5	0.5	11.5	7.2	1.91	0.95	0.49	0.2
Jharkhand	51.7	23.8	11.2	5.8	3.4	1.9	40.8	24.8	6.88	5.13	1.73	1.5
Karnataka	37.5	25.9	6.5	6.2	1.7	2.1	24.5	15.3	3.26	3.09	0.71	0.88
Kerala	20.1	18.4	4.4	4.1	1.5	1.3	9.2	5	1.59	0.83	0.46	0.25
Madhya Pradesh	53.5	35.1	12.5	8.6	4.1	2.9	35.7	21	8.33	3.86	2.8	1.01
Maharashtra	47.9	25.6	11.9	6.5	4.3	2.3	24.2	9.1	4.65	1.55	1.57	0.41
Odisha	60.9	37.5	17.4	9.6	6.6	3.5	35.7	17.3	7.01	3.15	2.03	0.85
Punjab	22.3	18.6	3.8	3.2	1	0.8	7.7	9.2	1.18	1.56	0.28	0.4
Rajasthan	35.8	29.7	7	5.7	2	1.7	16.1	10.7	3.21	1.56	1.01	0.38
Tamil Nadu	37.5	19.7	7.5	4.1	2.1	1.3	15.8	6.6	2.47	1.1	0.58	0.34
Tripura	44.4	22.5	9.5	3.8	2.9	1	16.2	7.4	2.17	1.72	0.45	0.52
Uttar Pradesh	42.7	34.1	9.2	7.8	2.8	2.5	30.4	26.2	5.68	5.29	1.61	1.51
Uttarakhand	35.1	26.2	5.8	5.1	1.4	1.4	11.7	10.5	1.25	1.55	0.2	0.38
West Bengal	38.1	24.4	7.9	5.3	2.3	1.6	22.5	14.7	3.7	2.71	0.94	0.71

Source: As in Figure 3.1

Comparing between 2004-05 and 2011-12 we observe that the incidence, depth and severity has reduced over these time period in both the rural and urban areas. In rural area the highest reduction in the incidence of poverty was observed in Tripura where it has reduced by 28.2 percentage points followed by Orissa, Maharashtra and others whereas the least reduction was observed in Jammu and Kashmir where it reduced from 14.1 per cent in 2004-05 to 11.5 in 2011-12. On the other extreme in case of urban area the highest reduction was observed in Orissa by 20.2 percent point whereas the least reduction was observed in Himachal Pradesh which was by 0.3 percentage points. But Jharkhand was an exception as the incidence of poverty has increased by 1 percentage points. Considering the depth of poverty, we find that Orissa in case of both rural and urban areas managed to have the highest reduction in this regard followed by Maharashtra and others while Assam had the least reduction in the depth of poverty over the years. Now looking at the severity of poverty we observe that in this case too Orissa managed to have the highest reduction and Assam the least in terms of severity of poverty in both urban and rural areas (Table 3.7).

Status of monetary poverty across States by Social Caste in India, 2004-05 and 2011-12

Here we will be focusing on the monetary poverty on the basis of social caste which we have categorized as ST, SC, OBC and Other. Generally, it is observed that monetary poverty

increase as one moves from OBC toward ST caste. In 2004-05, the above statement was followed by 8 states whereas in 2011-12, 12 states followed it. In 2004-05, Orissa, Madhya Pradesh, Bihar, and Chhattisgarh had the highest incidence of poverty among the ST, SC, OBC sub- group whereas Assam and Tripura had highest incidence of poverty among the other sub-group. Whereas in the 2011-12, we find that the highest percentage of monetary poor among the ST, SCs are in Bihar, Chhattisgarh, Uttar Pradesh, Orissa, and Maharashtra whereas in case of the OBC subgroup Chhattisgarh had the highest monetary poor followed by Jharkhand and others (Table 3.8).

Table 3.8 Status of Monetary Poverty by Caste across top 21 states in India

	2004-05				2011-12			
States	ST	SC	OBC	Other	ST	SC	OBC	Other
Andhra Pradesh	59.1	40.2	29.6	16.1	23.1	12.7	8.0	5.6
Assam	28.9	45.0	31.2	36.7	32.4	28.6	32.9	33.1
Bihar	59.1	77.2	52.3	33.9	55.6	51.0	31.9	22.6
Chhattisgarh	63.1	48.0	48.4	26.3	51.1	46.7	34.9	9.6
Gujarat	54.7	40.7	40.4	12.4	35.9	18.4	17.8	5.5
Haryana	6.7	47.0	28.1	8.1	9.0	24.1	13.3	3.9
Himachal Pradesh	33.7	37.4	18.5	16.4	9.2	15.9	2.8	6.3
Jammu & Kashmir	19.8	14.3	19.3	11.3	15.3	18.7	7.1	9.1
Jharkhand	59.8	59.7	43.0	27.1	49.7	40.4	34.6	23.1
Karnataka	51.2	53.8	34.7	20.1	31.5	33.2	18.8	15.6
Kerala	54.4	31.0	21.3	10.1	39.4	16.0	7.1	5.8
Madhya Pradesh	77.4	62.0	45.2	19.0	53.4	39.6	23.6	16.6
Maharashtra	68.1	52.9	39.1	27.6	54.4	19.7	14.5	10.7
Odisha	83.0	67.4	51.6	33.3	62.5	39.0	23.9	11.8
Punjab	18.7	38.0	21.8	6.7	6.2	15.6	8.1	2.3
Rajasthan	57.9	49.0	28.0	19.4	40.3	18.7	9.2	3.7
Tamil Nadu	41.9	48.6	26.5	10.1	25.8	19.0	9.8	1.6
Tripura	50.7	44.1	37.4	35.4	25.1	10.3	5.2	9.8
Uttar Pradesh	41.7	55.1	42.3	24.4	25.6	40.9	31.0	12.6
Uttarakhand	32.8	46.5	41.4	25.2	13.5	14.9	16.1	8.3
West Bengal	53.6	37.7	27.5	32.1	49.4	21.5	18.2	17.8

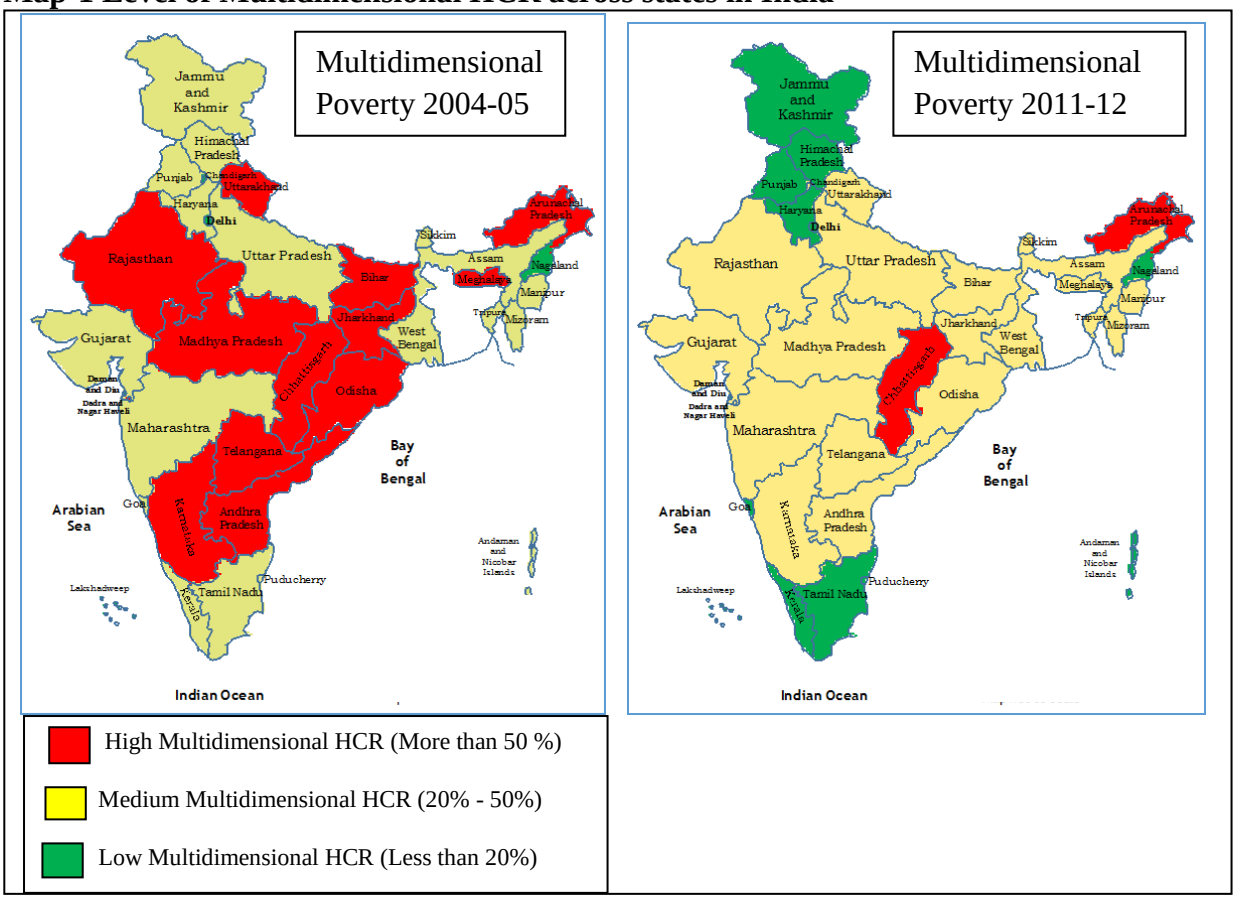
Source: As in Figure 3.1

Now comparing between 2004-05 and 2011-12 we observe that among all the castes, monetary poverty has declined substantially but the exception lies in Haryana and Assam where the monetary poverty has increased among the ST group in Jammu & Kashmir whereas in Assam it has increased in the OBC group. The highest reduction in this regard for ST group was in Andhra Pradesh followed by Tripura and others whereas for SC, OBC and others the highest reduction was observed in Tripura and Orissa.

3.5 Status of Multidimensional Poverty across States in India

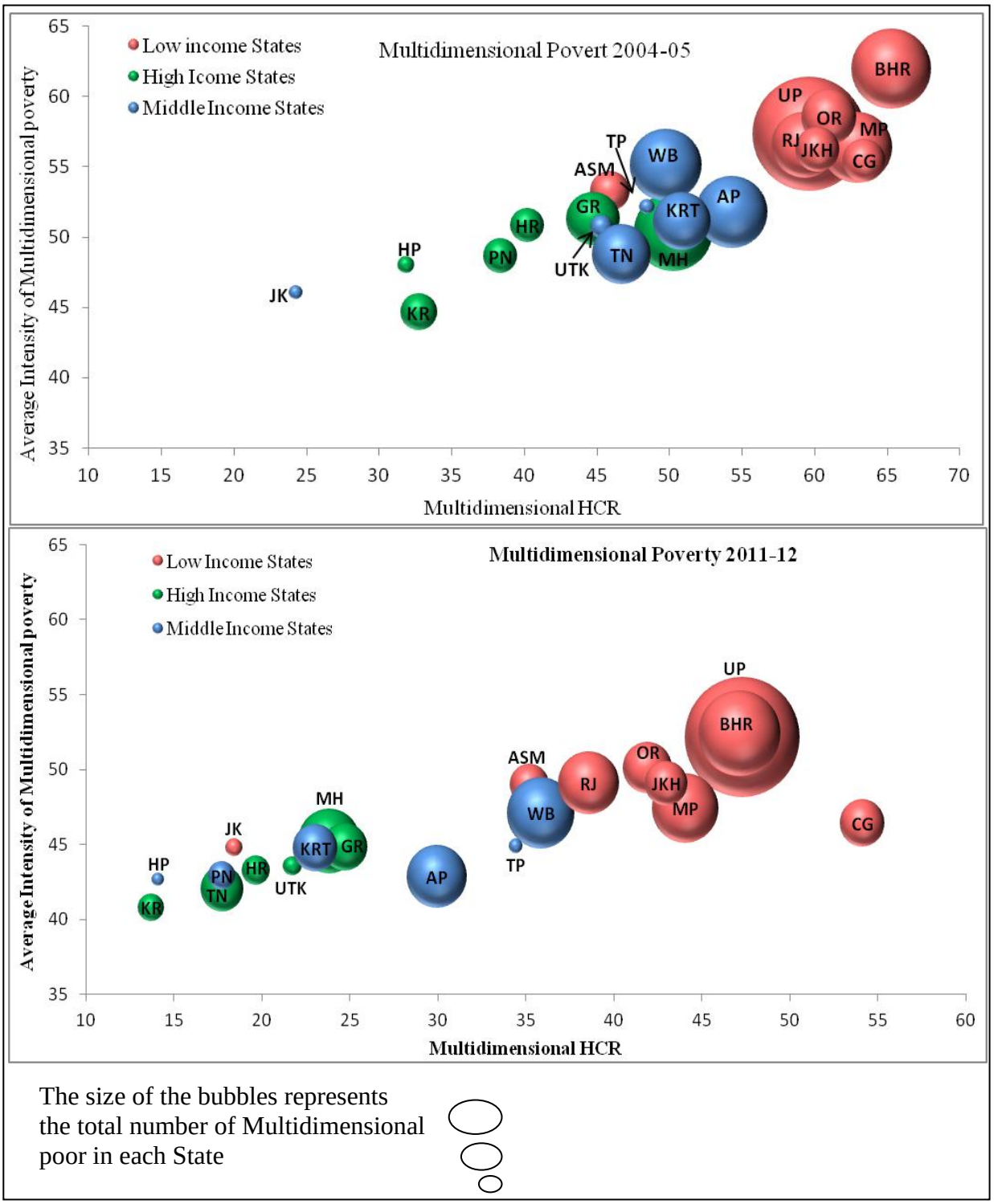
In this section an attempt has been made to show the change in the level of Multidimensional HCR across all states in India using the map. For this we have divided the HCR into 3 groups to which we have categorized as high, medium and low multidimensional HCR. Here we are basically concerned with the years 2004-05 and 2011-12, and have denoted the states with red colour for high, the yellow colour for medium and green colour for low multidimensional HCR. From the map it can be observed that the number of states having high multidimensional HCR has reduced from 13 which include Bihar, Madhya Pradesh, Rajasthan, and other to only 2 states which includes Chhattisgarh and Arunachal Pradesh. Considering the state having Medium Multidimensional HCR the numbers of states have increased from 18 to 21 which additionally include Madhya Pradesh, Rajasthan and Bihar in 2011-12. It is noteworthy that Nagaland had low Multidimensional head count ratio in both 2004-05 and 2011-12. It is mainly because of less deprivation in many indicators like attendance, electricity, house, land ownership and food insecurity where the deprivation is less than 10 percentage points (Map 1).

Map-1 Level of Multidimensional HCR across states in India



Source: As in Figure 3.1

Figure 3.5 Status of Multidimensional Poverty across States in India, 2004-05 and 2011-12



Source: As in Figure 3.1.

Status of multidimensional poverty across states in India is shown with the help of Figure 3.5. For this we have measured Multidimensional HCR in the horizontal-axis and an average intensity of multidimensional poverty in the vertical-axis. Another consideration is that the size of the bubble represents the total number of multidimensional poor, larger size indicates higher multidimensionally poor and vice-versa. On the basis of the relative per-capital state domestic

product the states are divided into 3 groups namely, low, high and medium to which we have assigned the colours red, green and blue respectively. Taking a look at the states we observe that in 2004-05, Bihar was in the worst condition as there the multidimensional HCR as well as the intensity of multidimensional poverty was high and it was also a low-income state. Uttar Pradesh had the highest multidimensional poor which remained highest even in 2011-12. However, Jammu & Kashmir was in the best position. In 2011-12 it was observed that the multidimensional HCR reduced considerable in case of all the states. Chhattisgarh in the year 2011-12 was in the worst position as it had highest multidimensional HCR but its intensity was lower than that of Uttar Pradesh and Bihar. And in that year Karnataka, Himachal Pradesh together with Punjab and Haryana were in a better position than Jammu & Kashmir which remained in the top position some year back. The striking change that is observed is that Himachal Pradesh and Punjab had moved from high to medium income states. Jammu & Kashmir had moved from middle income to low income group whereas Tamil Nadu and Uttarakhand had an upliftment in its status as it has moved from middle to high income states.

3.6 Econometrics Analysis of Multidimensional Deprivation across Households in India

Among the four categories of multidimensional deprivation the percentage shares of multidimensionally non-deprived and vulnerable to multidimensional deprived clubbed into one category because these two categories are below multidimensional poverty cut off i.e., 33.33. In this category the deprivation score of households is less than 33.33 per cent. Thus, the household with deprivation score less than 33.33 per cent are considered multidimensionally non-poor whereas other two categories are ordinary multidimensionally poor (with deprivation score 33.33 per cent to 50.0 per cent) and severely multidimensionally poor (with deprivation score 50.0 per cent and above). The degree of deprivation varies from one household to another and it depends on the characters of the households. Therefore, one household may not be deprived while other may be poor or severely multidimensionally poor. Therefore, the households who are multidimensionally poor in 2004-05 might be non-poor in 2011-12. The location of the households and the extent of social protection benefits widely affect the degree of deprivation.

The Theoretical Basis of the Determinant of Multidimensional Deprivation

The factors hypothesized to influence the deprivation of the households can be grouped into six categories namely, demographic, social, economic, education, location and social protection. The factors are presented in Table 3.9.

Table 3.9 Notation, Specification, and Descriptive Statistics of Variables used in the Multinomial logistic regression Model

		2004-05				2011-12			
Notation	Specification	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
TD	Time Dummy: If 2011=1, otherwise Zero	0	0	0	0	1.0	0.0	1	1
HHZ	Size of Household	4.9	2.5	1	43	4.6	2.2	1	39
AGEH	Age of the household Head	45.7	13.6	0	108	46.6	13.5	5	105
SAGEH	Square age of Age of the household Head	2274.4	1330.7	0	11664	2354.6	1335.4	25	11025
HEDU	Year of education of the household's head	4.2	2.8	1	11	6.4	3.7	1	13
PCPDS	Value of Per Capita PDS	9.0	21.6	0	425	16.8	29.5	0	565
RURAL	If Rural = 1, otherwise Zero	0.6	0.5	0	1	0.6	0.5	0	1
ST	Household belongs to ST or not. Yes=1, No=0	0.1	0.3	0	1	0.1	0.3	0	1
SC	Household belongs to SC or not. Yes=1, No=0	0.2	0.4	0	1	0.2	0.4	0	1
OBC	Household belongs to OBC or not. Yes=1, No=0	0.4	0.5	0	1	0.4	0.5	0	1
SE	The household type in respect of employment status is self-employed or not. Yes=1, No=0	0.5	0.5	0	1	0.5	0.5	0	1

Source: As in Figure 3.1

The demographic factors that are used in our analysis are size of the households (HHZ), age of the head of the households (AGEH) and square age of head of the households (SAGEH). The HHZ is specified as number of members of the households. Larger size households have more chance of deprivation or severely deprivation as because earning member out of total member is low thus the households fails to fulfill all the aspects of multidimensional poverty. Here we have considered the square of age of head with the age of the head in the model to find the effect of age accurately which have a non-linear relationship with the degree of deprivation (the dependent variable). The adding of age square to age, allows us to model the effect of differing ages, rather than assuming the effect is linear for all ages. The ability of the households increases with the increase in the age of the head of the household. The scope of better employment or higher earnings increases with increase of the age of head and for an upper aged it may be reduced. Therefore, it is hypothesized that the degree of deprivation across households increases with age of the head but at a decreasing rate.

The social factor is specified by social castes. Different social castes are defined as a dummy variable taking the value 1 if the head of the households belongs to scheduled tribe (ST), scheduled caste (SC) and other backward caste (OBC) and 0 if otherwise. ST, SC and OBC households have lesser access to physical capital and dynamics of development and therefore they are more deprived and experience high degree of deprivation.

The education factor is specified by level of education of the head of the households (HEDU). The education level-particularly of the head of the households imposes impact on the ability of households to earn an income and to maintain the better standard of living. It also influences the education level of the other member of the household. That is the higher the education level of the head of the households, the lower the degree of deprivation of the household.

The economic factor is specified as status of employment (SE). The status of employment is defined as a dummy variable taking the value 1 for self-employed households and 0 otherwise. The probability of deprivation of self-employed households is generally less.

The location of the household is also an important factor to judge whether the household is deprived or not. The location is specified by dummy variable (RURAL). The opportunity and access of the means of livelihood are relatively low for households living in rural areas. The rural located households are also lagging behind in respect of accessibility of education and health services. Therefore, the degree of deprivation is relatively high for rural located households.

Apart from the above factors the social protection benefits also plays a crucial role on the degree of deprivation of the households, specifically for the households in the backward districts. The social protection factor is specified by per capita food grain received by households from the public distribution system (PCPDS). The degree of deprivation is reduced with the higher access of PCPDS. In NSSO unit level data the information of the other social protection programmes are not available. This limitation is reduced with the field survey data where we have incorporated the benefits of other social protection programmes.

Result Analysis

Multinomial Logit Model is used to explain the degree of Multidimensional Deprivation or level of multidimensional poverty across households in India. The model is specified as follows: the data consist of different level of multidimensional poverty facing three choices - multidimensionally non-poor, ordinary multidimensionally poor and severely multidimensionally poor, which are coded as 0, 1 and 2. It is assumed that we have a set of observations Y_i for i=1.....n, of the outcomes of multi-way choices from a categorical distribution of size m = 3. Along with Y_i are a set of k observed values $x_{1.i}$, ...$x_{k.i}$ of explanatory variables like households size (HHSZ), age of head of households (AGEH), square of age of head of households (SAGEH), year of education of the head of the households (HEDU), per capita PDS (PCPDS), Rural, scheduled tribes (ST), scheduled caste (SC) and OBC, and Self-Employed Households (SE). We have considered time dummy (TD). Here 2011-12 takes value 1 and 2004-05 takes zero (Table 3.10).

$$Y_{it} = \alpha + \beta_1 TD_{it} + \beta_2 HHZ_{it} + \beta_3 AGEH_{it} + \beta_4 SAGEH_{it} + \beta_5 HEDU_{it} + \beta_6 PCPDS_{it} + \beta_7 RURAL_{it} + \beta_8 ST_{it} + \beta_9 SC_{it} + \beta_{10} OBC_{it} + \beta_{11} SE_{it} + \varepsilon_{it}$$

Where i = Number of Households, and t = 2 (2004-05 and 2011-12)

Table 3.10 Multinomial logistic analysis of different degree of multidimensional deprivation across households in India

Multinomial logistic regression
Number of Observation = 226306
LR chi2(22) = 76542.76
Prob > chi2 = 0.0000
Log likelihood = -163767.54
Pseudo R2 = 0.1894
0= Base Outcome [Multidimensional Non-Poor ($0 \leq k < 33.33$)]

	1 = Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)			2 = Severely Multidimensional Poor ($k \geq 50.00$)		
	Coefficient	z	P>z	Coefficient	z	P>z
TD	-0.06	-4.89	0.000	-0.77	-46.25	0.000
HHZ	0.05	22.25	0.000	0.10	32.41	0.000
AGEH	-0.10	-44.08	0.000	-0.14	-48.23	0.000
SAGEH	0.00	32.53	0.000	0.00	31.55	0.000
HEDU	-0.28	-128.18	0.000	-0.57	-158.21	0.000
PCPDS	0.0005	2.07	0.039	-0.002	-4.93	0.000
RURAL	0.28	22.73	0.000	0.43	26.2	0.000
ST	0.43	22.87	0.000	0.88	36.75	0.000
SC	0.50	28.3	0.000	0.77	34.69	0.000
OBC	0.32	23.26	0.000	0.47	24.69	0.000
SE	-0.17	-14.11	0.000	-0.51	-33.91	0.000
Intercept	2.66	46.94	0.000	4.34	60.67	0.000

Source: As in Figure 3.1.

The result of multinomial logit regression is given in Table 3.15. The LR χ^2 statistic is highly significant at less than 1 per cent level implying that the degree of multidimensionally deprived households is significantly explained by households size (HHSZ), age of head of households (AGEH), square of age of head of households (SAGEH), year of education of the head of the households (HEDU), per capita PDS (PCPDS), Rural, scheduled tribes (ST), scheduled caste and (SC), self-employed households (SE) and time dummy (TD). The multidimensional deprivation significantly decreased over time in India. The likelihood of multidimensionally deprived households and severely multidimensionally deprived households were more in rural area than urban area. The probability of multidimensionally deprived and severely multidimensionally deprived households increased significantly with the household size. Age of head of households was more likely multidimensionally non-deprived household than multidimensionally deprived and severely multidimensionally deprived households. SC, ST and OBC categories households were more likely multidimensionally deprived and severely multidimensionally deprived households than multidimensionally non-deprived household.

Self-employed households and year of education of the head of the households were more likely multidimensionally non-deprived household than multidimensionally deprived and severely multidimensionally deprived households.

Chapter 4

Multidimensional Poor, Non-Poor and Deprived of Rural Households across States of India: A Reflection of SECC 2011

Poverty reduction is considered by many policy-makers as the most important goal of development policy. Consequently, lots of energy has gone into generating data and developing definitions of poverty that will allow the measurement of the changes in poverty over time, comparisons across space, and the identification of poor households or individuals for targeted poverty-alleviation programs.

Traditionally, poverty is measured in monetary terms, either as income expenditure or as consumption expenditure. The money-metric poverty has received sharp criticism from all corners. Poverty ratio in India is measured using an exogenously determined poverty line quantified in terms of per capita monthly consumption expenditure, which is obtained from the large sample survey of consumption expenditure data of National Sample Survey Organization (NSSO). Limitations of measurement of poverty based on a single monetary indicator underscore the strong need for a multidimensional approach to poverty. Since 2010, UNDP World Development Report published Multidimensional Poverty Index (MPI) for a number of countries along with their HDI. The MPI, developed by OPHI, University of Oxford has also incorporated their deprivations in different dimensions.

Multidimensional measures of poverty, thus, conceptualize poverty along a spectrum of deprivation encompassing various aspects of wellbeing such as economic, social and material. The Indian Government conducted BPL censuses in 1992, 1997, 2002 to identify households who were eligible for certain benefits and a fourth census, known as Social Economic Caste Census (SECC) 2011. The SECC 2011 outlined an alternative identification method. It aimed to correct the large targeting errors observed in the BPL group in the year 2002 introducing different exclusion and inclusion criteria, indicators and scoring methods.

In this brief background it was found that there was hardly any study that explores the deprivation across states of India on the basis of SECC 2011. The Present paper analyses poor, non-poor and deprived households across different region and states of India by using SECC 2011.

4.1 Methods of Identification of Poor and Measurement of Deprivations

Methods of Identification of Poor in SECC 2011

In 2011, India's Ministry of Rural Development initiated the fourth rural BPL census called the Socio-Economic Caste Census (SECC) 2011. The census included the caste and tribe of the households as well as other BPL related questions. It was planned assuming that BPL identification would be conducted in three stages: households satisfying any exclusion criterion would be excluded automatically from the BPL list, households satisfying any inclusion criterion would be automatically included in the list, and the rest of the households would be identified through seven-item binary scoring criteria set. The indicators of exclusion, inclusion and deprivation are listed in Table 4.1.

Table 4.1 Indicators of Exclusion, Inclusion and Deprivation with respect to Rural Households

First Stage (Exclusion) Non-Poor	**Second Stage (Inclusion) Extremely Poor**	**Third Stage (Deprivation)**
1.Motorized two/three/four wheelers/fishing boats (which require registration). 2.Mechanized three/four-wheeler agricultural equipment's such as tractors, harvesters etc. 3.Kisan credit card with a credit limit of Rs50,000 and above 4.Households with any member as government employee. 5.Households with non-agricultural enterprise registered with the central or state governments. 6.Any member in the family earning more than Rs10,000 per month. 7.Households paying income tax or professional tax. 8.Households with three or more rooms with Pucca walls and roof. 9.Households owning a refrigerator or a landline telephone 10. Own 2.5 acres or more of irrigated land with at least one irrigation equipment 11. 5 acres or more of irrigated land providing two or more crops season. 12. Own 7.5 acres or more of irrigated land with at least one piece of irrigation equipment	1.Households living on alms. 2.Households without shelter. 3.Manual scavengers. 4.Primitive tribal groups. 5.Legally released bonded labourers	1. Households with a one-room dwelling with kaccha walls and roof. 2. Households with no adult member aged between 16 and 59 years. 3. Female-headed households with no adult male member aged between 16 and 59 years. 4. Households with a disabled member and no able-bodied adult member. 5. SC/ST households. 6. Households with no literate adult aged above 25 years. 7. Landless households deriving the major part of their income from manual casual labour.

Sources: OPHI Working Paper 53

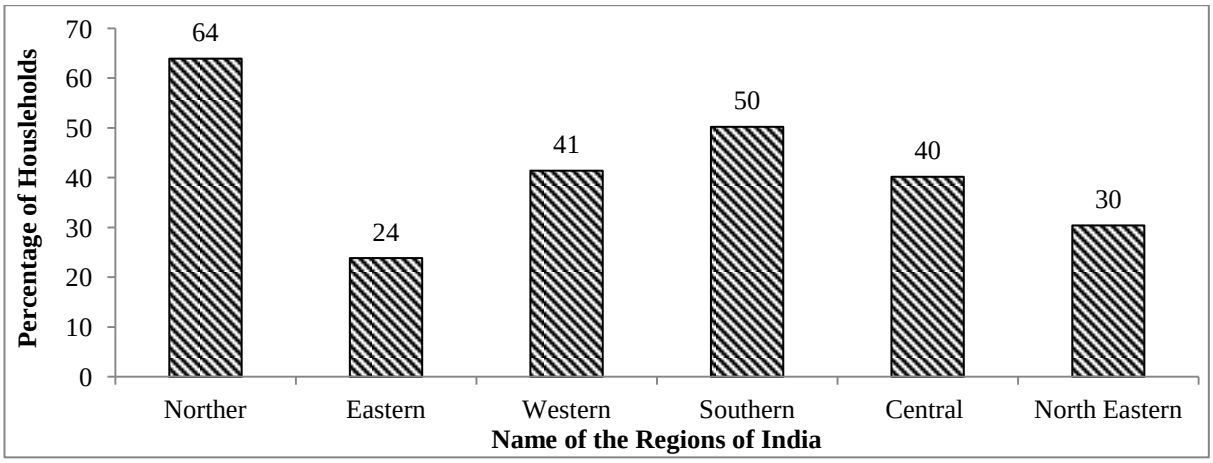
A person will be non-poor, if at least one indicator of exclusion criteria is satisfied. Poor will be identified by the satisfaction of the inclusion criteria and only those satisfying will be considered as poorest of poor. From the third stage i.e. the last stage for poverty measurement, we can only calculate the deprivation of the households. In this stage every indicator has been given equal weights.

4.2 Non-Poor, Extremely Poor and Deprived Households across Regions of Rural India

4.2.1 Non-Poor Households

We begin by presenting the estimates of the percentage of households being non-poor by the exclusion criteria of SECC 2011 in rural India. We have classified the states in respect of different region of rural India. Northern region consists of Jammu and Kashmir, Punjab, Haryana and Himachal Pradesh. The Eastern region consists of West Bengal, Bihar, Odisha and Jharkhand. Western region includes Maharashtra, Rajasthan, Gujarat and Goa. The Southern region includes Andhra Pradesh, Karnataka, Telengana, Tamil Nadu and Kerala. The Central region incorporates the states of Uttarakhand, Uttar Pradesh, Chhattisgarh and Madhya Pradesh. Similarly, the north eastern region are Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura, Assam and Meghalaya (Figure 4.1).

Figure 4.1 Non-Poor Households (Automatically Excluded) across Regions of India



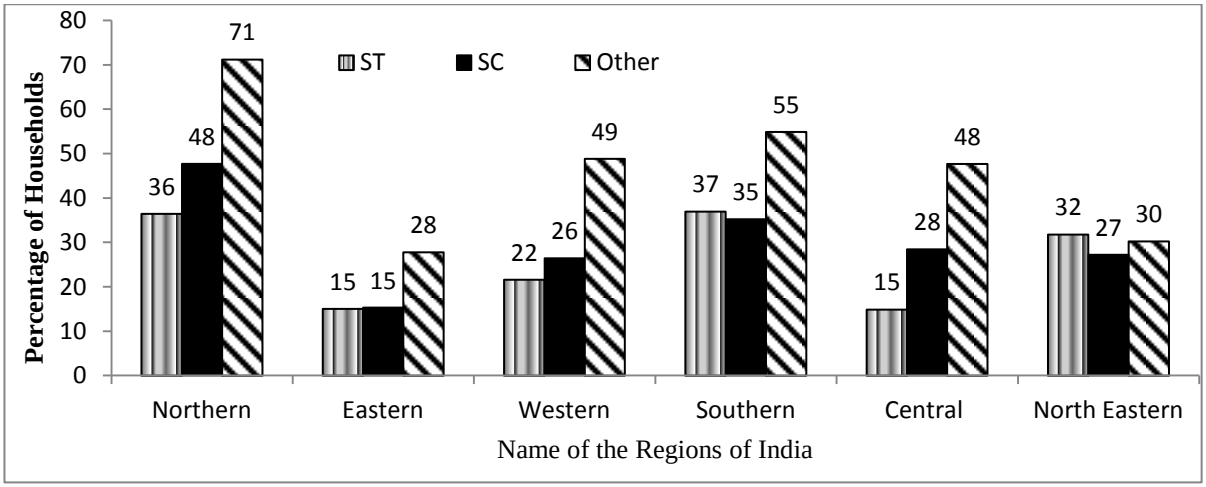
Source: SECC 2011

Non-poor households who were automatically excluded from BPL list were highest (64 per cent) in the northern region and lowest (24 per cent) in the Eastern region. Non-poor households were relatively low in North Eastern region (Figure 4.1).

Figure 4.2 depicts the non-poor rural households across different social castes. While the survey allows us to identify the non-poor household, ST non-poor households were the least among the three categories of castes in majority of the regions. Additionally, we can identify that the castes other than Scheduled castes and Scheduled tribes are the ones with the highest

number of non-poor households. The non-poor SC households are viewed to be more than that of the ST category but less than the other castes. In the north eastern region the percentage share of non-poor ST households to total ST households were higher (32 per cent) than that of SC and other castes. The share of ST non-poor households was highest in the northern region. The condition of ST households was relatively bad in Eastern and Central region as compared to other regions of India. Only 15 per cent of ST households were non-poor in 2011.

Figure 4.2 Non-Poor Households (Automatically Excluded) by caste across Regions of India

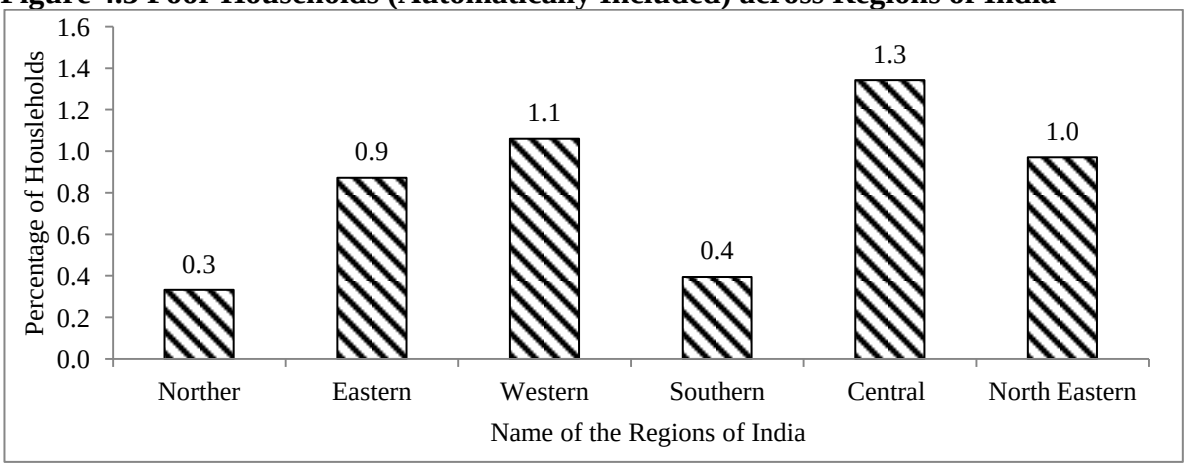


Source: SECC 2011.

4.2.2 Extremely Poor Households

It was observed that the extremely poor households (who are automatically included in the poverty group) in Central region of India were relatively higher (1.3 per cent) and was lower in Northern (0.3 per cent) and Southern (0.4 per cent) region as compared to other regions. In Western and North Eastern region extremely poor households were 1.1 per cent and 1.0 per cent respectively (Figure 4.3).

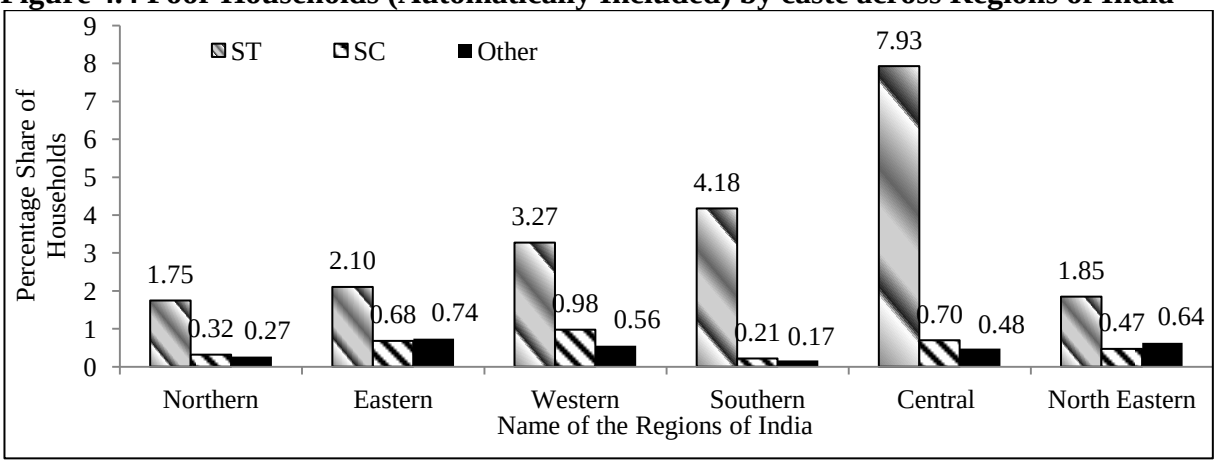
Figure 4.3 Poor Households (Automatically Included) across Regions of India



Source: SECC 2011

Figure 4.4 shows the percentage of extremely poor households in rural India by caste. It is observed that the poor households of all caste categories were high in Central region of India as compare to other regions. The percentage share of poor ST households in Southern region was 4.18 per cent but for SC and Other caste it was significantly low, 0.21 per cent and 0.17 per cent respectively but the percentage share of ST of poor households was relatively low in the Northern, East and North Eastern region as compare to other regions.

Figure 4.4 Poor Households (Automatically Included) by caste across Regions of India

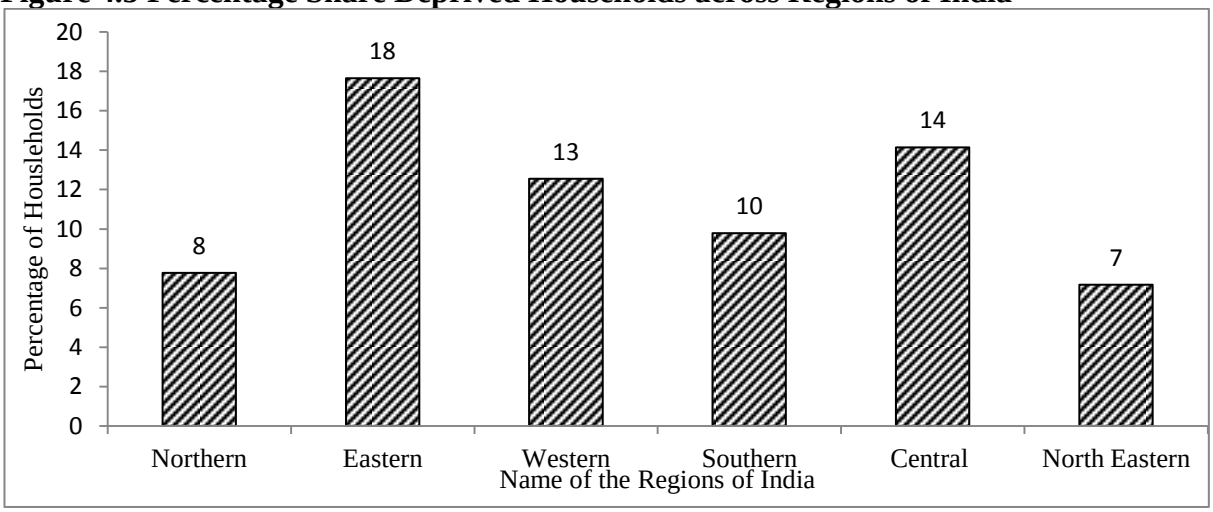


Source: SECC 2011

4.2.3 Headcount Ratio of Multidimensional Deprivation across Different Region of India

On the basis of SECC 2011 methodology, we have found the percentage share of deprived households. To measure the deprivation of households, we have used a deprivation cut off i.e. j* = 3, this means that if a household is deprived in at least three indicators out of 7 indicators, then the households is treated as deprived household. On the basis of this measure, 18 per cent households were deprived in Eastern region. Central region had the second highest deprived households. Percentage share of deprived households in Northern region was very low i.e. 8 percent(Figure 4.5).

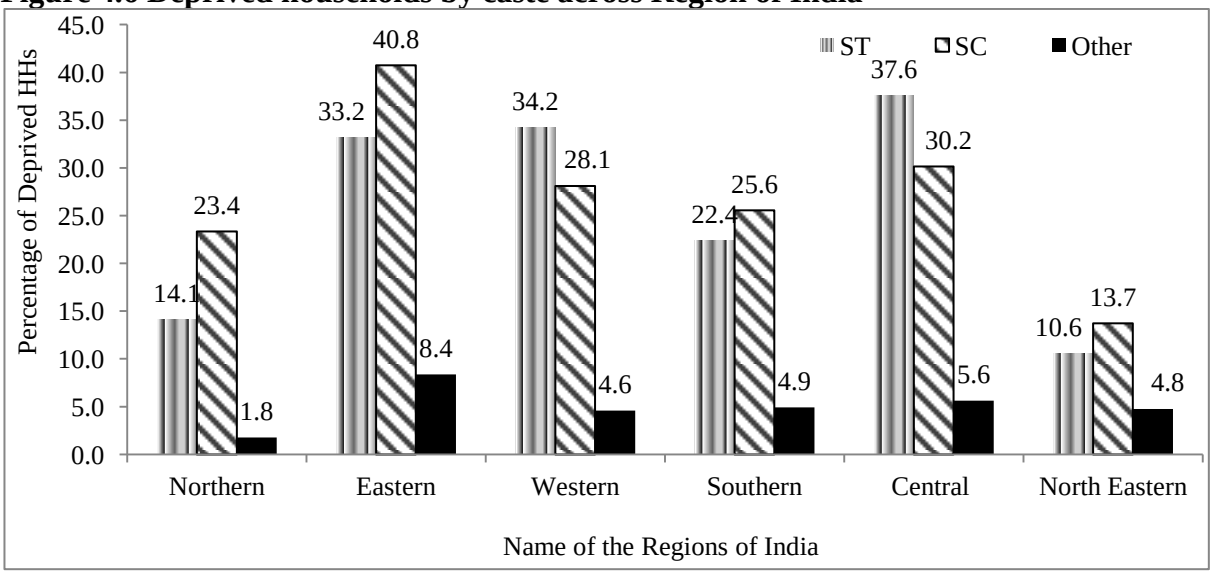
Figure 4.5 Percentage Share Deprived Households across Regions of India



Source: SECC 2011

It was also observed that the percentage shares of deprived households for all caste categories in Eastern region of India were higher as compared to other regions. The deprivation was relatively low in North Eastern and Northern region. The ST and SC households were more deprived than other castes across all regions in India. SC households were most deprived in Eastern region whereas STs were most deprived in the Central region (Figure 4.6).

Figure 4.6 Deprived households by caste across Region of India



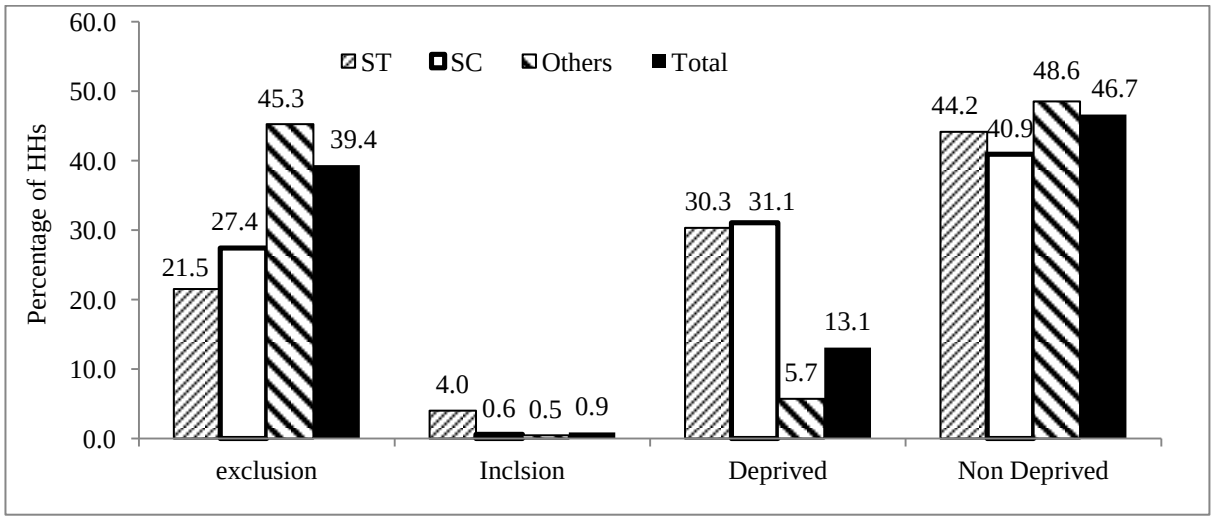
Source: SECC 2011

4.3 Excluded, Included and Deprived of ST, SC and Others Households in India

In India, non-poor or Excluded households from BPL list of SC, ST and Other castes were 27.4 per cent, 21.5 per cent and 45.3 percent respectively and in total 39.4 per cent households were non-poor in India. Included households in BPL list of SC and Other castes in this Country were relatively same. Only 4 per cent of ST households of total ST households were extremely poor. We have assumed a cut-off that is above 33.33 given by OPHI for calculating multidimensional deprivation. In India, 13 per cent households were deprived by using this cut-off. Deprived households of ST (30.3 per cent) and SC (31.1 per cent) were relatively higher than others categories.

In the rural India, 39.4 per cent households were non-poor (who are also non-deprived), 13.1 per cent were deprived and 0.9 per cent were extremely poor in 2011. The rest of 46.7 per cent households were non-deprived. The non-poor, extremely poor, deprived and non-deprived households for ST, SC and other castes are depicted in Figure 4.7.

Figure 4.7 Non-Poor, Extremely Poor and Deprived ST, SC and Others Households in India



Source: SECC 2011

4.4 Non-Poor, Extremely Poor and Deprived Households across States of India

Table 4.2 Non-Poor, Extremely Poor and Deprived HHs across different States in India

	Non Poor	Rank	Extreme Poor	Rank	Deprived	Rank
Jammu & Kashmir	47.57	11	0.86	10	4.98	24
Himachal Pradesh	66.54	4	0.15	28	2.68	27
Punjab	74.59	2	0.24	23	10.00	14
Haryana	59.94	5	0.22	26	8.96	16
Bihar	26.88	25	0.21	27	17.87	4
West Bengal	20.96	27	1.29	7	17.70	5
Jharkhand	31.07	22	1.03	9	11.37	10
Odisha	18.77	28	1.38	6	20.69	3
Rajasthan	39.81	15	0.71	11	16.98	6
Gujarat	46.76	12	0.45	15	8.99	15
Maharashtra	39.30	17	1.64	5	11.19	11
Goa	83.82	1	0.06	29	1.71	29
Andhra Pradesh	38.47	18	0.64	12	12.51	9
Karnataka	49.98	9	0.37	17	6.66	20
Kerala	69.45	3	0.23	25	2.22	28
Tamil Nadu	46.17	13	0.38	16	14.13	8
Telangana	55.70	7	0.24	24	10.37	12
Uttarakhand	55.64	8	0.32	19	5.11	23
Uttar Pradesh	47.92	10	0.26	21	8.93	17
Chhattisgarh	18.05	29	2.47	3	23.38	2
Madhya Pradesh	29.25	24	3.51	2	23.58	1
Sikkim	44.46	14	0.26	20	3.58	25
Arunachal Pradesh	58.95	6	1.76	4	7.07	19
Nagaland	34.23	19	0.34	18	6.33	22
Manipur	32.80	20	1.11	8	2.87	26
Mizoram	39.81	16	0.46	14	8.49	18
Tripura	23.73	26	4.78	1	10.35	13
Meghalaya	31.22	21	0.25	22	15.51	7
Assam	29.41	23	0.58	13	6.47	21
All India	39.4		0.89		13.1	

Source: SECC 2011

The share of non-poor, extremely poor and deprived households varied widely across States of India (Table 4.2). The States are ranked in terms of the percentage share of non-poor, poor, deprived and non-deprived households. The highest and lowest share of poor households was witnessed in Tripura and Goa respectively. The States which secured the top five ranks in terms of percentage share of deprived households were Madhya Pradesh (23.58 per cent), Chhattisgarh (23.38 per cent), Odisha (20.69 per cent), Bihar (17.87 per cent) and West Bengal (17.70 per cent).

4.4.1 Percentage Distribution of Non-Poor households across States of India

The percentage share of non-poor (automatically excluded from poor) households in states of India is presented in Table 4.3. Among 29 states of India, Goa was in the top with the largest share of non-poor households in SC category and second highest in ST and other categories. Punjab has occupied highest ranking by percentage share of non-poor households of ST and other castes.

Table 4.3 Percentage Distribution of Non-Poor households by caste across States of Rural India

	SC	Rank	ST	Rank	Others	Rank
Goa	68.55	1	74.80	2	85.46	2
Punjab	55.59	2	83.75	1	85.62	1
Himachal Pradesh	54.51	3	61.73	3	71.08	4
Mizoram	49.16	4	39.94	9	17.65	29
Jammu & Kashmir	45.16	5	28.26	17	51.74	12
Telangana	45.07	6	47.34	7	59.78	6
Nagaland	43.81	7	34.63	12	28.04	24
Manipur	43.43	8	25.45	19	40.55	18
Kerala	42.11	9	34.43	13	73.30	3
Meghalaya	39.48	10	30.54	14	37.35	20
Uttarakhand	39.38	11	54.10	5	59.62	7
Karnataka	37.10	12	39.23	10	54.34	9
Gujarat	35.83	13	28.22	18	53.21	10
Sikkim	35.57	14	41.98	8	47.01	15
Tami Nadu	32.99	15	28.89	16	51.24	13
Uttar Pradesh	31.91	16	35.00	11	53.08	11
Haryana	31.23	17	49.15	6	68.47	5
Andhra Pradesh	28.53	18	25.32	20	41.97	17
Assam	28.08	19	29.96	15	29.46	23
Rajasthan	25.54	20	21.20	22	49.07	14
Maharashtra	24.85	21	15.92	25	45.94	16
Jharkhand	23.72	22	24.42	21	36.07	21
Arunachal Pradesh	23.68	23	59.03	4	58.70	8
Tripura	21.37	24	21.08	23	26.87	25
Madhya Pradesh	19.09	25	14.43	26	38.14	19
West Bengal	15.41	26	12.61	27	24.35	27
Bihar	14.96	27	20.63	24	29.49	22
Chhattisgarh	14.53	28	12.44	28	23.23	28
Odisha	12.29	29	8.97	29	24.80	26
All India	**27.42**		**21.51**		**45.25**	
	(9.09)		**(4.45)**		**(57.41)**	

Notes: Figures in Brackets indicate the number of excluded households in million
Sources: SECC 2011

The states that secured the top five ranks in terms of percentage share of non-poor ST households to total ST households were Punjab, Goa, Himachal Pradesh, Arunachal Pradesh and Uttarakhand. The percentage share of non-poor households for all castes is relatively low in West Bengal, Chhattisgarh and Odisha. The percentage share of non-poor households for other castes was higher in most of the states except five north eastern states like Mizoram, Nagaland, Sikkim, Manipur, Meghalaya and Assam.

4.4.2 Percentage Distribution Extremely poor households across States in India

Among 29 states of India, Madhya Pradesh is in the top with the largest share of extremely poor households in SC category and second highest in others caste categories. West Bengal has occupied highest ranking by percentage share of poor households of other castes. The states that secured the top five ranks in terms of percentage share of extremely poor ST households to total ST households were Tamil Nadu, Tripura, Madhya Pradesh, Maharashtra and Andhra Pradesh. The percentage share of extremely poor households was very low in Goa and Punjab. In the rural India, there were 0.19, 0.79 and 0.61 million of ST, SC and Others households who were extremely poor respectively (Table 4.4).

Table 4.4 Extremely Poor Households (Automatically Included) by caste across States in India

	SC	Rank	ST	Rank	Others	Rank
Madhya Pradesh	1.73	1	9.94	3	1.24	2
Meghalaya	1.68	2	0.19	25	0.70	6
Chhattisgarh	1.30	3	5.12	6	0.82	4
Maharashtra	1.04	4	7.41	4	0.70	5
Rajasthan	1.01	5	1.12	18	0.51	11
West Bengal	1.00	6	1.43	15	1.40	1
Nagaland	0.95	7	0.35	22	0.15	25
Odisha	0.86	8	2.46	11	1.10	3
Gujarat	0.66	9	0.77	19	0.34	13
Jammu & Kashmir	0.65	10	2.25	12	0.61	8
Assam	0.50	11	0.12	27	0.68	7
Karnataka	0.46	12	1.33	17	0.24	15
Tripura	0.38	13	12.10	2	0.53	10
Uttar Pradesh	0.37	14	2.96	9	0.20	20
Jharkhand	0.37	15	2.50	10	0.44	12
Sikkim	0.33	16	0.34	23	0.21	18
Haryana	0.33	17	1.36	16	0.19	21
Punjab	0.31	18	0.00	29	0.21	19
Andhra Pradesh	0.24	19	7.00	5	0.23	16
Kerala	0.23	20	3.89	8	0.16	24
Telangana	0.23	21	0.73	20	0.16	23
Uttarakhand	0.23	22	4.27	7	0.18	22
Goa	0.20	23	0.10	28	0.05	28
Bihar	0.19	24	0.22	24	0.22	17
Himachal Pradesh	0.17	25	0.18	26	0.14	26
Manipur	0.10	26	2.05	14	0.09	27
Tami Nadu	0.05	27	18.27	1	0.05	29
Mizoram	0.00	29	0.46	21	0.57	9
Arunachal Pradesh	0.00	28	2.20	13	0.28	14
All India	**0.59**		**4.00**		**0.48**	
	(0.19)		**(0.79)**		**(0.61)**	

Notes: Figures in Brackets indicate the number of excluded households in million
Sources: SECC 2011

4.5 Indicator wise Deprived Households across different state of India

In this study, we have focused on the particular indicators for measuring the deprivation score. These are (i) Single room houses with kuccha walls and kuccha roof, (ii) No literate adult member above 25 ages, (iii) Land less households earning a major part of their income from manual casual labour. We can relate these particular indicators with particular scheme like IAY (for i), SSK and MSK (for ii). Here we see that Chhattisgarh (28.9 per cent), Odisha (27.2 per cent), Madhya Pradesh (24.9 per cent) and West Bengal (21.1per cent) were more deprived than other states of India on the basis of the above mentioned 1st deprived indicator. So, it is identified that government housing policies had not affected much in those particular states. On the basis of 2nd indicator, Chhattisgarh (6.5 per cent), Tami Nadu (6.3 percent), Andhra Pradesh (6.1 percent) and Madhya Pradesh (5.2 per cent) were more deprived.

Table 4.5 Percentage of Deprived Households across different States in India by Deprived Indicator

	One room with kucha walls and roof	No adult member age 16 to 60	Female headed household with no adult male	Disabled member and no able adult member	Deprivation criteria SC/ST households	No literate adult above 25 years	Landless households and manual casual labour
Jammu & Kashmir	7.5	1.8	1.7	0.4	15.8	25.2	7.7
Himachal Pradesh	1.2	2.7	3.0	0.3	13.3	7.8	3.9
Punjab	2.5	1.7	1.2	0.2	16.2	12.5	21.1
Haryana	3.4	1.9	1.7	0.2	15.7	16.7	27.1
Bihar	19.8	3.4	3.0	0.4	15.8	34.1	47.2
West Bengal	21.1	2.4	3.6	0.5	30.2	25.7	44.3
Jharkhand	14.7	2.6	3.1	0.3	31.3	28.4	18.0
Odisha	27.2	4.9	5.3	0.6	36.9	27.8	36.1
Rajasthan	20.0	3.2	3.1	0.8	27.3	31.4	21.9
Gujarat	9.7	3.3	2.8	0.3	19.3	17.0	26.6
Maharashtra	8.0	5.1	4.8	0.4	19.5	17.6	29.6
Goa	0.7	1.4	2.4	0.2	3.8	4.0	5.3
Andhra Pradesh	3.8	6.1	6.7	0.4	17.4	28.7	36.4
Karnataka	4.5	2.9	4.8	0.3	16.3	18.9	14.6
Kerala	1.4	2.1	3.7	0.2	7.1	1.8	18.9
Tami Nadu	12.8	6.3	6.8	0.3	18.1	16.4	37.2
Telangana	1.8	4.6	5.2	0.4	15.9	25.3	22.7
Uttarakhand	2.7	3.5	5.5	0.4	12.7	12.9	12.3
Uttar Pradesh	10.7	2.5	2.0	0.2	16.6	20.3	22.1
Chhattisgarh	28.9	6.5	6.8	0.8	42.1	33.9	34.0
Madhya Pradesh	24.9	5.2	4.1	0.7	31.3	33.1	38.3
Sikkim	2.3	1.7	2.8	0.7	26.9	13.5	8.1
Arunachal Pradesh	9.1	1.3	2.5	0.3	30.2	19.5	3.7
Nagaland	3.5	2.9	4.4	0.4	61.2	21.4	4.9
Manipur	2.4	1.4	3.0	0.2	39.0	13.8	13.9
Mizoram	11.8	2.1	3.3	0.2	59.1	16.1	4.8
Tripura	9.1	2.8	4.4	0.3	39.1	14.3	31.4
Meghalaya	6.2	1.7	5.6	0.4	63.4	25.7	27.3
Assam	8.1	1.5	3.4	0.4	16.3	24.8	27.3
All India	**13.3 (23.87)**	**3.6 (6.53)**	**3.9 (6.94)**	**0.4 (0.71)**	**21.6 (38.76)**	**23.5 (42.27)**	**30.0 (53.99)**

Notes: Figures in Brackets indicate the number of deprived households across 7 indicators in million

We have examined that in those states; infrastructural facilities on education were not so good. In Bihar and West Bengal, more than 40 per cent households belonged to the criteria of Landless households and manual casual labour. In all over India, 53.99 million households were land less and earn from casual labour, 23.87 million households have kuccha house and 6.53 million families had no adult member of the age group ranging from 16 to 60 years (Table 4.5).

4.6 Measurement of Head count ratio of deprivation across States in India

We have calculated three alternative measures of head count ratio of multidimensional deprivation symbolized by H^I, H^U and H_j*. While H^I denotes the headcount deprivation rates of households who are derived in all the 7 indicators, and is referred to as the "intersection method". On the basis of intersection method, 12928 households were deprived in all over India (Table 4.6). H^U denotes the corresponding headcount rates of households who are deprived in at least 1 indicator and is referred to as the "union method". According to this method, head count ratio across different states of India was relatively high. Here H_{j*} is the head count ratio of j* specific indicators cut off which is assumed to be three followed by the OPHI methodology (that i.e. deprived in at least 3 indicators).

Table 4.6 No. of deprivation households across States in India by Intersection method

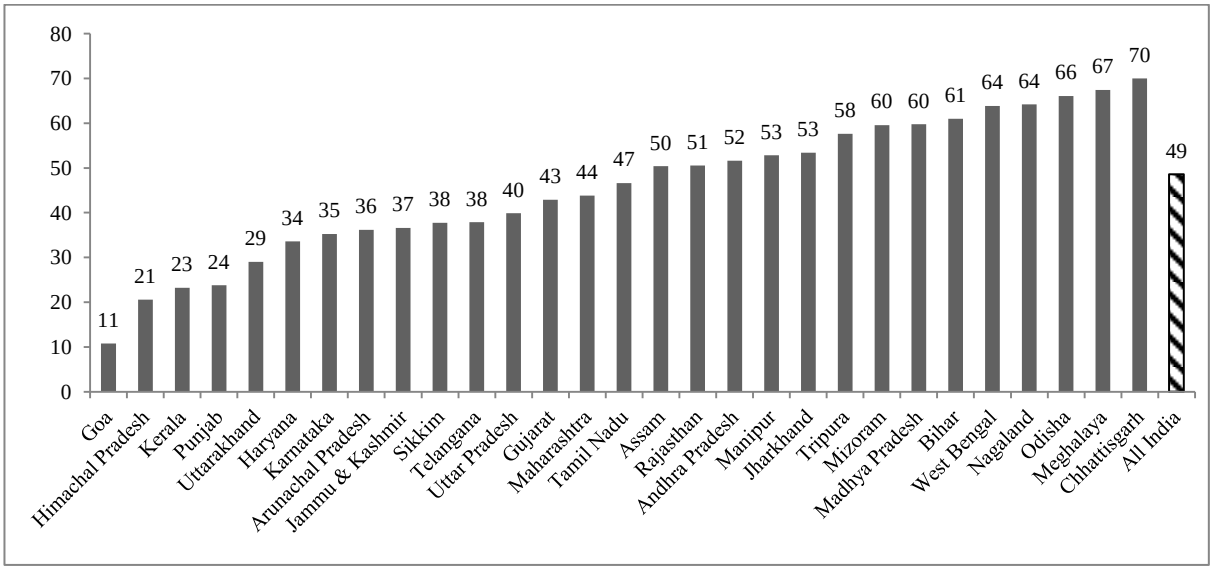
	ST	SC	Others	Total
Jammu & Kashmir	2	9	0	11
Himachal Pradesh	3	6	0	9
Punjab	0	94	0	94
Haryana	0	75	0	75
Bihar	44	679	5	728
West Bengal	310	918	0	1228
Jharkhand	77	91	0	168
Odisha	735	618	0	1353
Rajasthan	812	905	0	1717
Gujarat	114	91	0	205
Maharashtra	296	523	0	819
Goa	1	0	0	1
Andhra Pradesh	59	213	0	272
Karnataka	74	128	0	202
Kerala	7	33	0	40
Tamil Nadu	30	630	0	660
Telangana	53	120	0	173
Uttarakhand	0	18	0	18
Uttar Pradesh	11	670	0	681
Chhattisgarh	756	682	0	1438
Madhya Pradesh	1277	1643	2	2922
Sikkim	0	0	0	0
Arunachal Pradesh	2	0	0	2
Nagaland	3	0	0	3
Manipur	3	1	0	4
Mizoram	0	0	0	0
Tripura	18	8	0	26
Meghalaya	15	0	0	15
Assam	25	32	0	57
All India	4729	8192	7	12928

Sources: SECC 2011

In this study, H_{j*} lies between H^I and H^U. If we follow the H^I (interaction method), then multidimensional deprivation will be under estimated and if we follow the H^U (Union method), then multidimensional deprivation will be over estimated.

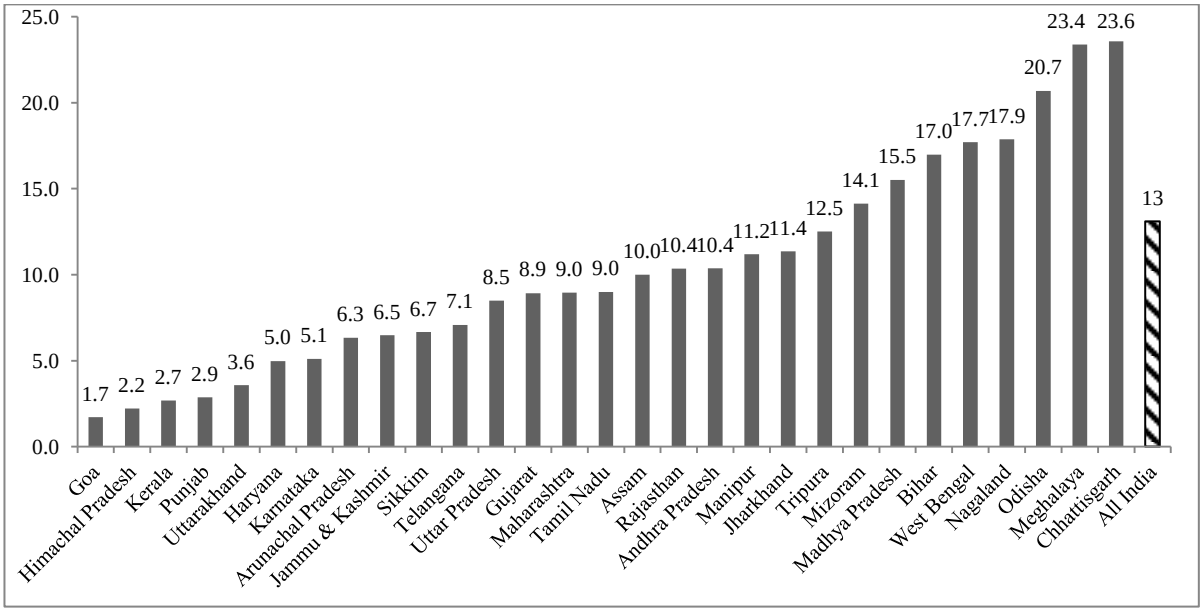
We analyse the position of the various States based on the various head count ratio of deprivation calculated through Union method (Figure 4.8). The value ranges across the states from 20 to 70, except Goa (with value 11). Thus we can infer that in terms of HCR, Goa is the least deprived state and Chhattisgarh is the most deprived states in India. According to Union method, 49 per cent households were deprived in India.

Figure 4.8 Head count ratio of deprivation across States in India by Union method



Source: SECC 2011

Figure 4.9 Deprived households by across States in India (if j*=3)



Source: SECC 2011

The percentage share of deprived households (with specific cutoff) was relatively high in Chhattisgarh, Madhya Pradesh, Odisha, Bihar, West Bengal and Rajasthan (Figure 4.9).

The SC/ST households were more deprived than the non-SC/ST households (Table 6). The states that secured the top five ranks in terms of percentage share of deprived SC households to total SC households are Bihar (52.4 per cent), Arunachal Pradesh (47.4 per cent), Chhattisgarh (45.7 per cent), Madhya Pradesh (44.7 per cent) and Odisha (40.1per cent). In Other caste, Chhattisgarh and Bihar witnessed more deprived household (Table 4.7).

Table 4.7 Percentage of Deprived households among different States of India

	SC	Rank	ST	Rank	Others	Rank
Bihar	52.4	1	38.1	5	10.3	2
Arunachal Pradesh	47.4	2	8.5	22	2.2	22
Chhattisgarh	45.7	3	29.7	8	12.4	1
Madhya Pradesh	44.7	4	43.6	1	9.7	3
Odisha	40.1	5	39.2	4	7.0	7
West Bengal	34.8	6	41.6	3	7.4	6
Rajasthan	32.5	7	42.3	2	5.5	9
Haryana	31.2	8	25.9	10	2.4	21
Andhra Pradesh	31.0	9	31.0	7	6.5	8
Tamil Nadu	31.0	10	27.0	9	7.9	4
Jharkhand	28.8	11	17.3	16	4.5	13
Uttar Pradesh	25.3	12	21.9	12	3.6	16
Maharashtra	25.2	13	35.9	6	4.4	14
Punjab	24.7	14	7.5	24	1.4	25
Telangana	24.4	15	20.4	13	5.1	10
Meghalaya	20.7	16	16.2	19	7.7	5
Gujarat	20.4	17	22.9	11	3.9	15
Mizoram	17.2	18	8.5	23	4.7	12
Karnataka	17.1	19	16.4	18	3.0	18
Assam	14.2	20	9.3	21	5.1	11
Uttarakhand	14.1	21	9.7	20	2.8	20
Jammu & Kashmir	13.5	22	16.8	17	1.5	24
Tripura	12.5	23	18.2	15	3.0	19
Kerala	10.1	24	19.2	14	1.0	29
Sikkim	9.6	25	6.0	26	1.3	27
Nagaland	8.6	26	6.5	25	3.1	17
Goa	6.9	27	5.7	28	1.0	28
Manipur	6.1	28	3.8	29	1.7	23
Himachal Pradesh	5.6	29	5.8	27	1.4	26
All India	31.1		30.3		5.7	

Sources: SECC 2011

Notes

1. The census included the caste and tribe of the households as well as other BPL related questions.

2. The SECC 2011 census instrument was also thoroughly revised from 2002 (GoI 2011) and aims to correct the large exclusion and inclusion errors observed in the BPL 2002 questionnaire. The SECC 2011 questions are easy to answer, the responses verifiable, and questions were screened so as not to create perverse incentives. These changes are anticipated to improve data quality in comparison with BPL 2002.
3. In this study H_{j*} lies between H^I and H^U.

Chapter 5

Multidimensional Poverty and Deprivations in India: An Analysis based on NFHS Unit Level Data

Poverty is multifaceted and deprivation in per-capita expenditure is an important dimension of poverty but monetary poverty does not accurately proxy other deprivations. Empirical studies have shown that significant percentages of those who are multidimensionally deprived are not monetary poor (Alkire and Kumar 2012). So, there is a strong need of multidimensional approach to measure poverty. Since 2010, UNDP measures the multidimensional poverty index (MPI) along with HDI. The UNDP's measure of multidimensional poverty is based on three dimension and ten indicators. The information related to these dimensions and indicator are not properly available in Socio-Economic Caste Census (SECC-2011). NSSO data captures education and living standard but there is no information about health. The information of those ten indicators are easily available in demographic and health survey (DHS) relating to NFHS in India. This chapter deals with the estimation of multidimensional poverty in India and her states on the basis of National Family Health Survey (NFHS). The multidimensional poverty index (MPI) is calculated by Oxford Poverty Human Development Initiative (OPHI) reported by UNDP's *Human Development Report 2010.*

Section 5.1 describes dimensions and indicators of multidimensional poverty. Section 5.2 discusses the difference between International and Alkire-Seth (2013) measurement of multidimensional poverty. The national performance of multidimensional poverty is discussed in Section 5.3. Section 5.4 explains the distribution of population at different level of multidimensional poverty in India. Section 5.5 discusses the status of multidimensional poverty across states in India. Econometrics analysis of multidimensional deprivation of the households in India is explained in Section 5.6 and Section 5.7 summaries the main findings.

5.1 The Dimensions and Indicators of Multidimensional Poverty

The international MPI is based on ten indicators grouped into three dimensions reported in Table 5.1. The first column reports three dimensions: education, health and living conditions. The second column reports the ten indicators. Each dimension is equally weighted[1] and indicators within each dimension are also equally weighted. The third column reports the deprivation cutoff of each of the ten indicators. The detail information about indicators and their deprivation cut-offs are as follows:

[1] HDI and MPI have also estimated using equal weight.

Table 5.1a Dimensions, Indicators and Deprivation Cut-offs to Measure the Multidimensional Poverty in India

Dimension	Indicator	Deprivation Cutoff
Education (1/3)	Schooling (1/6)	No one (15 years and above age) has completed 6 years of schooling
	Attendance (1/6)	A school-age child (up to grade 8) is not attending school
Health (1/3)	Nutrition (1/6)	A household member (for whom there is nutrition information) is malnourished, as measured by the BMI for adults (women ages 15–49 in most of the surveys) and by the height-for-age z score calculated using WHO standards for children under age 5.
	Mortality (1/6)	A child has died in the household within the five years prior to the survey.
Living Conditions (1/3)	Electricity (1/18)	The household has no access to electricity
	Sanitation (1/18)	The household's sanitation facility is not improved or it is shared with other households
	Water (1/18)	The household does not have access to safe drinking water or safe water is more than a 30-minute walk (round trip)
	Housing (1/18)	The household has a dirt, sand or dung floor
	Cooking fuel (1/18)	Household uses 'dirty' cooking fuel (dung, firewood or charcoal)
	Assets (1/18)	Not having at least one assets related to access of information (radio, TV, telephone) and not having at least one asset related to mobility (bike, motorbike, car, truck, animal cart, motorboat) or at least one asset related to livelihoods (refrigerator, arable land, livestock).

Source: Human Development Report 2015

Description of the Indicators of Multidimensional Poverty

A. Education

The education dimension consists of two indicators namely, schooling and school attendance

*Schooling***:** If none of the family member with age more than 15 years and above has completed six years of schooling then the people living in the household is deprived.

For calculating the deprivation of the indicator named 'schooling', we have used the household member record from NFHS-3 (2005-06) and NFHS-4 (2015-16) unit level data that is available in SPSS. We have taken the information for schooling deprivation from variable named HV108. The level of HV108 is "education completed in single year".

*School Attendance***:** The people living in the household is deprived in school attendance if at least one school age child (age group 4 to 14 years) did not attend school.

We have also used the member record for calculating deprivation in respect of schooling attendance. In the unit level data of NFHS-3, we have taken the information of school attendance from the variable HV129. The level of HV129 is "school attendance status". But in NFHS-4 that information is not available. So, in the unit level data of NFHS-4 we took the information of school attendance from HV121.

B. Health

The health dimension consists of two indicators namely nutrition and child mortality

Nutrition: If at least one woman or a child is malnourished, as measured by the Body Mass Index (BMI) lower than 18.5 kg/m^2 for adults women whose age is between 15–49 in most of the surveys and by the height-for-age *z* score calculated using World Health Organization (WHO) standards for children under age 5 below normal (lower than -2SD from the mean Z score) then the person living in the household is deprived in 'nutrition'. Here for the child malnourishment, we have considered stunted.

We have calculated the malnourishment separately for woman and child and have combined them. For calculating woman malnourishment, we have taken the information about BMI of woman from the variable HA40 that is available in households member record. Moreover, to calculate child malnourishment, we have used the variable HC1 and HC70. The level of HC1 and HC70 are 'child's age at time of measurement in month' (0 – 59) and 'height/age standard deviation (WHO)' respectively.

Child Mortality: If a child aged under 5 years has died in the household within the five years prior to the survey then the household is deprived. Under age 5, child mortality at least 5 years is calculated by taking the information from birth record of both NFHS-3 and NFHS-4 unit level data. We have used date of birth (CMC), child alive or not, age at death (month) and date of interview (CMC) to estimate child mortality. The names of those variables are B3, B5, B7 and V008 respectively.

C. Living Condition

The third dimension consists of six indicators which are specified as follows.

Electricity: If the primary source of energy of the household for lighting is electricity then the household is treated as non-deprived. The member of the household is deprived if the household does not fulfill the above criteria. The deprivation of the household in terms of electricity is calculated using the household record from NFHS data. The indicator considered to measure this deprivation is 'has electricity'. The variable name of this indicator is HV206.

Sanitation: If the household's sanitation facility is not improved or it is shared with other households then the household is treated as deprived. The deprivation of the household in terms of sanitation is calculated using the household member record from NFHS data. The indicator considered to measure this deprivation is 'type of toilet facility' and the variable name of this indicator is HV205. The person in the household will be deprived in case of sanitation if they use pit latrine with slab or without slab, open pit, no facility/bush/field, compositing toilet, dry toilet and other.

Drinking Water: A person in the household is deprived if he/she have no access to clean drinking water or the sources of drinking water is located more than 30 minutes away by waking.

For calculating deprivation regarding drinking water, we considered the household record from NFHS data and have taken two indicators namely 'sources of drinking' and 'time to get water and return (minutes)'. The variable name of these indicators considered are HV201 and HV204.

Housing: A household is considered to be deprived in this indicator if the floor material of the house is of either mud/clay/earth or sand.

To calculate deprivation of households in terms of housing, we have considered the indicator namely 'main floor material' and have used household record. The variable name of this indicator is HV213.

*Cooking Fuel***:** Household cooks using the fuels like dung, wood or charcoal, kerosene, gas etc. The household is deprived if the primary source of energy for cooking is either animal dung or wood or charcoal.

To calculate the deprivation, in case of cooking fuel, we have used the household record from NFHS data. The indicators considered to measure this deprivation is 'type of cooking fuel' and the name of this variable is HV226.

Assets: The household is deprived in case of assets ownership if the household does not have at least one asset related to access to information (radio, TV, telephone), mobility (bike, motorbike, car, truck, animal cart, motorboat) or livelihood (refrigerator, arable land, livestock). For calculating deprivation of household in 'assets', we have used the variables named HV207, HV208, HV209, HV210, HV211, HV212, HV221, HV243 and AGLAND.

5.2 Difference between International and Alkire-Seth (2013) measurement of Multidimensional Poverty

The UNDP's measurement of MPI across different countries is based on the Alkire- Foster methodology. This measurement is termed as 'International' measurement of MPI. Alkire-Seth (2013) measured the multidimensional poverty in India on the basis of NFHS –II (1998-99) and NFHS-III (2005-06). This measurement is different from the International measurement of multidimensional poverty in respect of the specification of the indicators. Out of the ten indicators, five are identical to the International and Alkire-Seth measurement

of multidimensional poverty, but rest five indicators are different. Those indicators are 'schooling', 'nutrition', 'mortality', 'flooring material' and 'assets'.

Table 5.1.b Comparable Indicator of International Measurement and Alkire-Seth Measurement

Dimension	Indicator	International Measure	Alkire-Seth Measure
Education (1/3)	Schooling (1/6)	No one(15 years and above age) has completed 6 years of schooling	No household member (15 years and above age) has completed five years of schooling
	Attendance (1/6)	A school-age child (up to grade 8) is not attending school	Any school-aged child (6–14) in the household is not attending school in the academic year of study
Health (1/3)	Nutrition (1/6)	A household member (for whom there is nutrition information) is malnourished, as measured by the BMI for adults (women ages 15–49 in most of the surveys) and by the height-for-age z score calculated using WHO standards for children under age 5.	Any ever-married woman with a BMI lower than 18.5 Kg/m2 or any child under the age of thirty-six months having z-score lower than -2SD from the mean z-score
	Mortality (1/6)	A child has died in the household within the five years prior to the survey.	Any child under the age of five of an ever-married women has died in the household
Living Conditions (1/3)	Electricity (1/18)	The household has no access to electricity	The household has no access to electricity
	Sanitation (1/18)	The household's sanitation facility is not improved or it is shared with other households	The household's sanitation facility is not improved or it is shared with other households
	Water (1/18)	The household does not have access to safe drinking water or safe water is more than a 30-minute walk (round trip)	The household does not have access to safe drinking water or safe water is more than a 30-minute walk (round trip)
	Housing (1/18)	The household has a dirt, sand or dung floor	The household lives in a kaccha house; or lives in a semi-pucca house and owns less than five acres of unirrigated or 2.5 acres of irrigated land
	Cooking fuel (1/18)	Household uses 'dirty' cooking fuel (dung, firewood or charcoal)	The household mainly cooks with charcoal, crop residue, animal dung, wood, or straw/shrubs/grass
	Assets (1/18)	Not having at least one asset related to access to information (radio, TV, telephone) and not having at least one asset related to mobility (bike, motorbike, car, truck, animal cart, motorboat) or at least one asset related to livelihoods (refrigerator, arable land, livestock).	The household does not own more than one of: radio, TV, telephone, bike, motorbike or refrigerator, and does not own a car or truck

Schooling

The indicator 'schooling' in global MPI measurement is different from Alkire-Seth MPI measurement. According to International MPI, we identify a person to be deprived in

"schooling" who live in a household and has not completed six years of schooling but Alkire-Seth measurement considered 5 years of schooling instead of 6 years.

Nutrition

For international measurement, we identify a household to be deprived in nutrition who has at least one woman being under-nourished (i.e., BMI below normal) and has any child less than five years being stunted (height-for-age Below -2 standard deviations, based on the WHO standard). For Alkire-Seth measurement, the nutrition indicator in the NFHS-3 dataset has been adjusted to match the information available in the NFHS-2 dataset. Unlike the international MPI, they identified a household to be deprived in nutrition who has at least one ever married woman or any child less than three years being under-nourished.

Mortality

The next indicator requiring adjustment is mortality. In the International measurement of multidimensional poverty, the child mortality means under five mortality in the last five years of survey period. But for Alkire-Seth measurement, two adjustments have been made within this indicator. First, for the international MPI, child mortality information was collected from both women and men. However, in order to match the information available in NFHS2, the information on child mortality in NFHS3 is restricted to ever married women only. Secondly for child mortality they considered under-five mortality, following the definition of child mortality in the fourth Millennium Development Goal instead of the death of any child of any age as in the international MPI. Consequently, this indicator also identifies a slightly smaller proportion of the population as deprived compared to the international MPI. So, we have taken the 'child mortality' indicator from international MPI measurement.

Housing

In the international MPI, flooring has been used as an indicator of housing and a household is identified as deprived if the floor of the house is made of low-quality materials such as dirt, sand or dung. Alkire-Seth (2013) analyzed India's performance in multidimensional poverty between 1999 and 2006 using unit level data of NFHS-2 and NFHS-3. In that case, no specific information was collected on the floor, wall and roof materials of the houses in NFHS-2. In both NFHS-2 and NFHS-3, the information was collected on the type of house where households reside. The type of house is divided into three categories: kuccha, semi-pucca and pucca. In place of 'flooring material' in the international MPI, they considered somewhat related indicator that uses information on the ownership of land in addition to the type of house so that a similar proportion of population is identified as deprived. They identified all households living in kaccha houses as deprived. In addition, they also identified

those households as deprived who live in semi-pucca houses, unless they own five acres or more of unirrigated land or 2.5 acres or more of irrigated land.

Assets

According to International MPI, we have considered many aspects related to assets like radio, TV, telephone, bike, motorbike, car, truck, animal cart, motorboat, refrigerator, arable land, livestock etc. But in the Alkire-Seth measurement of deprivation on assets, they ignore livestock. In their measurement, the land information was included for the measurement of housing deprivation.

5.3 National Performance of Multidimensional Poverty

5.3.1 Uncensored Deprivation across Indicators in India, 2005-06 and 2015-16

In case of schooling, our cut-off for deprivation is 6 years in comparison to 5 years in Alkire-Seth's measure. Hence, here the uncensored HCR in schooling is higher than that of Alkire-Seth's measure. In case of malnourishment we have followed the global standard. We have considered the women for the age group 15 to 49 years and children up to 59 month of age. But Alkire-Seth considered only married women and children up to the age of 36 months. Accordingly estimated uncensored HCR in 2005-06 was 49.7 per cent in comparison to 36.8 per cent in Alkire-Seth's measure. Another great deprivation in the measure of HCR is observed in the mortality indicator. For mortality we have considered under five mortality rate but Alkire-Seth considered any child of an ever married women who have died any time not only within five years. Therefore, in Alkire-Seth's measure the child mortality rate was over estimated (21.6 per cent) as compared to our estimation (4.3 per cent). In case of assets the HCR is also derived due to the consideration of the nature of assets.

Comparing between the two years i.e. 2005-06 and 2015-16, we have observed that the highest reduction in the deprivation occurred in some indicators of standard of living. Among these indicators 'assets' showed the highest reduction from 55.8 percent to 27.8 percent i.e. the reduction of 28 percent age points followed by electricity, sanitation and others whereas the least reduction among these indicators was observed in case of 'drinking water' where it reduced from 15.8 percent to 10.4 percent. In India, reduction of health and education deprivation has been slower than the standard of living indicators. Over the decade, the percentages of people living in household who are deprived in nutrition fell from 49.7 percent in 2005-06 to 36.6 percent in 2015-16 i.e., by about 13.1 percentage points. In case of 'health' dimension, 'mortality' indicator showed a reduction of only 2 percentage points from

4.3 percent to 2.3 percent while reduction in deprivation in case of education was more than 10 percentage points in case of both indicators namely 'schooling' and 'attendance'.

Table 5.2 Uncensored HCR in India by Indicators in 2005-06 and 2015-16

		Alkire and Seth	Authors Estimation			
Dimension	Indicators	2005-06	2005-06	2015-16	Absolute Change	Percentage Change
Education	Schooling	18.3#	28.1	16.3	-11.8	-42.2
	Attendance	18.8	18.7	6.5	-12.2	-65.3
Health	Nutrition	36.8#	49.7	36.6	-13.1	-26.4
	Mortality	21.6#	4.3	2.3	-2.0	-47.2
Standard of Living	Electricity	32.8	32.9	12.0	-20.9	-63.5
	Sanitation	69.8	69.5	50.6	-18.8	-27.1
	Water	15.8	15.8	10.4	-5.4	-34.3
	Housing	48.3#	48.4	36.4	-12.0	-24.8
	Cooking fuel	74.0	73.7	57.7	-16.0	-21.7
	Assets	48.7#	55.8	27.8	-28.0	-50.2

Source: Author's Calculation

The last column of Table 5.2 reports the relative change in the percentage of deprivation during 2005-06 and 2015-16. The relative change in the 'health' and 'education' indicators ranged from 26.4 percent in nutrition to 65.3 percent in 'attendance' while the relative change in the standard of living indicators ranged from 21.7 percent in 'cooking fuel' to 63.5 percent in electricity.

Considering the 'health' dimension, the highest absolute reduction was observed in 'nutrition' whereas the highest relative reduction was observed in 'mortality' as the deprivation has reduced from 4.3 percent in 2005-06 to 2.3 percent in 2015-16. In case of 'education', the highest absolute and relative reduction was observed in 'attendance' indicator but in case of standard of living the highest absolute reduction was observed in 'asset' whereas the highest relative reduction was observed in 'electricity' (Table 5.2).

5.3.2 Censored Deprivation across Indicators in India, 2005-06 and 2015-16

Now the scenario of Censored Head Count Ratio in India using the same ten indicators is shown in Table 5.3. The censored HCR is the ratio of the deprivation of multidimensionally poor people, it is observed that in 'education' 13.1 percentage points reduction in deprivation took place in 'schooling' indicator where it reduced from 26.5 percent in 2005-06 to 13.4 percent in 2015-16 followed by attendance indicator. In case of 'health', 'nutrition' indicator managed to have 17.6 percentage points reduction in its deprivation as it reduced from 38.2 percent to 20.6 percent in the same period followed by 'mortality' where the reduction in deprivation was the least which was only 2.1 percentage points. In case of 'standard of living'

it was found that deprivation in the 'asset' indicator reduced drastically by 26.3 percentage points over a period of 10 years from 39.4 percent to 13.1 percent followed by 'cooking fuel' indicator where the reduction was by 23.6 percentage points while 'sanitation' and others had more or less the same reduction. In case of 'drinking water' indicator least reduction in deprivation was observed where it reduced from 11.8 percent to 5.6 percent i.e., by only 6.2 percentage points from 2005-06 to 2015-16. Considering the percent change in education its range varied from 49.6 percent in 'schooling' to 67.2 percent in 'attendance'. While in case of 'health' its range varied from 46.1 percent in 'nutrition' to 52.9 percent in 'mortality' and in the 'standard of living' dimension its range varied from 44 percent in 'housing' to 68.9 percent in case of 'electricity'. Comparing between the absolute and relative change in Censored HCR we observe that in education the highest absolute reduction in deprivation was observed in 'schooling' whereas in case of 'health' the highest absolute reduction was observed in 'nutrition' and the highest relative reduction was found in case of 'mortality'. Coming to the case of 'standard of living' we observe that the highest absolute reduction was observed in case of 'assets' while the highest relative reduction in deprivation was in 'electricity'.

Table 5.3 Censored HCR in India by Indicators in 2005-06 and 2015-16

		Alkire and Seth	Authors Estimation			
Dimensions	Indicators	2005-06	2005-06	2015-16	Absolute Change	Percentage Change
Education	Schooling	17.6#	26.5	13.4	-13.1	-49.6
	Attendance	17.2	17.3	5.7	-11.6	-67.2
Health	Nutrition	30.6#	38.2	20.6	-17.6	-46.1
	Mortality	18.4#	4.0	1.9	-2.1	-52.9
Standard of Living	Electricity	26.8	28.4	8.8	-19.6	-68.9
	Sanitation	44.3	47.6	25.0	-22.6	-47.5
	Water	11.1	11.8	5.6	-6.2	-52.6
	Housing	35.8	39.2	21.9	-17.2	-44.0
	Cooking fuel	46.7	50.3	26.8	-23.6	-46.8
	Assets	35.2#	39.4	13.1	-26.3	-66.8

Source: Author's Calculation

5.3.3 Status of Multidimensional Poverty in India, 2005-06 and 2015-16

Multidimensional poverty index (MPI) and its two components, multidimensional head count ratio (H) and the average intensity among multidimensionally poor people (A) in India for the years 2005-06 and 2015-16 are presented in Table 5.4. All the indicators of the measurement of multidimensional poverty declined during 2005-06 to 2015-16. The multidimensional head count ratio (H) declined from as high as 52.0 per cent in 2005-06 to 28.5 per cent in 2015-16, i.e. the reduction of 23.5 percentage points. The intensity of multidimensional poverty (A)

declined from 50.7 per cent to 44.0 per cent during the same period. There has been a reduction in MPI from 0.264 in 2005-06 to 0.125 in 2015-16.

Table 5.4 Status of Multidimensional Poverty in India between 2005-06 and 2015-16

Poverty Cutoff	Indices	2005-06	2015-16	Change
One-third(1/3)	*H*	52.0	28.5	-23.5
	A	50.7	44.0	-6.7
	MPI	0.264	0.125	-0.138

Source: Author's Calculation

5.3.4 Status of Multidimensional Poverty in India by Geographical Region, 2005-06 and 2015-16

Sector wise change in multidimensional poverty in India between 2005-06 and 2015-16 is presented in Table 5.5. The multidimensional head count ratio (H) was significantly higher in the rural region than that of the urban region. In rural region as many as 65.6 percent people were multidimensionally poor in 2005-06. While this share reduced to 38.1 percent in 2015-16. That share in urban region was only 21.6 percent in 2005-06 and 9.1 percent in 2015-16. The reduction in the proportion of multidimensional poor in rural region during 2005-06 to 2015-16 was 27.5 percentage points compared to 12.5 percentage points in urban region. It is observed that in rural area MPI reduced from 0.34 in 2005-06 to 0.17 in 2015-16. This reduction in MPI was due to significant reduction in both H and A, but the magnitude of reduction in A was much smaller than that of H. While in case of urban area MPI has reduced from 0.100 in 2005-06 to 0.039 in 2015-16. This reduction is basically due to the reduction in H which reduced from 21.6 percent to 9.1 percent and little less for the reduction in A which reduced from 46.3 percentages to 42.7 percentages during the same time period.

Table 5.5 Status of Multidimensional Poverty in India by Sector between 2005-06 and 2015-16

	2005-06				2015-16				Change	
	Pop. Share	*H*	*A*	*MPI*	Pop. Share	*H*	*A*	*MPI*	*H*	*MPI*
Rural	69.2	65.6	51.3	0.337	67.0	38.1	44.2	0.168	-27.5	-0.2
Urban	30.8	21.6	46.3	0.100	33.0	9.1	42.7	0.039	-12.5	-0.1

Source: Author's Calculation

5.3.5 Contribution of Indicator for Measurement of Multidimensional Poverty

We can also interpret the Censored HCR with respect to the percent of people who are poor. For this purpose, we showed how the contribution of each indicator to the overall Multidimensional Poverty in India between 2005-06 and 2015-016 has changed among the poor only. From Table 5.6 we can observe that in 'schooling' indicator of education 51 percent of the multidimensional poor were deprived in 2005-06 which reduced to 46.9

percent in 2015-16 while in case of 'attendance' the reduction was of 13 percentage points as the deprivation reduced from 33.2 percentage to 19.9 percentage in the said period. In case of 'health' mere reduction was observed in both 'nutrition' and 'mortality' indicator between 2005-06 and 2015-16. On the other hand, in 'standard of living' maximum reduction of about 30 percentage points of the multidimensional poor was observed in case of 'asset' indicator as in its case the reduction in deprivation was from 75.7 percentage to 45.9 percentage followed by 'electricity' and 'attendance' while the least reduction of the multidimensional poor was observed in 'cooking fuel' indicator where it reduced from 96.7 percentage to 93.9 percentage in the same time period (Table 5.6).

Table 5.6 Contribution of Indicators to the Overall Multidimensional Poverty in India between 2005-06 and 2015-16

		Dimensional Contribution		% of MPI Poor Deprived in Indicator			Indicators Contribution		
		2005-05	2015-16	2005-05	2015-16	Change	2005-05	2015-16	Change
Education	Schooling	27.66	25.27	51.0	46.9	-	16.76	17.76	+
	Attendance			33.2	19.9	-	10.90	7.52	-
Health	Nutrition	26.70	29.91	73.5	72.4	-	24.15	27.39	+
	Mortality			7.7	6.7	-	2.54	2.52	-
Standard of Living	Electricity	45.65	44.81	54.6	31.0	-	5.98	3.91	-
	Sanitation			91.5	87.7	-	10.03	11.07	+
	Water			22.8	19.7	-	2.50	2.49	-
	Housing			75.3	77.0	+	8.25	9.71	+
	Cooking fuel			96.7	93.9	-	10.60	11.85	+
	Assets			75.7	45.9	-	8.30	5.79	-

Source: Author's Calculation

5.3.6 Status of Multidimensional Poverty by Social Castes and Religions in India, 2005-06 and 2015-16

Poverty has also changed its nature among different social groups. The social groups with which we are concerned are basically Caste and Religion of India. The result of the above issue is reported in Table 5.7. For this purpose, we first classified the Castes into 4 categories as done in the NFHS database namely Scheduled Caste, Scheduled Tribes, Other Backward Caste and General. There has been reduction in the MPI and H for each of the four subgroups although the reduction is not uniform. The maximum reduction of multidimensional poverty index was observed in case of ST group where it reduced from 0.274 to 0.122 between 2005-06 and 2015-16 whereas the least reduction was observed in case of General group where it reduced from 0.176 to 0.073 i.e., by only 0.102 percentage points which leads to decrease in disparity among these groups. In this table we have also analyzed how different religious group in India have performed. For this purpose, we have classified the population into 5

major religious groups namely Hindu, Muslim, Christian, Sikh and others[2]. It is evident that more than 80 percent of the populations are Hindu and nearly 14 percent are Muslim while the rest share includes Christian, Shikh and other religions. The population composition in terms of religion has not changed much between 2005-06 and 2015-16. Both MPI and H have reduced in case of all religious groups but here also the reduction is not uniform across religion. The maximum reduction in deprivation is observed in case of Muslim group where MPI declined from 0.315 in 2005-06 to 0.150 in 2015-16 followed by Hindu group where it reduced by 0.136 percent point whereas the least reduction in deprivation was observed in case of Sikh where it has reduced from 0.097 to 0.031 i.e. by only 0.066 percent point over the last 10 years.

Table: 5.7 Performance of multidimensional poverty across Social Subgroups

	2005-06				2015-16				Change	
Caste	Pop Share	*MPI*	*H*	*A*	Pop Share	*MPI*	*H*	*A*	*MPI*	*H*
SC	19.1	0.319	62.3	51.2	20.6	0.152	34.5	44.1	-0.166	-27.8
ST	8.4	0.430	78.0	55.1	9.3	0.237	51.4	46.1	-0.193	-26.6
OBC	40.1	0.274	54.6	50.2	42.8	0.122	27.9	43.6	-0.152	-26.7
General	32.4	0.176	36.1	48.6	27.3	0.073	17.1	42.8	-0.102	19.0
Religion										
Hindu	80.1	0.261	52.1	50.1	80.2	0.125	28.6	43.6	-0.136	-23.5
Muslim	14.3	0.315	58.2	54.0	14.1	0.150	32.3	46.4	-0.165	-25.9
Christian	2.2	0.176	36.6	48.1	2.3	0.070	16.5	42.3	-0.106	-20.1
Sikh	1.7	0.097	21.9	44.4	1.7	0.031	7.6	40.9	-0.066	-14.3
Other Religion	1.6	0.227	45.3	50.2	1.6	0.113	26.2	43.2	-0.114	-19.1

Source: Author's Calculation

5.3.7 Status of Multidimensional Poverty by Household Characteristics in India, 2005-06 and 2015-16

To observe if poverty varies across household characteristics, performances by household characteristics is analyzed. For this purpose, we classified the population in 3 different ways: head's gender, household head's education and by household size. This is summarized in Table 5.8.

At first, we have provided the poverty figure when the entire population is divided on the basis of the household head's gender. It was observed that the percentage of people living in female headed household has increased from 11.1 percent in 2005-06 to 11.9 percent in 2015-16. It was also observed that there had been reduced in deprivation in the female headed household but the reduction was more in case of male-headed household than that of female-headed household. The poverty figure is also observed when the population is divided on the basis of the education level of the household head. From the given figure it was observed that

[2] We would have liked to analyses multidimensional poverty within other religious groups in greater detail, but the sample size does not permit this. Hence, we combined all other religions into one population subgroup.

the population share has reduced from 38 percentages to 31.4 percentage i.e. by around 7 percent point where the household head has no education whereas the percentage share has increased in the rest of the education level of the household head and the highest increase in population share was observed where the household head has completed 6-10 years of schooling. It is interesting to note that the adjusted head count ratio (MPI) as well as multidimensional head count ratio (H) has reduced to it maximum when the household head had no education as compared to other level of education.

Table: 5.8 Performance of multidimensional poverty by Household Characteristics

	2005-06				2015-16				Change	
Head's Gender	Pop. Share	*MPI*	*H*	*A*	Pop. Share	*MPI*	*H*	*A*	*MPI*	*H*
Female	11.1	0.289	55.6	51.9	11.9	0.153	33.9	44.9	-0.136	-21.7
Male	88.9	0.261	51.6	50.5	88.1	0.122	27.8	43.9	-0.139	-23.8
Head's Education										
No Education	38.0	0.414	76.0	54.5	31.4	0.229	49.4	46.4	-0.185	-26.6
1 - 5	18.7	0.287	58.0	49.5	18.5	0.153	34.9	44.0	-0.134	-23.2
6 - 10	29.3	0.149	34.5	43.1	32.9	0.063	16.2	38.7	-0.086	-18.3
11 - 12	6.0	0.091	22.2	41.0	7.7	0.036	9.4	37.9	-0.056	-12.9
More than 12	8.0	0.044	10.9	40.5	9.5	0.019	5.2	37.8	-0.025	-5.8
Household Size										
1--3	12.9	0.207	44.9	46.0	15.1	0.0998	24.0	41.6	-0.107	-20.9
4 - 5	33.7	0.223	44.9	49.7	39.2	0.1023	23.4	43.7	-0.121	-21.5
6 - 7	27.0	0.290	55.5	52.3	26.1	0.1457	32.4	44.9	-0.145	-23.1
8 - 9	13.6	0.328	62.0	53.0	10.7	0.1692	37.5	45.1	-0.159	-24.5
10 or More	12.8	0.303	60.1	50.5	8.9	0.1593	36.3	43.9	-0.144	-23.8

Source: Author's Calculation

This Table also presents the multidimensional poverty figure when the population is divided on the basis of the size of the household. The population share of the people living in household with 5 or less than 5 members has increased over the last 10 years implying the preference for small family whereas the population share of households with more than 5 members has reduced over this decade. Moreover, it has also been observed that the poverty reduction has occurred in case of every household size but the highest reduction in MPI and H was observed in case of household having 8-9 members where MPI and H reduced from 0.328 and 62 to 0.1692 and 37.5 i.e. by 0.159 and 24.5 respectively whereas the least reduction was observed in case of household having 1-3 members. It is noteworthy that the poverty was higher in the household having more family members but over decade the reduction in poverty was also higher in this group.

5.4 Distribution of Population at Different Levels of Multidimensional Poverty in India, 2005-06 and 2015-16

5.4.1 Distribution of Population at Different Levels of Multidimensional Poverty by Sector in India

Population of India can be divided into four categories on the basis of the deprivation cut-off (k) which can be stated as Multidimensional Non-Poor ($0 \leq k < 20.00$), Vulnerable to Multidimensional poor ($20.00 \leq k < 33.33$), Ordinary Multidimensional poor ($33.33 \leq k < 50.00$) and Severely Multidimensional poor ($k \geq 50.00$). In India, it was observed that these has been increment in the proportion of rural as well as urban population in the 1st two levels i.e., multidimensional non-poor and vulnerable to multidimensional Poor. The share of ordinary and severely Multidimensional Poor has declined in case of both rural and urban areas. It is to be noted that in 2005-06 the highest share i.e., 33 percent of rural population was severely multidimensional poor but in 2015-16 only 12.3 percent which is the least were in this group which shows an improvement in their condition. In case of urban population, their share has declined drastically in case of ordinary multidimensional poverty from 13.6 percent to 6.6 percent and also in severely multidimensional poverty from 8 percent to 2.4 percent between 2005-2006 and 2015-16 (Table 5.9).

Table 5.9 Distribution of Multidimensional Poverty of Population by Sector in India between 2005-06 and 2015-16

Level of Multidimensional Poor	2005-06			2015-16		
	Rural	Urban	Total	Rural	Urban	Total
Multidimensional Non-Poor ($0 \leq k < 20.00$)	17.3	60.3	30.6	40.2	77.1	52.4
Vulnerable to Multidimensional Poor($20.00 \leq k < 33.33$)	17.0	18.2	17.4	21.7	13.9	19.1
Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)	32.6	13.6	26.7	25.8	6.6	19.5
Severely Multidimensional Poor ($k \geq 50.00$)	33.0	8.0	25.3	12.3	2.4	9.0

Source: Author's Calculation

5.4.2 Distribution of population at Different Level of Multidimensional Poverty by Social Caste in India

In 2005-06, SC & ST had their highest share of population living in the level of ordinary and severely multidimensional poor whereas in case of OBC maximum share of population were in the ordinary multidimensional poverty level and the least were in the vulnerable group. But in 2015-16, the population share of SC, ST, OBC and General in severely multidimensional poverty has reduced drastically and the highest reduction in the share was observed in case of ST where it reduced from 48.4 percent to 19.5 percent during 2005-06 to 2015-16 (Table 5.10).

Table 5.10 Distribution of Multidimensional Poverty of Population by Social Caste in India between 2005-06 and 2015-16

	2005-06				2015-16			
	SC	ST	OBC	GEN	SC	ST	OBC	GEN
Multidimensional Non-Poor ($0 \leq k < 20.00$)	20.7	10.2	27.6	45.3	44.4	29.1	52.3	66.5
Vulnerable to Multidimensional Poor($20.00 \leq k < 33.33$)	17.1	11.8	17.8	18.5	21.1	19.6	19.8	16.4
Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)	31.2	29.5	28.6	21.0	23.5	31.9	19.3	12.4
Severely Multidimensional Poor ($k \geq 50.00$)	31.1	48.4	25.9	15.1	11.0	19.5	8.5	4.7

Source: Author's Calculation

5.4.3 Distribution of Population at Different Level of Multidimensional Poverty by Religion in India

Table 5.11 Distribution of Multidimensional Poverty of Population by Religion in India between 2005-06 and 2015-16

	2005-06					2015-16				
	Hindu	Muslim	Christian	Sikh	Other Religion	Hindu	Muslim	Christian	Sikh	Other Religion
Multidimensional Non-Poor ($0 \leq k < 20.00$)	30.2	26.1	46.5	58.4	37.3	52.1	48.1	67.2	77.5	54.0
Vulnerable to Multidimensional Poor ($20.00 \leq k < 33.33$)	17.7	15.7	16.9	19.8	17.4	19.2	19.6	16.3	14.9	19.8
Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)	27.6	24.3	20.6	14.3	25.2	20.0	19.1	12.2	5.9	19.1
Severely Multidimensional Poor ($k \geq 50.00$)	24.5	33.9	16.0	7.6	20.1	8.6	13.3	4.2	1.7	7.0

Source: Author's Calculation

In case of Hindu, Christian, Sikh and other religion maximum proportion of the population were in the multidimensional non-poor group with 30.2 percent, 46.5 percent, 58.4 percent and 37.3 percent respectively in 2005-06 but in case of Muslim in the same year maximum proportion of the population i.e. 34 percent were severely multidimensional poor. Over the ten years there had been increment in the share of population in the multidimensional non-poor group. Though there was a reduction in the share of the severely multidimensional poor but the maximum reduction was observed in case of Muslim community as it reduced from 33.9 percentage to 13.3 percentage i.e. by 20.6 percentage points during this time period. We can also observe that the condition of people across religion has improved considerably over the decade (Table 5.11).

5.4.4 Distribution of Population at Different level of Multidimensional Poverty by Household Size in India

From Table 5.12, it can be observed that the proportion of multidimensional non-poor was high in the family with 1-3 family members in both the years 2005-06 and 2015-16. Moreover, there has been an increment in the proportion of populations in this level over the decade. In 2005-06, in the family having 1-3 family member 37.9 percent of the population were multidimensional non-poor followed by ordinary multidimensional poverty, vulnerable to multidimensional poverty and severely multidimensional poverty but with family having 8 or above family members, their major proportion were in the ordinary and severely multidimensional poverty whereas in 2015-16 the same trend follows but the percentage share of population has increased in the multidimensional non-poor and vulnerable to

multidimensional poverty group and the population share has declined in the ordinary and severely multidimensional poverty group. It is noteworthy that multidimensional poverty is high in those family having large family size and vice-versa.

Table 5.12 Distribution of Multidimensional Poverty of Population by Households Size in India between 2005-06 and 2015-16

	2005-06					2015-16				
	1--3	4 - 5	6 - 7	8 - 9	10 or More	1--3	4 - 5	6 - 7	8 - 9	10 or More
Multidimensional Non-Poor ($0 \leq k < 20.00$)	37.9	37.8	27.1	21.8	20.8	59.3	59.2	48.0	40.1	38.3
Vulnerable to Multidimensional Poor ($20.00 \leq k < 33.33$)	17.2	17.2	17.4	16.2	19.2	16.7	17.4	19.6	22.4	25.5
Ordinary Multidimensional-Poor ($33.33 \leq k < 50.00$)	30.0	23.9	26.2	28.1	30.3	19.3	16.1	21.1	24.1	24.4
Severely Multidimensional-Poor ($k \geq 50.00$)	14.9	21.0	29.3	33.9	29.7	4.7	7.3	11.3	13.3	11.9

Source: Author's Calculation

5.4.5 Distribution of Population at Different level of Multidimensional Poverty by Education of Household's Head in India

Dividing the population on the basis of the education level of the household's head we have observe that as the education level of household's head increased, the proportion of population in the multidimensional non-poor group also increased in both 2005-06 and 2015-16 whereas the proportion of severely multidimensional poor decreased. The degree of multidimensional poverty was relatively high for the households with illiterate and low level educated head. Among the households with illiterate head 45.6 percent and 30.3 percent households were severely and ordinarily multidimensional poor in the year 2005-06. In 2015-16 there shares were 29.7 and 19.7 percent respectively. Over the ten years the proportion of population having illiterate households head in the severely multidimensional group declined from 45.6 percent to 19.7 percent whereas in the family having household head completed more than 12 years of schools the proportion of severely multidimensional poverty declined from 12.7 percent in 2005-06 to 0.5 percent in 2015-16. However, the proportion of population having illiterate household head who were multidimensional non-poor has increased from 11 percent to 30.1 percent over the decade (Table 5.13).

Table 5.13 Distribution of Multidimensional Poverty of Population by Education of Household's Head in India between 2005-06 and 2015-16

	2005-06					2015-16				
	No Literate	1 - 5	6 - 10	11 - 12	More than 12	No Literate	1 - 5	6 - 10	11 - 12	More than 12
Multidimensional Non-Poor ($0 \leq k < 20.00$)	11.0	23.1	42.5	58.7	76.4	30.1	42.8	64.0	75.9	85.5
Vulnerable to Multidimensional Poor ($20.00\ k < 33.33$)	13.1	18.9	23.0	19.1	12.7	20.5	22.4	19.8	14.7	9.4
Ordinary Multidimensional-Poor ($33.33 \leq k < 50.00$)	30.3	30.7	26.1	18.3	9.0	29.7	23.3	14.3	8.6	4.7
Severely Multidimensional-Poor ($50.00 \leq k \leq 100$)	45.6	27.4	8.3	3.9	1.9	19.7	11.5	1.9	0.8	0.5

Source: Author's Calculation

5.5 Status of Multidimensional Poverty across States in India

The indicators of multidimensional poverty widely varied across states in India. The multidimensional HCR (H) varied from as high as 77.1 percent in Bihar to 14.3 percent in Kerala in the year 2055-06. The top five states in terms of high percentage share of multidimensional poor were Bihar (77.1 percent), Jharkhand (72 percent), Chhattisgarh (68.1 percent), Uttar Pradesh (64.8 percent) and Madhya Pradesh (66 percent). The share was relatively low in Kerala, Goa, Punjab and Tamil Nadu. The HCR decreased overtime in all the states. In 2015-16, it varied between 55 percent in Bihar to 1.2 percent in Kerala.

The performance of states to reduce multidimensional poverty varies among themselves. It is observed from Table 5.14 that all the states showed reduction in multidimensional poverty but the maximum reduction in MPI was observed in 2 states namely Chhattisgarh and Jharkhand where it has reduced by 0.190 points followed by Bihar and others and the maximum reduction in H was observed in Sikkim where it reduced from 40.1 in 2005-06 to 6.3 in 2015-16 i.e. by 33.9 percentage points followed by Arunachal Pradesh and Chhattisgarh.

Population share in almost 15 states has reduced like in Arunachal Pradesh, Gujarat, Himachal Pradesh, Punjab, Uttar Pradesh and other. In most of these states, the reduction in population share was negligible but the highest reduction was observed in Uttar Pradesh where it reduced from 17.0 percent to 15.70 percent over the years while in rest of the states there has been an increment in the population share over the time period. To name a few are Andhra Pradesh[3], Bihar, Chhattisgarh, Jammu & Kashmir, Tamil Nadu, and others where

[3] We have combined Andhra Pradesh with Telangana to get Andhra Pradesh. Because these states were not partitioned in 1999. We have not reported the union territory and Delhi, but it was included when calculating the national results.

Tamil Nadu showed the highest increment in population share from 5.2 percent in 2005-06 to 6.44 percent in 2015-16 (Table 5.14).

While analyzing the status of Multidimensional poverty across sector it was observed that in the rural area Jharkhand had the highest HCR which was 85.5 in 2005-06 followed by Chhattisgarh, Madhya Pradesh, Assam and others whereas in 2015-16, Bihar had the highest HCR which was 59.5 followed by Jharkhand, Madhya Pradesh and others and the least HCR was in Kerala which was 16.9 and 1.7 respectively in 2005-06 and 2015-16. On the other hand, in the urban area in both 2005-06 and 2015-16 Bihar and Uttar Pradesh had the highest HCR while Arunachal Pradesh had the least HCR which was 37.2 in 2005-06 and was the second highest and managed to reduce it to 6.6 percent in 2015-16.

Table 5.14 Performance of multidimensional poverty across Sates in India

	2005-06				2015-16				Change	
	Pop. Share	*MPI*	*H*	*A*	Pop. Share	*MPI*	*H*	*A*	*MPI*	*H*
States										
Andhra Pradesh (Combined)	7	0.205	44.7	45.7	7.2	0.066	16.3	40.8	-0.139	-28.4
Assam	2.6	0.3	60	50	2.39	0.165	37.2	44.4	-0.135	-22.8
Bihar	8.2	0.442	77.1	57.3	8.75	0.26	55	47.2	-0.182	-22
Chhattisgarh	2.2	0.342	68.1	50.2	2.27	0.152	36.4	41.7	-0.19	-31.7
Gujarat	4.8	0.177	37	47.8	4.78	0.094	22.1	42.8	-0.082	-15
Haryana	1.9	0.179	38.4	46.6	2.26	0.049	11.6	42.4	-0.13	-26.8
Himachal Pradesh	0.6	0.145	35.8	40.4	0.54	0.04	10.9	36.9	-0.104	-24.8
Jammu & Kashmir	0.9	0.192	42	45.8	0.94	0.076	18.3	41.8	-0.116	-23.7
Jharkhand	2.7	0.401	72	55.7	2.67	0.211	47.4	44.6	-0.19	-24.7
Karnataka	5.7	0.185	40.3	46	4.85	0.063	15.8	40.1	-0.122	-24.5
Kerala	2.6	0.055	14.3	38.5	2.84	0.004	1.2	37.2	-0.051	-13.1
Madhya Pradesh	6.3	0.347	66	52.6	6.46	0.185	41.4	44.7	-0.162	-24.7
Maharashtra	9.5	0.159	34.2	46.6	9.71	0.075	17.9	41.8	-0.084	-16.2
Orissa	3.6	0.319	62.3	51.3	3.4	0.157	36.2	43.4	-0.162	-26.1
Punjab	2.4	0.106	23.6	45	2.16	0.027	6.7	41	-0.079	-16.9
Rajasthan	5.8	0.317	60.3	52.7	5.48	0.15	33.2	45.1	-0.168	-27.1
Tamil Nadu	5.2	0.131	31.4	41.6	6.44	0.028	7.4	37.6	-0.103	-24.1
Tripura	0.3	0.251	52.6	47.7	0.29	0.092	21.8	42.4	-0.159	-30.8
Uttar Pradesh	17	0.336	64.8	51.8	15.7	0.188	42.1	44.7	-0.148	-22.8
Uttarakhand	0.8	0.173	38	45.6	0.82	0.081	19.5	41.2	-0.093	-18.5
West Bengal	7.8	0.289	57.1	50.6	7.51	0.114	27.2	42	-0.175	-29.9
Sikkim	0.1	0.187	40.1	46.5	0.04	0.024	6.3	38.2	-0.163	-33.9
Arunachal Pradesh	0.1	0.261	52.4	49.9	0.08	0.085	20	42.6	-0.176	-32.4
Nagaland	0.1	0.269	53.2	50.7	0.12	0.098	24.1	40.8	-0.171	-29.1
Manipur	0.2	0.183	39.8	46	0.18	0.069	17.4	39.9	-0.114	-22.4
Mizoram	0.1	0.108	24.8	43.6	0.08	0.04	9.6	42.3	-0.068	-15.2
Meghalaya	0.3	0.292	56	52.1	0.23	0.138	31.4	43.9	-0.154	-24.7
Goa	0.1	0.083	19.1	43.3	0.12	0.02	5.3	38.1	-0.063	-13.8

Source: Author's Calculation

Bihar even had the maximum intensity of multidimensional poverty (A) in both the considered years in the rural as well as urban area followed by Jharkhand and others. Uttar

Pradesh in the urban area had the highest intensity of 48.8 and 45.1 in 2005-06 and 2015-16 respectively whereas the least in both the sectors was found in Kerala followed by Himachal Pradesh, Tamil Nadu and others.

Now considering the MPI, the highest in rural area in 2005-06 was in Jharkhand which was 0.49 whereas in 2015-16 it was highest in Bihar and was 0.281. In the urban area the MPI was highest in Bihar which was 0.25 and 0.114 in both the years respectively followed by Uttar Pradesh, Himachal Pradesh, Jharkhand and others while the least MPI was enjoyed by Kerala in both rural and urban area. It is noteworthy that Bihar in both the rural and urban area in 2005-06 and 2015-16 had the highest HCR, intensity and MPI whereas Kerala enjoyed the least.

5.6 Impact of Socio-economic Indicators on Level of Multidimensional Poverty

For econometrics analysis of multidimensional poverty, we have clubbed multidimensionally non-poor and vulnerable to multidimensional poor or deprived into one category because these two categories are below multidimensional poverty cut off i.e., 33.33. In this category the deprivation score of households is less than 33.33 per cent. Thus, the household with deprivation score less than 33.33 per cent is considered multidimensionally non-poor whereas other two categories are ordinary multidimensionally poor (with deprivation score 33.33 per cent to 50.0 per cent) and severely multidimensionally poor (with deprivation score 50.0 per cent and above). It is experienced that the location of the households and health insurance of the member of the households also affects the level of multidimensional poverty.

Specifications and Sources of the Variables

The variables identified to capture these processes and their specifications are presented in Table 5.15. Mean, standard deviation (SD) and the notations used for the variables are also listed in Table 5.15.

HHSIZE means household size i.e., the number of members in the family. Location of the household (LOCN) is considered as a dummy variable taking the value 1 if it is located in the rural area and 0 if it is located in the urban area. Another two demographic factors are age of the household's head (HAGE) and square age of household's age. Education of household's head (HED) is measured by years of education. Health insurance (HMHC) is the dummy variable taking value 1 if any member of the household has health insurance otherwise 0.

Table 5 .15 Notation, Specification, and Descriptive Statistics of Variables used in the Multinomial logistic regression Model

		2005-06				2015-16			
Notation	Specification	Mean	Std.	Min	Max	Mean	Std.	Min	Max
TD	Time Dummy: 1 for 2005-06 and 0 for 2015-16	0.0	0.0	0	0	1.0	0.0	1	1
HHSIZE	Size of Household	4.9	2.5	1	35	5	2.3	1	41
LOCN	If Rural = 1, 0 = Otherwise	0.5	0.5	0	1	1.7	0.5	1	2
HAGE	Age of the household Head	46.3	14.4	3	95	48.4	14.1	10	98
HSAGE	Square age of age of the household Head	2353.1	1440.2	9	9801	2539.5	1446.2	100	9604
HED	Year of education of the household's head	6.3	7.0	0	20	6.33	8.1	0	20
HMHC	Member of household covered by a health scheme or health insurance	0.3	1.3	0	9	0.31	0.7	0	8
ST	Household belongs to ST or not? Yes=1, No=0	0.1	0.3	0	1	0.19	0.4	0	1
SC	Household belongs to SC or not? Yes=1, No=0	0.2	0.4	0	1	0.18	0.4	0	1
OBC	Household belongs to OBC or not? Yes=1, No=0	0.3	0.5	0	1	0.38	0.5	0	1
Hindu	Religion of the household is Hindu or not? Yes=1, No=0	0.7	0.4	0	1	0.75	0.4	0	1
Muslim	Religion of the household is Muslim or not? Yes=1, No=0	0.1	0.3	0	1	0.12	0.3	0	1
Christian	Religion of the household is Christian or not? Yes=1, No=0	0.1	0.3	0	1	0.08	0.3	0	1
Sikh	Religion of the household is Sikh or not? Yes=1, No=0	0.02	0.1	0	1	0.02	0.1	0	1
HN_ST	Household belongs to Hindu as well as ST or not? Yes=1, No=0	0.06	0.2	0	1	0.10	0.3	0	1
HN_SC	Household belongs to Hindu as well as SC or not? Yes=1, No=0	0.1	0.4	0	1	0.16	0.4	0	1
HN_OBC	Household belongs to Hindu as well as OBC or not? Yes=1, No=0	0.3	0.4	0	1	0.31	0.5	0	1
HN_GEN	Household belongs to Hindu as well as General or not? Yes=1, No=0	0.3	0.4	0	1	0.17	0.4	0	1
MS_ST	Household belongs to Muslim as well as ST or not? Yes=1, No=0	0.002	0.0	0	1	0.01	0.1	0	1
MS_SC	Household belongs to Muslim as well as SC or not? Yes=1, No=0	0.004	0.1	0	1	0.004	0.1	0	1
MS_OBC	Household belongs to Muslim as well as OBC or not? Yes=1, No=0	0.04	0.2	0	1	0.05	0.2	0	1
MS_GEN	Household belongs to Muslim as well as General or not? Yes=1, No=0	0.1	0.3	0	1	0.06	0.2	0	1
CHR_ST	Household belongs to Christian as well as ST or not? Yes=1, No=0	0.1	0.2	0	1	0.07	0.3	0	1
CHR_SC	Household belongs to Christian as well as SC or not? Yes=1, No=0	0.004	0.1	0	1	0.003	0.1	0	1
CHR_OBC	Household belongs to Christian as well as OBC or not? Yes=1, No=0	0.01	0.1	0	1	0.005	0.1	0	1
CHR_GEN	Household belongs to Christian as well as General or not? Yes=1, No=0	0.02	0.1	0	1	0.01	0.1	0	1

Source: Author's Calculation

We have also used social factor like social caste and religion for analysis of multidimensional poverty. Different social castes are defined using separate dummy variable taking the value 1 if the head of the households belong to scheduled tribe (ST), scheduled caste (SC) and other backward caste (OBC) and 0 if otherwise. Here also different religions are defined by different dummy variable taking the value 1 if the head of the households belong to Hindu, Muslim, Christian and Sikh and 0 otherwise. We have also used cross dummy castes religions. The notation and specification of those variables are given in Table 5.15.

Result Analysis

Multinomial Logit Model is used to explain the degree of Multidimensional Deprivation or level of multidimensional poverty across households in India using NFHS data. The model specified is as follows: the data consist of different level of multidimensional poverty facing three choices - multidimensionally non-poor, ordinary multidimensionally poor and severely multidimensionally poor, and are coded 0, 1 and 2 respectively. It is assumed that we have a set of observations Y_i for i=1.....n, of the outcomes of multi-way choices from a categorical distribution of size m = 3. Along with Y_i are a set of k observed values $x_{1.i}$, ...$x_{k.i}$ of explanatory variables like HHSZ, LOCN, HAGE, HSAGE, HED, HMHC, ST, SC and OBC, and Hindu, Muslim, Christian and Sikh. We have also considered time dummy (TD). Here 2015-16 takes value one and zero for 2005-06.

$$\begin{aligned} Y_{it} = \alpha + \beta_1 TD_{it} + \beta_2 HHZ_{it} + \beta_3 LOCN_{it} + \beta_4 HAGE_{it} + \beta_5 HSAGE_{it} + \beta_6 HED_{it} + \beta_7 HMHC_{it} \\ + \beta_8 ST_{it} + \beta_9 SC_{it} + \beta_{10} OBC_{it} + \beta_{11} \mathbf{Hindu_{it}} + \beta_{12} \mathbf{Muslim_{it}} + \beta_{13} \mathbf{Christian_{it}} \\ + \beta_{14} \mathbf{Sikh_{it}} + \boldsymbol{\varepsilon_{it}} \end{aligned}$$

Whereas i = Number of households and t =2 (2005-06 and 2015-16)

The result of multinomial logit regression is given in Table 5.16 and Table 5.17. The LR $\chi 2$ statistic is highly significant at less than 1 per cent level implying that the degree of multidimensionally deprived households is significantly explained by the explanatory variable. The multidimensional poverty significantly decreased over time (TD) in India. The likelihood of multidimensionally poor and severely multidimensionally poor households were more in rural area than in the urban area (LOCN). The probability of multidimensionally poor and severely multidimensionally poor households increased significantly with household size (HHSIZE). Age of head of households (HAGE) was more likely multidimensionally non-poor than multidimensionally poor and severely multidimensionally poor. SC, ST and OBC categories households were more likely ordinary multidimensionally poor and severely

multidimensionally poor than multidimensionally non-deprived. Year of education of the head of the households (HED) were more likely multidimensionally non-poor household than ordinary multidimensional poor and severely multidimensional poor households.

Table 5.16 Multinomial Logit- Estimation of the Status of Multidimensional Poverty

Number of observations = 710550
LR chi2 (30) = 236323.50
Prob > chi2 = 0.0000
Log likelihood = -455942.02
Pseudo R2 = 0.2058
0= Base Outcome [Multidimensional Non-Deprived ($0 \leq k < 33.33$)]

	1 = Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)			2 = Severely Multidimensional Poor ($k \geq 50.00$)		
	COEF.	Z	P>Z	COEF.	Z	P>Z
TD	-0.68	-73.58	0.000	-1.30	-105.87	0.000
HHSIZE	0.01	8.79	0.000	0.16	85.51	0.000
LOCN	1.40	157.54	0.000	1.75	117.08	0.000
HAGE	-0.09	-70.45	0.000	-0.16	-78.17	0.000
HSAGE	0.0007	57.89	0.000	0.001	47.46	0.000
HED	-0.15	-187.10	0.000	-0.33	-220.55	0.000
HMHC	-0.13	-28.61	0.000	-0.22	-27.89	0.000
ST	0.91	78.93	0.000	1.43	82.13	0.000
SC	0.66	62.54	0.000	0.89	52.94	0.000
OBC	0.41	45.01	0.000	0.57	38.50	0.000
Hindu	0.60	30.13	0.000	0.97	30.98	0.000
Muslim	0.80	36.13	0.000	1.48	43.31	0.000
Christian	-0.20	-8.97	0.000	-0.11	-3.08	0.002
Sikh	-0.92	-24.50	0.000	-0.99	-14.97	0.000
Intercept	0.73	18.45	0.000	1.73	28.95	0.000

Source: Author's Calculation

Among different religion groups Hindu and Muslim were more likely ordinary as well as severely multidimensional poor. But Christian and Shikh were less likely ordinal and multidimensional poor. Within a particular religion the status of multidimensional poverty may vary across social castes. Each of the religion (Hindu, Muslim and Christian) is classified in four groups (viz, General, OBC, SC & ST). To find out the differential status of multidimensional poverty across social groups of each of the religion we have incorporated interaction dummies. Accordingly, there are 12 interaction dummies for three religions. The impact of these interaction dummies along with other indicators on the degree of multidimensional poverty. Within Hindu Religion ST, SC and OBC groups were more likely ordinary or severely multidimensionally poor. There was no differential impact of social castes of Muslim religion. Within Christian religion the General group is less likely ordinary and severely multidimensional poor. While SCs were more likely ordinary and severely multidimensional poor.

Table 5.17 Multinomial Logit- Estimation of the Status of Multidimensional Poverty

Number of observations = 710550
LR chi2(40) = 237442.99
Prob > chi2 = 0.0000
Log likelihood = -455382.28
Pseudo R2 = 0.2068
0= Base Outcome [Multidimensional Non Poor ($0 \leq k < 33.33$)]

	1 = Ordinary Multidimensional Deprived ($33.33 \leq k < 50.00$)			2 = Severely Multidimensional Deprived ($k \geq 50.00$)		
	COEF.	Z	P>Z	COEF.	Z	P>Z
TD	-0.68	-73.20	0.000	-1.30	-105.50	0.000
HHSIZE	0.01	8.89	0.000	0.17	85.57	0.000
LOCN	1.40	156.66	0.000	1.75	116.72	0.000
HAGE	-0.09	-70.52	0.000	-0.16	-78.24	0.000
HSAGE	0.0007	58.09	0.000	0.001	47.70	0.000
HED	-0.15	-185.99	0.000	-0.33	-219.31	0.000
HMHC	-0.13	-28.93	0.000	-0.22	-28.24	0.000
HN_ST	0.86	41.29	0.000	1.33	41.37	0.000
HN_SC	0.49	24.42	0.000	0.66	20.78	0.000
HN_OBC	0.26	13.44	0.000	0.34	10.90	0.000
HN_GEN	-0.21	-10.35	0.000	-0.35	-10.09	0.000
MS_ST	0.28	5.88	0.000	0.51	7.60	0.000
MS_SC	0.55	10.11	0.000	1.00	14.66	0.000
MS_OBC	0.40	16.75	0.000	0.84	23.96	0.000
MS_GEN	0.16	7.27	0.000	0.42	12.15	0.000
CHR_ST	-0.07	-3.08	0.002	0.05	1.33	0.182
CHR_ SC	0.00	-0.03	0.977	-0.24	-2.38	0.017
CHR_OBC	-0.23	-4.41	0.000	-0.02	-0.28	0.778
CHR_GEN	-0.93	-15.99	0.000	-0.66	-6.72	0.000
SIKH	-1.28	-34.84	0.000	-1.60	-24.64	0.000
Intercept	1.48	38.39	0.000	2.91	50.32	0.000

Source: Author's Calculation

Chapter 6

Multidimensional Deprivation in West Bengal: *Empirical study based on SECC 2011*

The Scheduled Tribes (ST) and Scheduled Castes constitute the weakest section of population of India. They constituted the matrix of India's poverty and deprivation. The tribal people are the sons of the soil and the citizens of the country. They are the indigenous people in India. While they have been subjected to the worst types of social exploitation. They have been practically deprived in many civic facilities and isolated from the modern and civilized way of living since centuries. Since independence, Government of India has been extended provision of social justice to the ST people for improving their socio-economic conditions but the fact is that after seven decades of independence, the STs are more deprived than the other social castes in India. The degree of deprivation varies from one region to another in India. A significant portion of STs are living in West Bengal. The then Left Front (LF) Government was ruling more than three decades in West Bengal. It was expected that under the ruling of the LF Government the marginalized section had been empowered but the STs of a relatively developed state West Bengal are more deprived than other states in India (Das 2017).

The estimation of monetary poverty across social caste indicated that the incidence of poverty was the highest for STs. The money-metric poverty is measured by the monetary term on the basis of mainly per capita consumption expenditure. The Limitations of the measurement of poverty based on a single monetary indicator underscore the strong need for the multidimensional approach of poverty and deprivation. Since 2010, UNDP World Development Report published Multidimensional Poverty Indicators (MPI) for a number of countries along with Human Developed Index (HDI). The MPI, developed by OPHI, University of Oxford, incorporated the deprivations of different dimensions.

The multidimensional measure of poverty, conceptualizes poverty along a spectrum of deprivation encompassing various aspects of wellbeing such as economic, social and material. To identify the households who were eligible for certain benefits, Government of India conducted BPL Censuses in 1992, 1997, 2002 and a Fourth Census known as Social Economic Caste Census (SECC) 2011.The SECC 2011 also outlines an alternative identification method of poor and deprived households. It aims to correct the large targeting errors observed in the BPL group in the year 2002 introducing different exclusion and inclusion criteria, indicators and scoring methods.

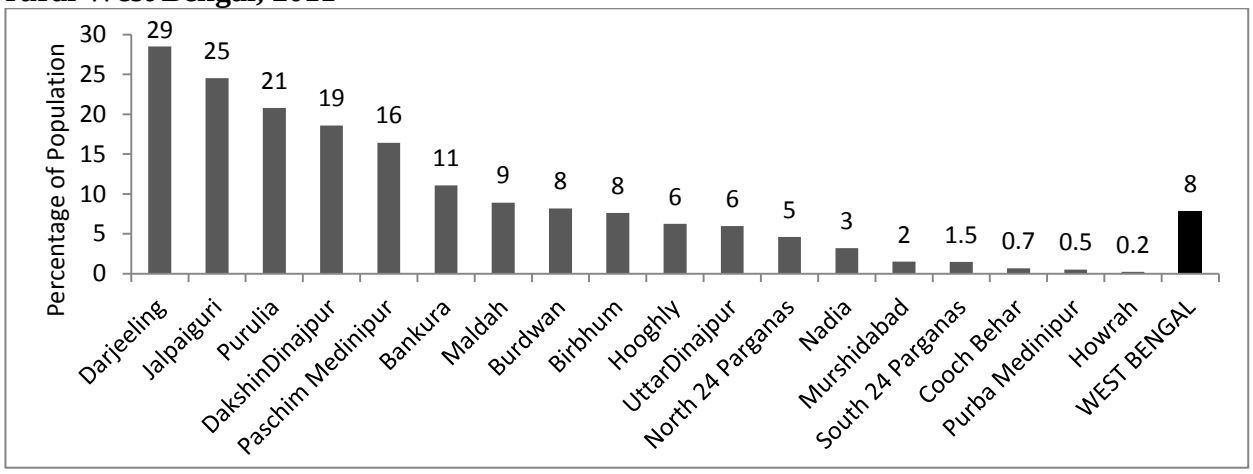
In this brief background the present study analyses the multidimensional deprivations of the Scheduled Tribes (ST) households compared to the Non-ST households in rural West Bengal on the basis of Socio Economic Caste Census (SECC) 2011.

6.1 Socio Economic Status of STs and Non- STs across Districts of West Bengal

ST Population

As per Census 2011 the percentage share of ST people to total population was 8 per cent in Rural West Bengal. The top five ranking districts in respect of the percentage share of ST population were Darjeeling (29 per cent), Jalpaiguri (25 per cent), Purulia (21 per cent), Dakshin Dinajpur (19 per cent) and Paschim Medinipur (16 per cent). ST population was very low in Cooch Behar (0.7 per cent), Purba Medinipur (0.5 per cent) and Howrah (0.2 per cent) [Figure 1].

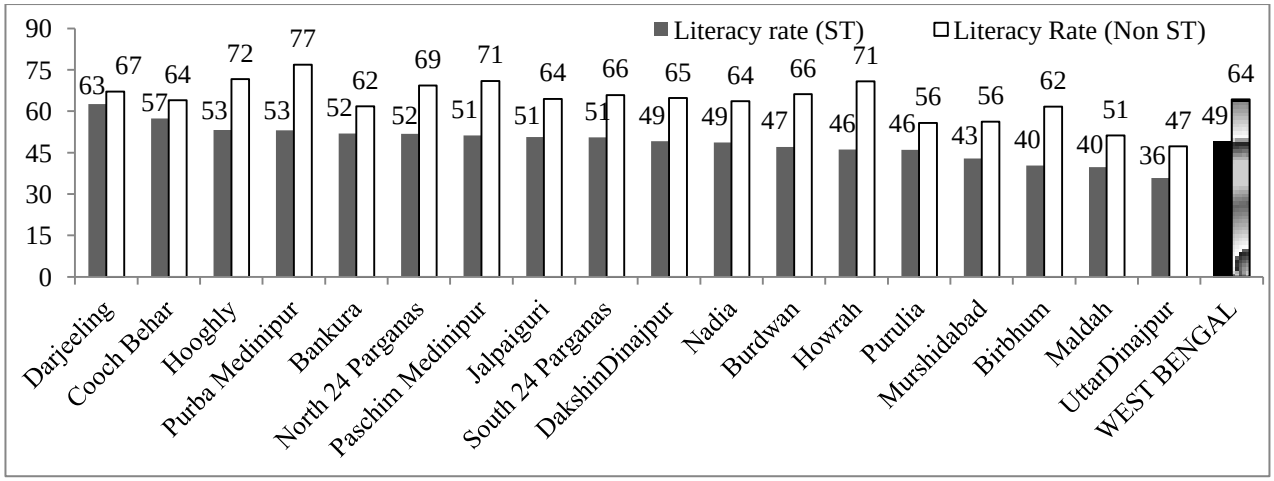
Figure 6.1 Percentage Share of ST Population to Total Population across Districts of rural West Bengal, 2011



Source: Census 2011

Literacy Rate of STs vis-à-vis Non-STs:

Figure 6.2 Literacy Rate of ST and Non-ST in Rural West Bengal in 2011



Source: Census 2011

The rural literacy rate of STs in West Bengal was 49 per cent in 2011 and the gap in literacy rate between STs and non-STs was 15 per cent. The rural literacy rates of STs varied from as low as 36 per cent in Uttar Dinajpur to 63 per cent in Darjeeling. The literacy gap was higher is relatively developed districts namely, Hooghly, Purba Midnapore, Howrah and Birbhum (Figure 2).

Housing Condition of ST Households

Among the ST households in West Bengal 87.1 per cent households owned house. The percentage share of ST households with house was relatively low in West Bengal than that in all over India. The percentage share of ST households who owned house widely varied across districts of West Bengal. It varied from 47.6 per cent in Jalpaiguri to 98.8 per cent in Purulia. The share of the houseless households was subsequently low – only 0.06 per cent in rural West Bengal but the share of the houseless in the ST category was greater than the other castes in rural West Bengal. Except hill region and Howrah district, housing condition of ST was relatively lower than that of the other castes (Table 6.1).

Table 6.1 Distribution of ST Households by Ownership Status and Type of House across Districts of Rural West Bengal, 2011

	Ownership Status				Type of House		
	Owned	Rented	Other	House Less	Kucha House	Pucca House	Other House
Darjeeling	75.4	11.1	13.4	0.03	10	31.4	58.5
Jalpaiguri	47.6	24.7	27.6	0.08	17.5	41.7	40.7
Cooch Behar	80.9	1.2	17.9	0.03	16.6	37.5	45.9
Uttar Dinajpur	93.8	0.6	5.6	0.04	26.5	10.7	62.8
Dakshin Dinajpur	97.2	0.2	2.5	0.02	19.1	5.6	75.2
Maldah	98.2	0.4	1.4	0.00	49.1	6	44.9
Murshidabad	92.4	1.1	6.5	0.05	59.8	8.4	31.8
Birbhum	94.9	0.4	4.5	0.21	73	4.4	22.4
Burdwan	90.8	2	7.2	0.06	52.7	13.1	34.2
Nadia	95.8	1	3.3	0.00	39.7	24.7	35.7
North 24 Parganas	94.0	1.2	4.6	0.14	59	15.6	25.2
Hooghly	95.5	0.9	3.5	0.06	41.3	15	43.6
Bankura	97.3	0.4	2.2	0.03	47.2	7.9	44.8
Purulia	98.8	0.3	0.8	0.03	67.1	6.6	26.2
Howrah	68.3	17.6	14.1	0.00	16.4	48.7	34.9
South 24 Parganas	93.4	0.9	5.6	0.10	74.7	9.4	15.8
Paschim Medinipur	95.8	0.3	3.8	0.06	52.4	3.7	43.8
Purba Medinipur	85.9	3.8	10.2	0.09	57	11.2	31.7
West Bengal	***87.1***	***4.9***	***7.9***	***0.06***	***43.4***	***15***	***41.5***
India	***95.6***	***2.3***	***1.8***	***0.17***	***53.7***	***20.1***	***25.9***

Source: Socio economic Cast Census-2011

Occupation of ST Households

SECC 2011 listed six categories of occupation – cultivation, manual casual labour, part-time or full-time domestic services, foraging rag picking, non-agricultural own account enterprise,

begging and others. The distribution of rural ST households by occupation across districts of West Bengal is given in Table 6.2. In respect of the distribution of occupation of ST households the following features are noteworthy. *Firstly*, manual casual labour (MCL) and cultivation was the main occupation of rural ST households. *Secondly*, the occupation of most of the ST households was MCL. Among the total ST households in West Bengal the occupation of 71.65 per cent households was MCL in 2011. The corresponding share in all over India was 51.34 per cent. The share of MCL was relatively high in Burdwan (83.58 per cent), Birbhum (83.23 per cent), Nadia (81.70 per cent), Murshidabad (81.68 per cent). The share of MCL households was significantly higher for STs than that of Non-STs (Table 6.2). *Thirdly*, on the whole 16 per cent households were engaged in the cultivation. It widely varied across the districts of West Bengal. Dakshin Dinajpur (31.01 per cent), Maldah (28.85 per cent), Purulia (23.93 per cent), Uttar Dinajpur (21.60 per cent) and Bankura (20.61 per cent) witnessed relatively high share in cultivation. *Thirdly*, only 0.51 per cent of rural ST households engaged in non-agricultural enterprise (NAE). The households with non-agricultural own account enterprise as the occupation, was significantly low for STs than the Non-STs.

Table 6.2 Percentage Share of Occupation of ST Households across Districts of rural West Bengal in 2011

	Cultivation	Manual Casual Labour	Foraging Rag Picking	Non-agricultural Enterprise	Begging	Others
Darjeeling	14.26	53.13	0.03	0.43	0.13	29.49
Jalpaiguri	7.06	71.37	0.29	0.47	0.25	18.06
Koch Bihar	12.49	69.00	0.21	2.06	1.18	12.62
Uttar Dinajpur	21.60	66.34	0.27	0.77	0.54	8.15
Dakshin Dinajpur	31.01	63.04	0.14	0.60	0.76	3.40
Maldah	28.85	62.93	0.22	0.75	0.66	5.17
Murshidabad	9.57	81.68	0.23	0.21	1.41	5.70
Birbhum	10.48	83.23	0.46	0.53	0.82	3.78
Burdwan	5.95	83.58	0.15	0.33	0.77	7.45
Nadia	9.77	81.70	0.10	0.48	0.52	6.88
North 24 Parganas	8.14	80.71	0.29	0.68	0.92	7.55
Hugli	10.66	79.15	0.07	0.37	0.66	7.62
Bankura	20.61	71.07	0.54	0.34	0.82	5.85
Purulia	23.93	66.23	0.49	0.51	0.71	6.19
Howrah	4.37	49.41	0.00	1.53	0.27	43.33
South 24 Parganas	20.00	68.50	0.17	0.93	0.90	7.86
Paschim Medinipur	19.26	73.85	0.70	0.50	0.53	4.33
Purba Medinipur	10.90	75.42	0.32	0.58	4.14	7.53
All India	37.94	51.34	0.22	0.63	0.23	7.60
West Bengal	16.05	71.65	0.35	0.51	0.62	9.28

Source: Socio Economic Caste Census 2011

Table 6.3 t-Test to the difference between of ST and Non-ST households in respect of Occupation

		Mean	SD	Test of $H_0: \sigma_1 = \sigma_2$ Against $H_0: \sigma_1 \neq \sigma_2$	Test of $H_0: \sigma_1 = \sigma_2$ Against $H_0: \sigma_1 \neq \sigma_2$
Manual Casual Labour	ST	71.1	10	$F=\frac{\frac{s_1^2 n_1}{n_1-1}}{\frac{s_2^2 n_2}{n_2-1}}$=3.53 Table value of F is 2.27 at 1% level. Therefore, H_0 is rejected.	t = $\frac{\bar{X}_1-\bar{X}_2}{\sqrt{\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}}}$ = 5.57 Table value of 't' is 1.71 at 1% level. Therefore, H_0 is rejected.
	Non ST	56.3	5.3		
Non-agricultural Own Account Enterprise	ST	3.45	1	Calculated F -value =4.87 Table value of F is 2.27 at 1% level. Therefore, H_0 is rejected.	Calculated t-value =10.70 Table value of 't' is 1.71at 1% level. Therefore, H_0 is rejected.
	Non ST	0.67	0.45		

Source: Authors' Calculation
Note: 18 (no of districts)

Income of ST Households

Table 6.4 Percentage Share of Monthly Income of ST Households across Districts of rural West Bengal, in 2011

	ST			SC			Other		
	Less than 5000	5000-10000	More than 10000	Less than 5000	5000-10000	More than 10000	Less than 5000	5000-10000	More than 10000
Darjeeling	84.1	8.2	7.7	80.2	12.5	7.3	73.6	13.8	12.6
Jalpaiguri	94.6	3.5	1.9	83.4	11.8	4.8	75.1	15.5	9.3
Cooch Behar	84.5	6.1	9.5	86.7	9.8	3.5	80.3	14.4	5.2
Uttar Dinajpur	92.7	5.6	1.6	86.3	10.4	3.3	82.9	13.3	3.8
Dakshin Dinajpur	95.7	2.8	1.6	91.8	5.8	2.4	85.6	9.8	4.6
Maldah	92.1	5.6	2.3	87.3	9.1	3.5	83.3	12.2	4.4
Murshidabad	93.6	2.9	3.6	89.0	7.4	3.6	83.5	12.1	4.4
Birbhum	96.7	1.7	1.6	94.4	3.3	2.2	83.9	10.2	5.9
Burdwan	92.2	2.7	5.1	89.8	5.0	5.1	70.4	16.3	13.3
Nadia	92.2	4.2	3.6	80.0	13.5	6.5	75.7	16.2	8.1
North 24 Parganas	93.4	3.6	3.1	85.8	9.4	4.8	81.3	12.8	5.9
Hooghly	91.3	4.5	4.2	88.3	7.6	4.0	64.5	23.1	12.4
Bankura	93.1	3.4	3.5	94.2	3.2	2.6	77.5	13.2	9.3
Purulia	94.1	2.6	3.4	90.8	4.1	5.1	84.8	8.3	7.0
Howrah	62.9	9.1	28.0	85.4	10.1	4.5	70.8	19.5	9.6
South 24 Parganas	92.7	3.9	3.5	84.7	10.7	4.6	83.1	12.0	4.9
Paschim Medinipur	95.2	2.4	2.4	92.3	4.7	3.0	80.7	12.4	7.0
Purba Medinipur	90.6	4.5	4.9	88.4	7.4	4.2	81.4	12.2	6.4
West Bengal	***93.1***	***3.6***	***3.3***	***87.5***	***8.3***	***4.2***	***79.1***	***13.8***	***7.1***
All India	***86.6***	***8.9***	***4.5***	***83.6***	***11.7***	***4.7***	***70.3***	***19.9***	***9.8***

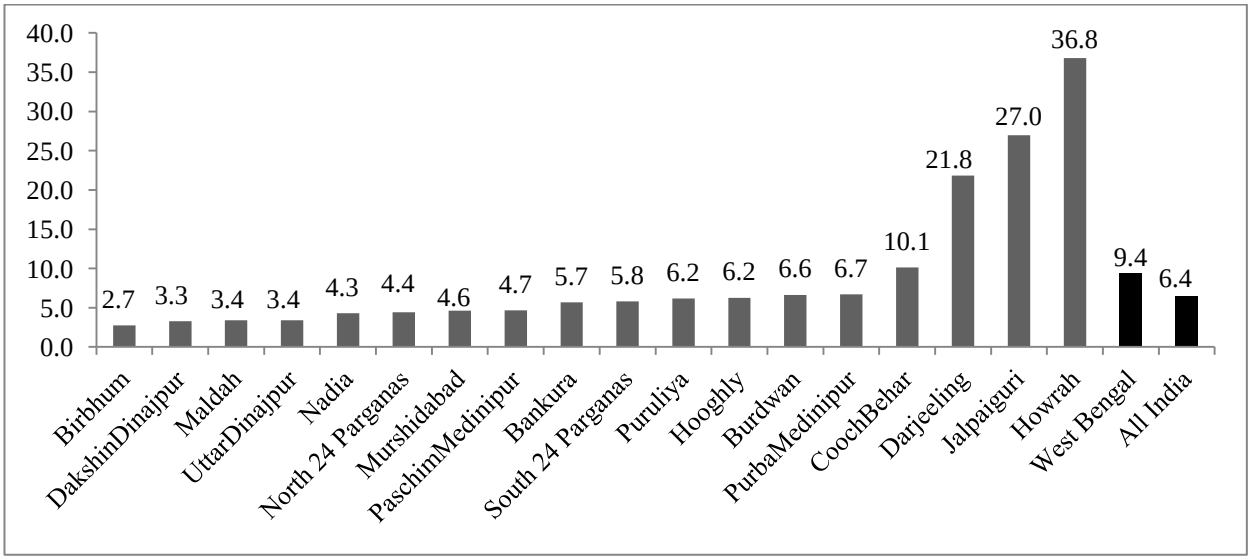
Source: Socio Economic Caste Census 2011

The monthly income of ST households was also relatively low as compared with other social caste. In West Bengal, there was 93 per cent of ST households with monthly income less than Rs. 5000. This share of low income ST households was larger than that of other caste. The share was also relatively higher as compared to all over India. The Income of ST households was relatively low in between districts namely Birbhum, Dakshin Dinajpur, Paschim Medinipur, Jalpaiguri and Purulia (Table 6.4).

Salaried ST Households

The salaried households were relatively low among STs compared to non ST. This was due to the low level of regular status of employment. Out of total ST households in West Bengal only 9.4 per cent were salaried households in 2011. The percentage share of ST households was marginally higher in West Bengal than all over India. Among the Districts of West Bengal the percentage share of salaried ST households out of total ST households was relatively high in Howrah, Jalpaiguri and Darjeeling (Figure 6.3).

Figure 6.3 Percentage Shares of Salaried ST Households to Total Household across Districts of Rural West Bengal across Districts of rural West Bengal, in 2011



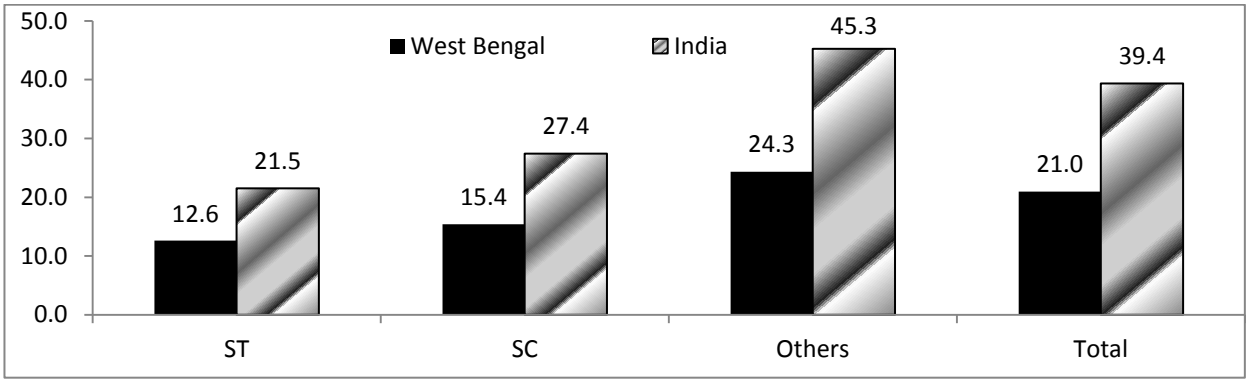
Source: Socio Economic Caste Census 2011

6.2 Non-Poor, Extremely Poor and Deprived Households in Rural West Bengal

6.2.1 Non-Poor Households

Non-poor (who are automatically excluded from BPL list) ST households in West Bengal (12.6 per cent) vis-à-vis India (21.5 per cent) was significantly lower than Non-ST class (Figure 6.4).

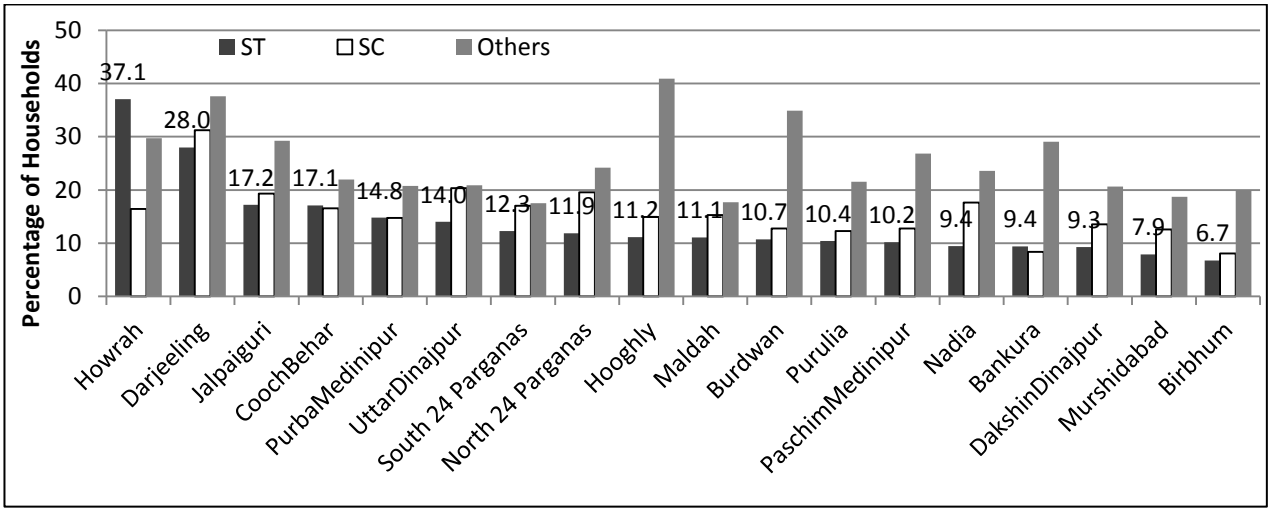
Figure 6.4 Rural Non-Poor Households in West Bengal vis-à-vis India in 2011



Source: Socio Economic Caste Census 2011

The share of non-poor households of ST, SC and other categories widely varied across districts of West Bengal (Figure 6.5). Howrah and Birbhum witnessed the highest and the lowest share of non poor households of ST respectively. The Districts of West Bengal which secured top five ranks in terms of percentage share of non-poor ST households to total ST households were Howrah, Darjeeling, Jalpaiguri, Cooch Behar and Purba Medinipur. The percentage share of non-poor households for all castes was relatively low in Maldah, Murshidabad, Purulia, Bankura and Dakshin Dinajpur (Figure 6.5).

Figure 6.5 Percentage Share Non-Poor households to Total households by castes across Districts of Rural West Bengal 2011

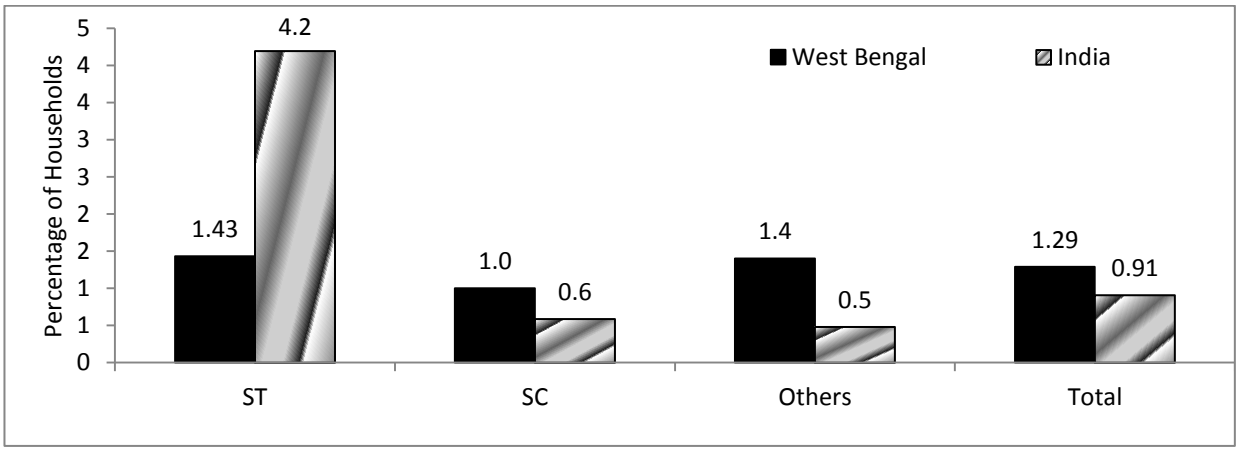


Source: Socio Economic Caste Census 2011

6.2.2 Extremely Poor Households

It was observed that the percentage share of rural extremely poor households (who are automatically included in the BPL group) to total Rural Households of ST class was relatively low in West Bengal (1.43 per cent) compared to India (4.2 per cent) (Figure 6.6).

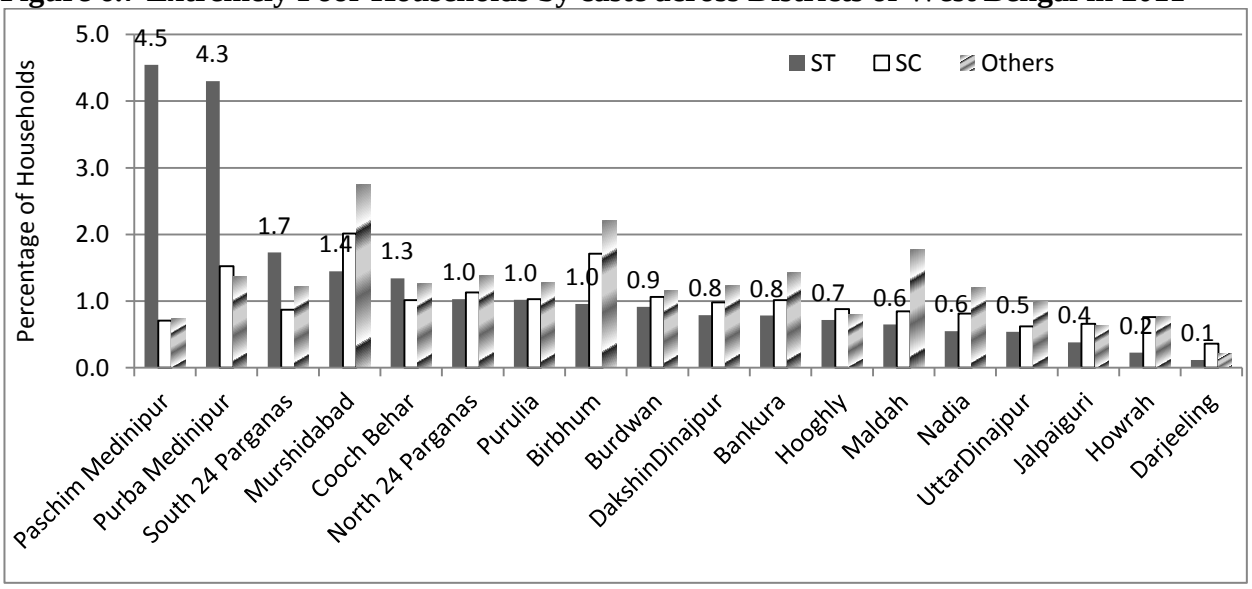
Figure 6.6 Percentage Share of Extremely Poor Households to Total households in West Bengal vis-à-vis in India in 2011



Source: Socio Economic Caste Census 2011

Among districts of West Bengal, the extremely poor households were relatively high in Purba Medinipur and the Paschim Medinipur districts i.e. 4.3 per cent and 4.5 per cent respectively but poor households of ST category were relatively low in Purulia and Bankura, Darjeeling and Jalpaiguri districts as compared to SC and others categories. Therefore districts are relatively ST dominated (Figure 6.7).

Figure 6.7 Extremely Poor Households by caste across Districts of West Bengal in 2011



Source: Socio Economic Caste Census 2011

6.2.3 Deprived Households

The deprivation of ST households was analysed on the basis of six indictors ranged from lack of housing facility and education of adult member to the absence of any meal earner and household depending on manual casual labour (Table 6.5). A household is deprived in housing if she does not occupy any house with at least one room with kucha walls and roofs. The housing deprivations of ST households were relatively high in West Bengal which was 32.39 per cent in 2011while in all over India it was 29.78 per cent.

Among the districts of West Bengal the housing deprivation was relatively high in South 24 Parganas, North -24 parganas and Birbhum districts. As regard to the indicator like landless households and manual casual labour, 58.5 per cent households were deprived in West Bengal. This share was also high as compared to all over share. In some districts of West Bengal, namely Murshidabad, Burdwan, Nadia and Hooghly more than 80 per cent households were deprived in this particular indicator. All of these four districts are not less developed; Burdwan and Hooghly are relatively developed districts. The deprivation of ST households is also striking in respect of adult literacy rate. Half of the ST adult people of West Bengal were not literate. Uttar Dinajpur, Maldah, Murshidabad and Birbhum were top four districts in respect of deprivation in adult literacy rate. These three indicators of deprivation, namely housing, economic livelihood and adult literacy are related with the government functioning as well as households directories. Effective support service (as social protection programme) along with participation helps to reduce deprivation in housing livelihood and literacy. The other three indicators of deprivation, viz. 'no adult member age between 16 to 59', 'female headed households with no adult male' and 'disable member with no able adult member' are quite natural. Relative lesser number of ST households were deprived in each of these three indicators.

Table: 6.5 Indicators wise Deprived Households of ST across Districts of West Bengal in 2011

	One room with kucha walls and roof	No adult member age 16 to 59	Female headed households with no adult male age 16 to 59	Disabled member and no able adult member	No literate adult above 25 years	Landless households and manual casual labour
Darjeeling	5.93	2.17	5.57	0.87	31.88	52.67
Jalpaiguri	12.54	1.32	5.08	0.58	50.30	69.46
Cooch Behar	14.08	3.19	5.97	0.44	48.14	72.19
Uttar Dinajpur	17.84	2.40	6.45	0.31	67.24	61.56
Dakshin Dinajpur	14.08	2.71	7.05	0.33	51.50	53.60
Maldah	31.13	2.51	6.22	0.56	66.70	52.22
Murshidabad	40.33	2.51	6.29	0.33	62.75	83.32
Birbhum	53.91	3.03	7.81	0.52	65.88	76.46
Burdwan	33.79	2.44	7.74	0.34	56.43	85.44
Nadia	35.01	2.15	5.23	0.23	56.29	82.51
North 24 Parganas	56.73	2.30	4.70	0.77	41.97	73.05
Hooghly	27.82	2.89	9.08	0.48	46.16	81.95
Bankura	39.15	2.85	6.86	0.68	45.35	36.20
Purulia	44.89	3.24	5.38	0.53	49.93	24.94
Howrah	19.55	2.37	6.11	0.22	35.37	69.66
South 24 Parganas	67.81	2.35	3.95	0.51	42.21	59.29
Paschim Medinipur	39.52	3.23	7.03	0.80	44.66	47.72
PurbaMedinipur	48.28	3.19	6.62	0.53	44.62	74.47
West Bengal	32.39	2.58	6.41	0.58	50.31	58.49
All India	29.78	5.03	6.31	0.61	52.89	40.15

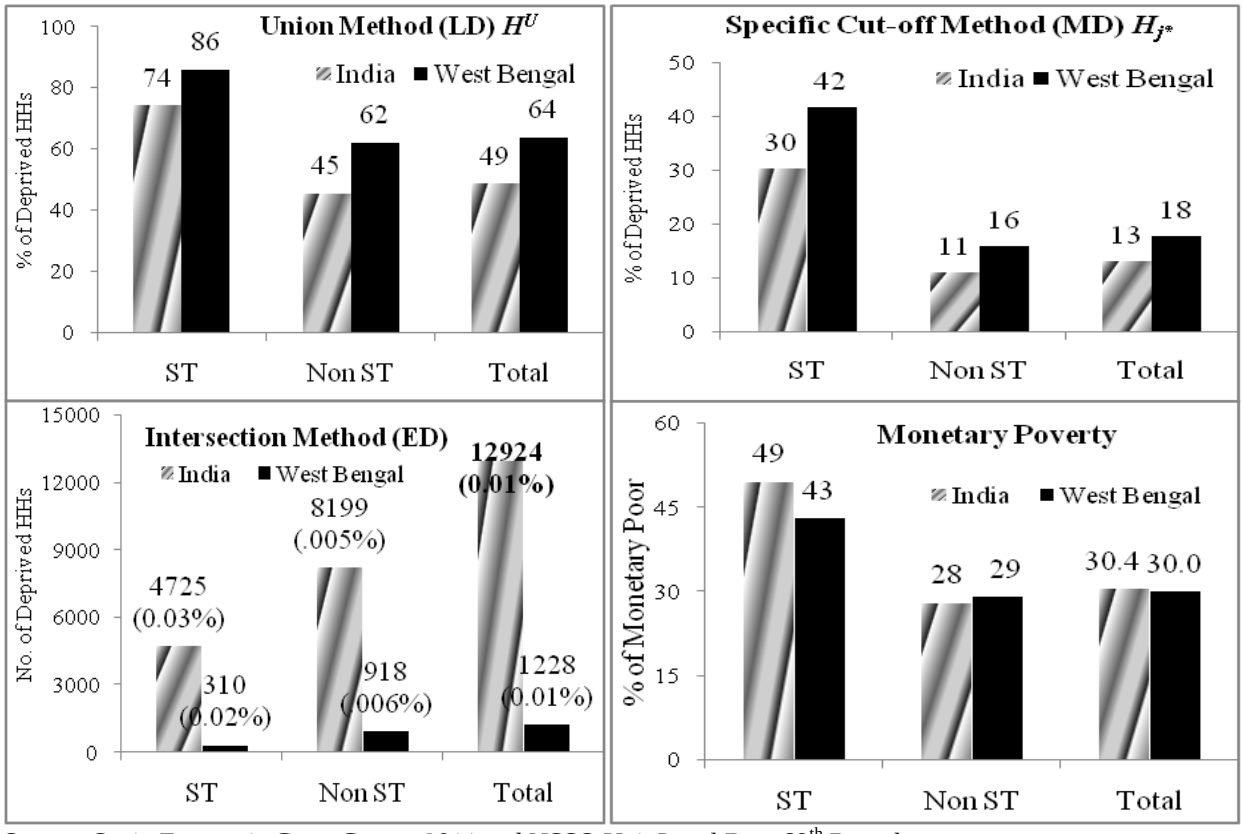
Source: Socio Economic Caste Census 2011

6.3 Multidimensional Deprivation in Rural West Bengal

Measurement of Head count ratio of deprivation across districts in West Bengal

The monetary measurement of poverty is based on the poverty line. In 2011-12, 43 per cent of ST and 29 per cent of non-ST people were poor. In all over India there shares was 49 per cent and 28 per cent respectively. This monetary poverty measures only the deficiency in consumption of the households. It fails to capture different aspects of deprivation of human wellbeing. The multidimensional poverty can incorporate these deprivations but it is cut-off sensitive. The monetary measurement of poverty is also poverty line cut-off. This poverty line cut-off is predefined and estimated by the government authority[2] but there is no predefined cut-off in case of multidimensional poverty. Therefore, in the present study we have estimated the multidimensional poverty with three different cut-off – intersection method, union method and specific cut-off of three indicators. Here our notion is to compare the multidimensional poverty of ST people with Non-ST people with each of these three cut-offs in West Bengal vis-à-vis all over India. In union method, the multidimensional HCR of ST was relatively higher in West Bengal compared to all over India. In West Bengal, 80 per cent of ST people were deprived in at least one indicator in 2011. The corresponding figure in India was 74 per cent. While in case of intersection method, i.e. the household deprived in all indicators, the percentage share of multidimensional poor households were little lower for STs than that of Non-STs. Not only that the percentage share of these extremely deprived households in West Bengal were lower than that in all over India but their share was also very low. In case of moderate deprivation, i.e. the households were deprived in at least three indicators, 42 per cent of ST and 16 percent of Non-ST households were deprived in West Bengal. The percentage shares of moderately deprived ST households were many folds than Non-ST households in West Bengal as well as in all over India. In case of West Bengal, the percentage share of moderately deprived ST households was lower than that of SC, OBC and General caste households (Figure 6.8)

Figure 6.8 Multidimensional deprivation of rural households by MPI Constructed Using Different Deprivation Cutoffs



Source: Socio Economic Caste Census 2011 and NSSO Unit Level Data 68th Round.

Table 6.6 Non-Poor, Extreme Poor, Moderate Deprived and Non-Deprived Households in West Bengal as well as in India in 2011

		Non-Poor	Extreme Poor	Moderate Deprived	Non Deprived	Total
West Bengal	ST	12.6	1.43	41.6	44.4	100
	SC	24.3	1.4	7.4	66.8	100
	Other	15.4	1	34.8	48.7	100
	Total	21	1.3	17.7	60	100
India	ST	21.5	4.2	30.3	44	100
	SC	27.4	0.6	31.1	40.9	100
	Other	45.3	0.5	5.7	48.5	100
	Total	39.4	0.9	13.1	46.6	100

Source: Socio Economic Caste Census 2011

We have assumed a cut-off that is above 33.33 given by OPHI for calculating multidimensional deprivation. It was observed (Table 6.6) that in West Bengal and India 18 per cent and 13 per cent households were moderately deprived respectively. Deprived households of ST (42 per cent) in West Bengal were significantly higher than the Non ST categories.

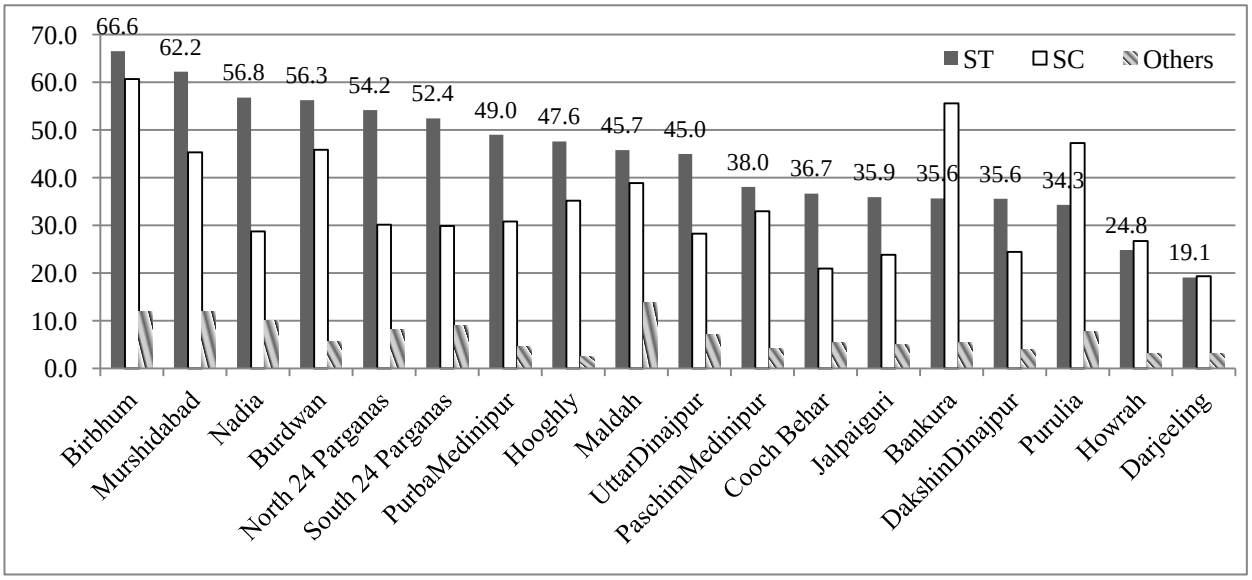
Table 6.7 Statistical Test of Deprivation of ST and Non ST classes

	Mean	SD	Test of $H_0: \sigma_1 = \sigma_2$ Against $H_0: \sigma_1 \neq \sigma_2$	Test of $H_0: \sigma_1 = \sigma_2$ Against $H_0: \sigma_1 \neq \sigma_2$
ST	44.2	80.9	$F=\frac{\frac{s_1^2 n_1}{n_1-1}}{\frac{s_2^2 n_2}{n_2-1}}$=5.38	t = $\frac{\bar{X}_1-\bar{X}_2}{\sqrt{\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}}}$ = 8.77
Non ST	15.6	15.04	Table value of F is 2.27at 1% level. Therefore, H_0 is rejected.	Table value of 't' is 1.71at 1% level. Therefore, H_0 is rejected.

Sources: Authors' Calculation

The percentage share of moderately deprived households widely varied across districts of West Bengal. It varied from 66.6 per cent in Birbhum to 19.1 per cent in Darjeeling. The other districts with relatively higher share of moderately deprived ST households were Murshidabad, Nadia, Bardhhaman and North 24-Porganas. While the share of moderately deprived ST households were relatively low in some districts where STs were densely populated. These districts are Darjeeling, Purulia, Bankura, Dakshin Dinajpur, Jalpaiguri and Paschim Medinipur. On the other hand STs were more deprived in some districts where they are sparsely populated. These districts are Birbhum, Murshidabad, Nadia, Burdwan, North and South 24-Parganas (Figure 6.9).

Figure 6.9 Percentage of Moderate Deprived households in the Districts of West Bengal



Source: Socio Economic Caste Census 2011

Notes

1. Oxford Poverty and Human Development Initiatives (OPHI) developed the measurement of multidimensional poverty where they used 33.33 per cent dimensional cut-off.
2. The estimated rural poverty line was Rs. 934 for WB and Rs. 972 for all over India (Rangarajan Committee)

Chapter 7

Poverty and the Deprivation of the Rural Sample Households in West Bengal

We have discussed poverty and deprivations at the aggregate levels of state and whole of India based on the secondary data from three different sources, viz. NSSO, NFHS and SECC 2011. These aggregate analyses possess some deficient due to the shortfall of the data. NSSO data is suitable to measure the monetary poverty but not the multidimensional poverty as some of the indicators and dimension are missing. NFHS data are best fitted for the measurement of multidimensional poverty but it fails to estimate the monetary poverty. SECC 2011 data are helpful to find out the non-poor, extreme poor and deprived households but unable to measure monetary as well as multidimensional poverty in systematic manner. Another major drawback of these three data sets is that they are deficient about the information relating to social protection benefits and their impact on poverty and other means of deprivation. Therefore, there is a need of a comprehensive data set to analyse the monetary poverty, food security, multidimensional poverty and deprivations in one hand and to evaluate the impact of social protection benefits on the other. To what extent the households (specifically poor households) are benefited from social protection programmes is yet to be analysed. Therefore, for the sake of an analysis of social protection benefits at the household level, specifically for the poor households, there is a need for an evaluation of social protection benefits of the poor on the basis of grass root reality. That is what is done in this chapter based on primary data collected from 32 sample villages and 800 sample households of 16 sample blocks in the five respectively backward districts of West Bengal namely Purulia, Bankura, Paschim Medinipur, South 24 Parganas and Derjiling.

The section that follows presents the brief profile of sample blocks and villages based on data from Census of India. Section 7.2 discusses the features of sample households. Section 7.3 analyses the entitlement of the sample households. Status of food security of the sample households is estimated in section 7.4. Status of poverty of the sample households is estimated in section 7.5. In section 7.6 we estimate the status of multidimensional poverty and deprivation of the sample households.

7.1 Profile of Sample Blocks and Villages

A number of socio-economic indicators based on Census 2011 presents a brief profile of sample districts, blocks and villages.

Table 7.1 Demographic Features of Sample Blocks, 2011

						Distribution of Population (=100%)			Distribution of Workers (=100%)			
Block	PP ('000)	SC (%)	ST (%)	LTR (%)	WPR (%)	MW	MRW	NW	CL	AL	HHI	OW
Paschim Medinipur												
Keshiary	149.3	23	34.3	68	45.1	22	23.1	54.9	20.4	63.8	2.8	13
Dantan -II	155	8.9	7	72.9	36.1	23.7	12.4	63.9	30.1	46.3	2.4	21.2
Jamboni	113.2	18.1	28.6	63.9	45.2	16.5	28.7	54.8	12.7	58.2	4.2	24.9
Sankrail	115.4	18.2	25	65	45.4	26.4	19	54.6	30.7	56.6	2.2	10.5
Bankura												
Vishnupur	156.8	35.7	7.5	58.2	42.8	27.9	14.9	57.2	21.2	44.6	5.8	28.4
Taldangra	147.9	26.3	13.9	62.3	42.2	23	19.2	57.8	21.9	56.5	3.6	18
Khatra	104.6	26.5	24	62	39.5	20.7	18.8	60.5	18.2	58.2	1.8	21.8
Ranibundh	119.1	11.5	47.1	60.5	48.3	23	252	51.7	22.8	58.5	5.2	13.6
Purulia												
Jaipur	123.1	13.4	10.3	48.1	39.5	18.8	20.7	60.5	30.9	31.9	12.9	243
Kashipur	174.3	29.5	27.9	60.8	43.2	17.9	25.3	56.8	19.9	47.8	3.1	29.1
Hura	143.6	19.5	25.5	59.9	48.5	22.2	26.3	51.5	25.1	50.3	2.5	22.1
Jhalda – II	135.8	9.1	13.8	45.4	45.5	28.7	16.8	5.5	6.9	6	47.8	9.3
South 24Parganas												
Mandirbazar	189	43.8	0	33.3	65.2	20.3	13.1	66.7	9.3	27.4	7	56.3
Kakdwip	282.0	34.7	0.7	68.3	35.7	21.1	14.6	64.3	14.1	38.2	5.2	42.5
Darjiling												
Darjeeling Phulbazar	105.2	4.7	28.8	41.7	73	25.4	16.3	58.3	38.6	12.2	3.9	45.4
Mirik	46.4	7.8	30.8	74.0	37.4	26.4	11.1	62.6	13.7	14.5	2.0	69.8
Total	878	26.4	13.9	64.2	39.4	22	17.7	60.3	20.6	42.9	4.6	31.8

Source: Primary Census Abstract, Census of India 2011, Govt. of India

Population including SCs and STs, literacy rate, working status of people and distribution of workers of 16 sample blocks in 2011 are presented in Table 7.1. Among the 16 sample blocks, the literacy rate was highest in Jamboni (63.9 per cent) and Dantan-II (72.9 per cent) blocks of Paschim Medinipur district, Taldangra (62.3 per cent) and Khatra (62 per cent) blocks of Bankura district, Kashipur (60.8 Per cent) and Hura (59.9 Per cent) blocks of Purulia District, Mirik (74 per cent) block of Derjiling district and Kakdwip (68.3 per cent) block of South 24 pargana district. Dantan-I and Mandirbazar are the blocks of Paschim Medinipur and South-24- parganas district where the literacy rate was relatively low by 37 per cent and 33 per cent respectively.

The share of scheduled caste (SC) population was highest in Mandirbazar (43.8 percent) in South-24- Parganas district, followed by Vishnupur (35.7 per cent) in Bankura district and Jamboni (18.1per cent) in Paschim Medinipur district. On the other hand, the share was lowest in Darjeeling Phulbazar block (4.7 percent) in Derjiling district. The share of

scheduled tribe (ST) population was highest in Darjeeling Phulbazar (28.8 per cent) in Derjiling district, followed by Jamboni (28.6 per cent), and Danton (16.2) in Paschim Medinipur district.

Sample blocks also vary in terms of worker-population ratio (WPR). WPR was relatively high in two backward blocks, namely Darjeeling Phulbazar (73.0 per cent) in Derjiling district and Mandirbazar (65.2 percent) in South 24 Parganas district. WPR was relatively low in Vishnupur (58.2 per cent) and Taldangra (62.3 per cent) blocks of Bankura districts. Danton-I (64.9) and Jamboni (63.9) were the two most backward blocks in Paschim Medinipur districts who witnessed high WPR. Regarding working status of population there was only one block with higher share of marginal workers as compared to the main workers that is Jamboni in Paschim Medinipur district. It was recognized that in this block major percentages of workers were not getting employment even for 180 days in a year.

The nature of distribution of workers in these blocks indicated their backwardness. In most of the blocks the share of agricultural workers to total workers was substantially high. The percentage share of cultivators was highest in Darjeeling Phulbazar (38.6 per cent), followed by Jaipur (30.9 per cent) and Sankrail (30.7 per cent). This share was relatively low in Jhalda-II (6.9 per cent), Mandirbazar (9.3 percent) and Jamboni (12.7 per cent). In context of agricultural laborers, the share of most of the blocks was relatively high. It was realized that around 63.8 per cent of rural workers were agricultural laborers in Keshiary followed by Ranibundh (58.5 per cent) and Khatra (58.2 per cent). Percents of agricultural laborers was relatively low in Jhalda-II (6 per cent) and Derjiling Phulbazar (12.2 per cent).

The share of rural household industry workers was highest in Jhalda-II (47.8 per cent) of Purulia district followed by Jaipur (12.9 percent) and lowest in Khatra (1.8 per cent). Percentage share of 'other workers' was highest in Mirik (69.8 per cent) followed by Mandirbazar (56.3 per cent) and Darjeeling Phulbazar (45.4 per cent). This share was lowest in Jhalda-II (9.3 per cent) led by Sankrail (10.5 per cent).

The size of the village in terms of number of the households as well as population widely varied across villages (Table 7.2). Numbers of households in the village Srinagar of South 24 Parganas districts were high followed by Chekya of the Purulia district. In Srinagar village of South 24 Parganas district the number of individuals was near about eleven thousands. Number of individuals was also high in Chekya village (5995) in Purulia district and the number of individuals was more than 3000 in Mirik Khasmahal village (2268) in Darjeeling district, Daskhin Andia (3445) and Pachmura (3719) in Paschim Medinipur districts, Khairipihira village (3161) in Purulia district. Whereas the number of individuals was relatively low in the tribal village Chandania (316) in Bankura district.

Table 7.2 Demographic Features of Sample villages, 2011

							Percentage in Total Population(=100)			Percentage in Total Worker(=100)			
	No. of HHS	Pop	SC (%)	ST (%)	LTR (%)	WPR	MW	MRW	NW	CL	AL	HH1	OW
Paschim Medinipur													
Murakati	136	577	10.7	8.3	30.7	58.6	2.9	55.6	41.4	4.1	74.9	9.2	11.8
Belia	504	2268	25.2	10.6	34	36.5	20.6	15.9	63.5	14.7	21.6	10.9	52.8
Jarasol	82	351	0	0	14.5	68.1	25.4	42.7	31.9	74.5	22.2	0	3.3
Phulbani	155	750	0.7	71.5	34.4	53.1	51.9	1.2	46.9	2.8	92	3.5	1.8
Langa Mara	587	2612	12.9	40.3	48.1	51.1	26.1	25	48.9	19.7	63.2	5.1	12
Murakata	231	1068	18.4	37.6	25.7	42.1	27.4	14.7	57.9	25.3	70.9	0	3.8
Kotpada	254	1100	42.8	24.3	32.7	33.3	21.1	12.2	66.7	16.1	73.2	0	10.7
Dakshin Arbana	725	3445	8.1	11.4	29.5	34.3	9.9	24.4	65.7	17.3	53.1	1.8	27.7
Bankura													
Bantilla	281	1194	20	8.4	37	48.3	16.7	31.7	51.7	21.8	62.9	2.1	13.2
Chandania	76	316	66.8	0	60.1	45.6	24.4	21.2	54.4	3.5	88.2	0.7	7.6
Panchmura	797	3719	35	0.6	32.1	35.7	30	5.7	64.3	5.2	29.6	12.5	52.7
Saldaha	247	1149	16.9	22.1	35.2	39.9	22.6	17.2	60.1	27.1	59.6	0.4	12.9
Mitha-Am	226	986	9.8	83.4	43	45.2	15.1	30.1	54.8	14.8	79.6	0	5.6
Nachna	240	1086	24	54.5	35.7	44.7	3.4	41.3	55.3	35.1	17.1	31.5	16.3
Baramara	443	2061	18.9	24.3	44.3	42.5	34.6	7.8	57.5	12.9	59.7	0.8	26.6
Kulupukur	175	878	0	15.1	29.6	33	18.6	14.5	67	36.9	26.2	14.1	22.8
Purulia													
Mukundpur	417	2076	27.4	1.6	60	33.5	1.9	31.6	66.5	5.6	62.1	3.3	29
Nutandi	340	1886	69	0.5	65.3	41.1	15.2	25.9	58.9	6.2	36.1	38.3	19.5
Rudra	221	1085	19.4	0.6	39.8	27.5	20.8	6.6	72.5	39.3	15.1	2	43.6
Shampur	68	317	0	98.4	47	52.1	3.5	48.6	47.9	5.5	61.8	1.2	31.5
Chekya (CT)	1166	5995	5.2	2.2	53.5	53.5	38.5	15	46.5	2.1	1.7	80.6	15.6
Dirnu	506	2471	1.3	24	63.8	44	29.4	14.6	56	12.7	16.5	33	37.8
Dholkata	247	1289	1.8	25.4	54.4	43.2	27.3	15.9	56.8	21.9	60.5	0.9	16.7
Khairipihira	629	3161	34.7	19.6	45.8	55.1	28.7	26.4	44.9	30	36.5	0.9	32.7
South 24-Parganas													
Baji Sukdebpur	379	1896	75.2	0.0	72.8	34.0	20.4	13.5	66.0	12.1	25.7	5.7	56.5
Ramnathpur	614	2978	53.5	0.0	64.9	40.0	29.2	10.7	60.0	5.3	10.5	18.0	66.2
Srinagar	2329	10959	43.1	0.1	67.1	31.4	23.1	8.2	68.6	19.8	61.2	1.3	17.7
Srikrishnagar	580	2754	6.0	0.1	65.2	31.8	21.5	10.4	68.2	20.9	49.4	0.8	29.0
Darjeeling													
Alubari Basty	237	1063	1.1	41.2	79.8	24.7	12.4	12.3	75.3	4.9	0.4	10.3	84.4
Lebong Tea Garden	521	2276	2.4	41.8	73.4	41.7	32.8	9.0	58.3	2.3	0.8	0.1	96.7
Mirik Khasmahal (P)	954	4329	2.8	49.9	80.7	42.3	23.0	19.2	57.7	42.3	26.6	1.6	29.6
Marma Tea Garden	700	3077	2.9	48.8	71.8	48.3	31.6	16.8	51.7	19.8	9.9	1.7	68.5

Source: Primary Census Abstract, Census of India 2011, Govt. of India

The percentage share of scheduled tribes (STs) was highest in Shampur village (98.4 percent) in the Purulia districts, Mitha-Am (83.4 per cent) and Nachna (54.5 per cent) village in Bankura district followed by Phulbani village (71.5) in Paschim Medinipur district. There

were two villages where the percentage share of schedule tribes was zero that is Ramnathpur village and Baji Sukdebpur village in South 24 Parganas district.

Three villages namely Ramnathpur, Baji Sukdebpur in South 24 Parganas district and Chandania in the Bankura districts are the villages where above fifty percent of the inhabitants belonged to scheduled caste (SC). In Baji Sukdebpur village the percentage share of SC people was 75.2 per cent. It was followed by another two villages, namely Srinagar (43.1 percent) in South 24 district and Kotpada (42.8 per cent) in Paschim Medinipur whereas in the villages Kulupukur in Bankura district, Shampur in the Puruliya districts and Jarasol in the Paschim Medinipur districts had no SC population.

Literacy rate was above seventy percent in all the villages namely Mirik Khasmahal, Marma Tea Garden, Alubari Basty and Derjiling Phulbazar of Derjiling districts and Baji Sukdebpur (72.8 per cent) of South 24 Parganas districts. It was more than 60 per cent in seven villages namely Chandana in Bankura distracts, Dirnu and Nutandi of Puruliya districts and Ramnathpur, Srinagar and Srikrishnagar of South 24 Parganas districts. The villages were the literacy rate was relatively low was Jarasol (14.5 per cent), Murakata (25.7 per cent) and Dakshin Andia (29.5 per cent) of Paschim Medinipur districts and Kulupukur (29.5 percent) of Bankura district.

Four villages of Paschim Medinipur namely Langa Mara, Phulbani, Murakata and Jarasol and the three villages of Purulia districts namely Shampur, Chekya and Khairipihira have the highest percent of Workforce Participation Rate (WPR). WPR was below 30 per cent in the village of Alubari Basty of Derjiling districts and Rudra in Purulia districts.

As per Census of India 2011, in sample villages about 27.9 per cent of the population was male workers and 12.8 percent population were female worker. The percentage share of male workers varied from 94.6 per cent in Rudra to 49.2 per cent in Chekya. WPR varied largely for the females. Female WPR was highest in Chekya (50.8 per cent), followed by Khairipihira (49.2 per cent), Jarasol (48.5 per cent) and Murakati (48.2 per cent) and lowest in Rudra (5.4 per cent) and Srinagar (8.6 per cent).

In Bankura among the eight sample villages percentage share of male agricultural workers was highest in Mitha-Am (92.7 per cent) followed by Chandania (86.1 per cent) and lowest in Panchmura (32.8 percent). The females share was significantly high in Chandania where, about 98.5 per cent of the female workers were engaged in agriculture and was followed by Baramara (85 percent). This share was lowest in Nachna (13 per cent) and Pachmura (43.4 percent). The share of household industry workers was relatively high in Kulupukur for males (12.3 per cent) and in Nachna for females (81.4 per cent). In Pachmura ‘Terracotta’ is a traditional craft household industry of repute and all the ‘Kumbhakar’ households by heredity

are engaged in this activity. The household industry share was lowest in Mitha-Am and Baramara for both males and females. The highest share of male 'other workers' to total workers was 58.7 per cent in Pachmura and for females it was 26.7 per cent in Pachmura.

Table7.3 Employment Pattern of Workers by Sector and Sex in Sample Villages 2011

	Male	% of Male Workers (100)			Female	% of Female Workers (100)		
Name	Workers	AW	HHI	OT	Workers	AW	HH I	OT
Paschim Medinipur								
Murakati	175.0	80.6	3.4	16.0	163.0	77.3	15.3	7.4
Bella	626.0	31.0	6.7	62.3	202.0	53.0	23.8	23.3
Jarasol	123.0	95.1	0.0	4.9	116.0	98.3	0.0	1.7
Phulbani	225.0	94.7	2.7	2.7	173.0	94.8	4.6	0.6
Langa Mara	828.0	80.3	3.0	16.7	508.0	87.2	8.5	4.3
Murakata	352.0	96.6	0.0	3.4	98.0	94.9	0.0	5.1
Kotpada	294.0	91.2	0.0	8.8	72.0	81.9	0.0	18.1
Dakshin Arbana	977.0	73.8	1.3	24.9	205.0	54.6	3.9	41.5
Bankura								
Bantilla	347.0	77.2	3.5	19.3	230.0	96.1	0.0	3.9
Chandania	79.0	86.1	1.3	12.7	65.0	98.5	0.0	1.5
Panchmura	1076.0	32.8	8.5	58.7	251.0	43.4	29.9	26.7
Saldaha	332.0	84.0	0.3	15.7	126.0	93.7	0.8	5.6
Mitha-Am	286.0	92.7	0.0	7.3	160.0	97.5	0.0	2.5
Nachna	324.0	71.6	6.8	21.6	161.0	13.0	81.4	5.6
Baramara	609.0	67.2	1.1	31.7	266.0	85.0	0.0	15.0
Kulupukur	228.0	65.8	12.3	21.9	62.0	53.2	21.0	25.8
Purulia								
Mukundpur	503.0	69.6	2.0	28.4	193.0	62.7	6.7	30.6
Nutandi	482.0	49.0	21.6	29.5	294.0	31.3	65.6	3.1
Rudra	282.0	54.3	1.8	44.0	16.0	56.3	63.0	37.5
Shampur	86.0	37.2	2.3	60.5	79.0	100.0	0.0	0.0
Chekya (CT)	1579.0	6.0	69.3	24.6	1631.0	1.5	91.5	6.9
Dimu	637.0	36.4	22.4	41.1	450.0	18.9	48.0	33.1
Dholkata	365.0	80.3	1.1	18.6	192.0	86.5	0.5	13.0
Khairipihira	885.0	523.0	0.3	47.3	857.0	81.1	1.4	17.5
South 24-Parganas								
Baji Sukdebpur (K)	539.0	37.5	2.8	59.7	96.0	39.6	21.9	38.5
Ramnathpur (K)	894.0	18.1	10.3	71.6	296.0	8.8	41.2	50.0
Srinagar	3139.0	84.0	0.5	15.5	297.0	49.8	9.8	40.4
Srikrishnagar	797.0	73.3	0.8	26.0	80.0	40.0	1.3	58.8
Darjeeling								
Alubari Basty	196.0	4.1	10.7	85.2	67.0	9.0	9.0	82.1
Lebong Tea Garden	594.0	3.4	0.0	96.6	356.0	2.8	0.3	96.9
Mirik Khasmahal (P)	1163.0	69.7	1.5	28.8	667.0	67.3	1.8	30.9
Marma Tea Garden	831.0	29.7	2.0	68.2	656.0	29.7	1.4	68.9

Source: Primary Census Abstract, Census of India 2011, Govt. of India

In Paschim Medinipur district, 96.9 per cent of the rural male workers and 94.9 per cent of the rural female workers were engaged as 'agricultural worker' in Murakata. The percentage share of 'other workers' was also relatively high in Belia (for both males and females).The

share of household industry workers was relatively high in Belia and the contribution was 6.7 per cent for males and 23.8 per cent for females (Table 7.3). Percentage share of rural male worker varies from 82.7 per cent in Dakshin Andia to 51.5 per cent in Jarasol in Paschim Medinipur districts.

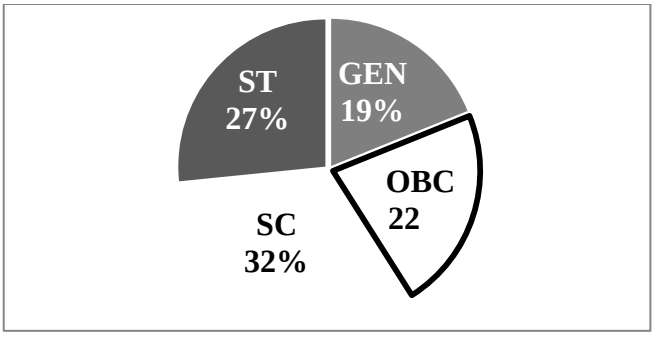
In South-24 Parganas, among four sample villages, percentage share of rural male worker varied from 91.4 per cent in Srinagar to 75.1 per cent in Ramnathpur. It was observed that 84 per cent of the rural male workers and 49.8 per cent of the rural female workers were engaged as 'agricultural worker' in Srinagar. The percentage share of 'other workers' was also relatively high in Ramnathpur (for both males and females).The share of household industry workers was relatively high in Ramnathpur with 10.3 per cent for male and 41.2 per cent for female workers.

In Derjiling districts among the four sample villages percentage share of rural male worker varied from 74.5 per cent in Alubari Basty to 55.9 per cent in Marma Tea garden. Whereas, percentage share of rural female worker varied from 44.1 per cent in Marma Tea garden to 25.5 per cent in Alubari Basty. With high percent that is, 69.7 per cent of the rural male workers and 67.3 per cent of the rural female workers were engaged as 'agricultural worker' in Mirik Khasmahal. The percentage share of 'other workers' was also relatively high in Lebong Tea Garden which was 96.6 for males and 96.9 for females. The share of household industry workers was also relatively high in Alubari Basty village and was 10.7 percent for male workers and for female it was 9.0 percent.

7.2 Profile of Sample Households

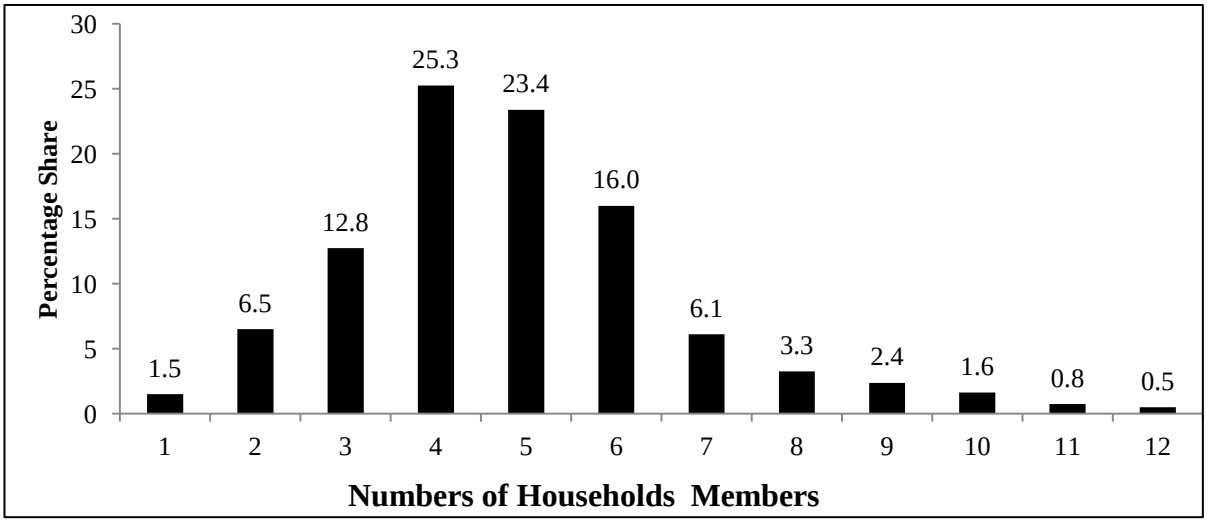
First, the majority of the sample households were Hindu (81.3 per cent) and only nine per cent were Muslim. Among 800 sample households 151 households (19 per cent) belonged to General (GEN) caste, 177 households (22 per cent) to Other Backward Caste (OBC), 259 households (32 per cent) to Schedule Castes (SC) and remaining 213 households (27 per cent) to Scheduled Tribes (ST) category. The distribution of sample households across castes is shown in Figure 7.1.

Figure 7.1 Distribution of Sample Households by Castes in 2016-17



Second, the numbers of members in individual vary from one to twelve, though there are 39.6 per cent households having members from five to six. In only 6 per cent of households number of members was higher than seven. The average number of members of 800 sample households was 5. The entire distribution of sample households by number of members is presented in Figure 7.2.

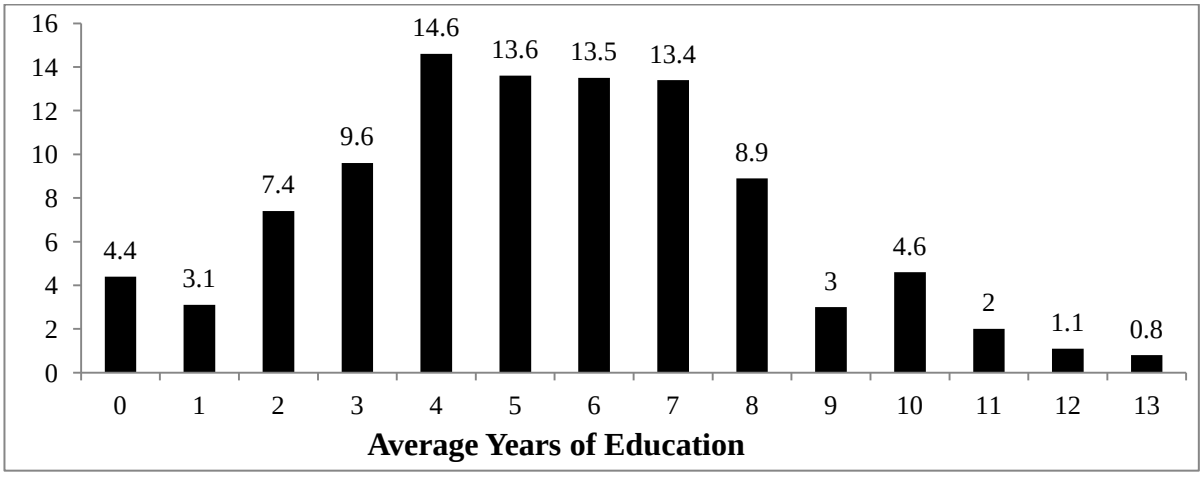
Figure 7.2 Distributions of Sample Households (HHs) by Number of HHs Members



Source: Field Survey 2016-17

Third, education level of the members of sample households was relatively low. Among all the members 4.8 per cent households were illiterate. The average year of education was seven or more for only 33.8 per cent of households. There are 39.1 per cent households having average years of education (average years of schoolings of all members) that is less than 4 years. The share of households with average years of education six years or less was 66.2 per cent (Figure 7.3).

Figure7.3 Distributions of Sample Households (HHs) by Average Years of Education



Source: Field Survey 2016-17

Fourth, the housing condition of the poor households is assessed by the nature of wall and roof and number of rooms (Table 7.4). As many as 58.4 per cent houses had mud wall. The bricks (pakka) walls was been found in only 28.9 per cent households. The roofs of 5.2 per cent houses are of grass or straw, 14.6 per cent were of Tiles and 31.5 per cent were of asbestos. There were only 7.6 per cent households having concrete roof. Majority of the houses (66.9 per cent) were small having one to two rooms. Most of the houses (94.3 per cent) were one-floored. The households who enjoyed the benefit of Pradhan Mantri Awas Yojona had better housing condition but many more were eligible to obtain the benefit of PMAY.

Table 7.4 Housing Conditions of Sample Households

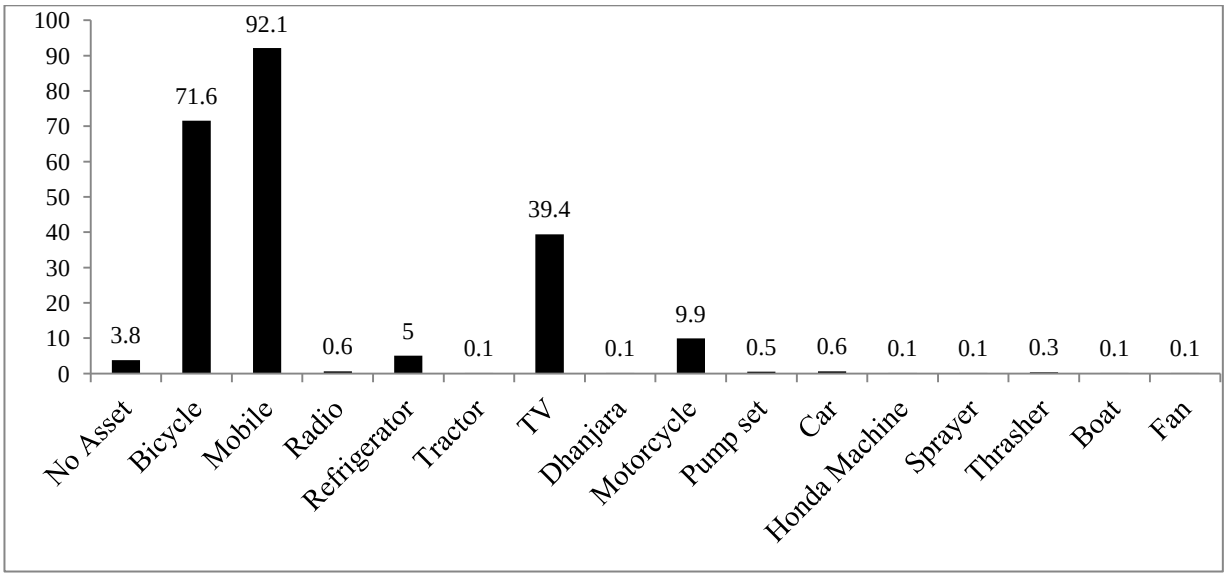
Rooms		House Wall		House Roof	
Number of Rooms	Percentage of HHs	Nature of House Wall	Percentage of HHs	Nature of Roof Top	Percentage of HHs
1	18.3	Grass	0.4	Grass or Straw	5.0
2	48.6	Bamboo	0.6	Bamboo	0.4
3	20	Polyethene Sheet	0.9	Polyethene Sheet	1.4
4	9.6	Mud	58.4	Asbestos	31.5
5	1.9	Wood	5.8	Concrete	7.6
6	1.3	Raw Bricks	2.9	Others	12.0
7	0.1	Stone	1.3	Kharh	17.0
8	0.3	Pakka Bricks	28.9	Tails	14.6
Total	100	Others	1	Tin	10.5

Source: Field Survey 2016-17

Fifth, in case of sanitation facility most of the households were still deprived. Only 43 per cent of households had latrine (either open or close pit) facilities. Electricity does not reach every household even in 2017. There were 87 per cent houses who were electrified and in case of rest of the houses either house-owner were not able to access the electricity or there was no facility of electricity.

Sixth, among 800 sample households 71.6 per cent had bi-cycle, 92.1 per cent had mobile, 39.4 per cent had TV and even 9.9 per cent had motor bike. Other productive assets were hardly found. The pump set for irrigation was found in only 0.5 per cent households and fridge was used by only 5 percent households. The rickshaw and bullock cart were also used as the means of transport but only a few households had these assets (Figure 7.4).

Figure 7.4 Assets owned by the Sample Households



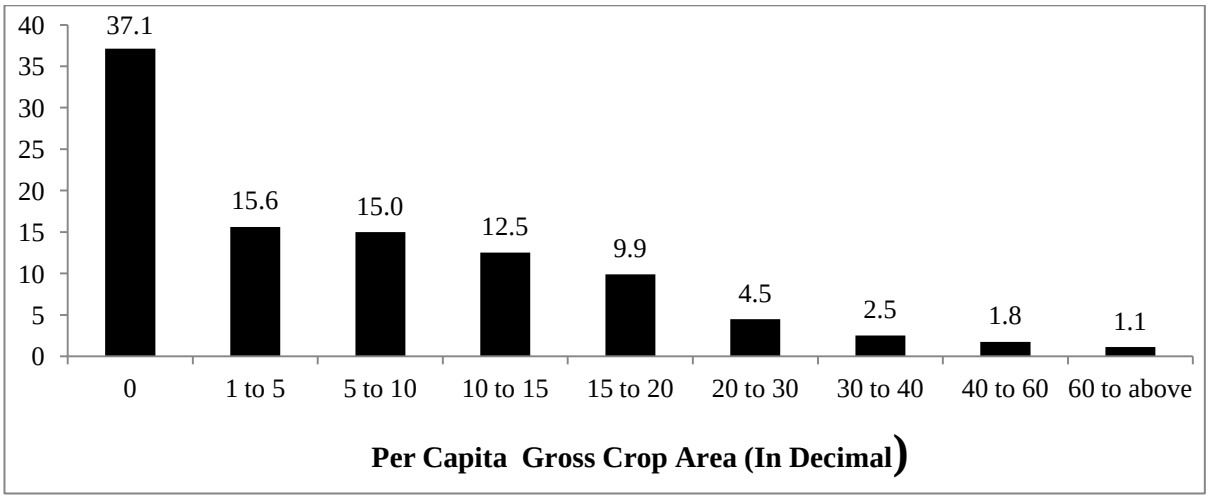
Source: Field Survey 2016-17

7.3 Entitlement of the Sample Households

The cultivable land holding which is the important asset endowment in the rural area was relatively low for most of the sample households. The distribution of sample households by per capita gross cropped area (GCA) is depicted in Figure 7.5. Among 800 sample households in five less developed districts (Paschim Midnapore, Bankura, Purulia, South -24 Parganas and Darjeeling) 37.1 per cent were landless and non-cultivating households. The households with per capita gross cropped area of 10 decimals or less account for 30.6 per cent. Among the rest, most of the households were marginal landholding households. That is, the cultivable land the main asset endowment of rural households was low. Here we estimated the land productivity as the means of exchange entitlement. The exchange entitlement of land was also deficient due to its low productivity.

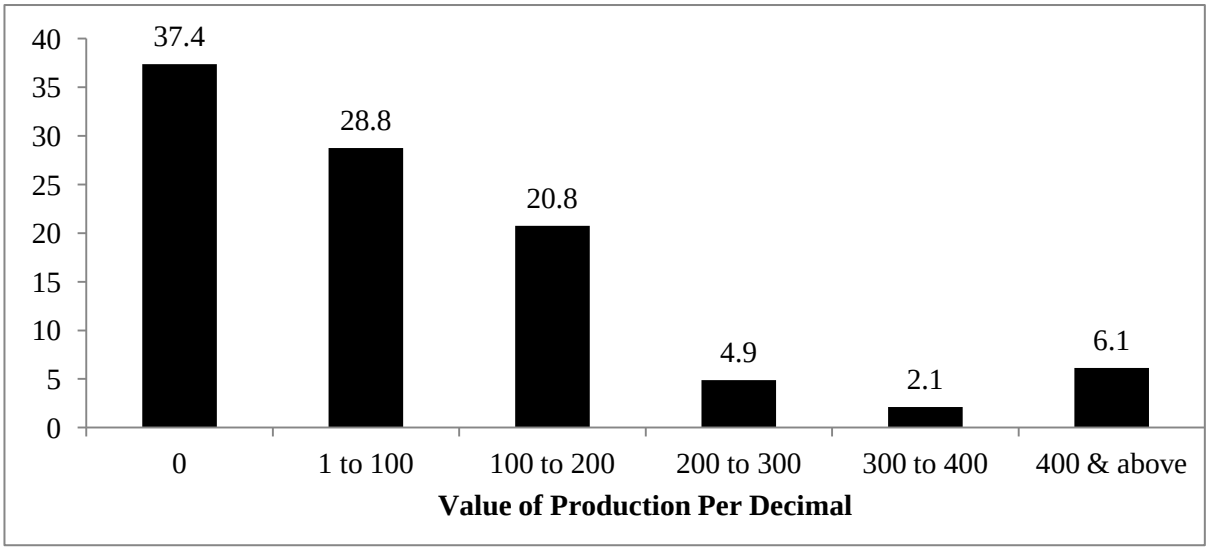
Figure 7.6 depicts the land productivity (value of production per decimal GCA) of cultivating households. The land productivity of 66.2 per cent cultivating households was less than Rs.100. The main reason of this low productivity was that a significant portion of these districts are drought prone, hilly areas and have inadequate irrigation facilities. Now let us see the other means of productions of households.

Figure 7.5 Distribution of Households by per capita Gross Cropped Area (GCA)



Source: Field Survey 2016-17

Figure 7.6 per Decimal Productivity of Land of Sample Households

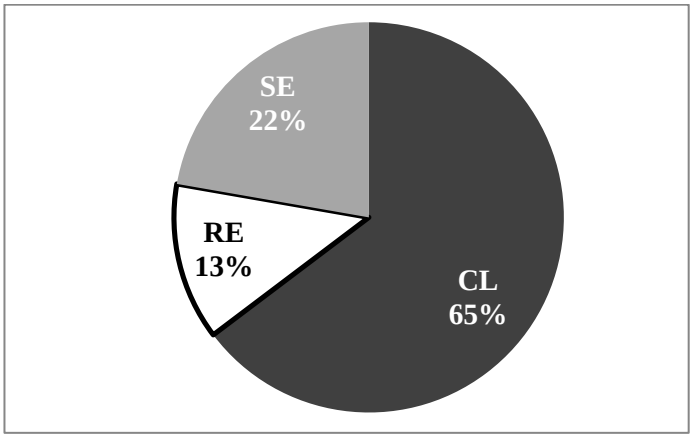


Source: Field Survey 2016-17

Labour Power

The labour power is another most crucial endowment for the rural households. For the deficiency of land and other means of production households depend on their labour power to survive. One's labour power is used either in trade-based or production-based entitlement or in sale for others and sometimes in both. But the majority of the labourers (65 per cent) of sample households were engaged in casual labour. Only 13 per cent of labourers were regularly employed (Figure 7.7). The extent of sale of their labour power and earning varied from one household to another, which also depends upon whether they find employment, and if so for how long and at what wage rate.

Figure 7.7 Distribution of Labour by the Status of Employment in 2016-17



Source: Field Survey 2016-17

Table 7.5 Distribution of Households by Per Day Per Capita Income (Rs) from different Sources (entitlements)

Per Capita Per Day Income (Rs)	labour Income	Income from Agriculture Production	Income from other than Agriculture Production	Income from Trade activities	Income from Asset	Income from CPR	Income from SPS
0	10	309	690	616	464	600	72
1 to10	48	372	58	57	308	182	710
10 to 20	105	74	24	37	16	7	2
20 to 30	144	26	13	29	12	11	16
30 to 40	130	9	5	30	0	0	0
40 to 50	101	3	4	9	0	0	0
50 to 60	56	2	0	10	0	0	0
60 to 70	55	2	4	2	0	0	0
70 to 80	32	1	1	0	0	0	0
80 to 90	42	1	1	2	0	0	0
90 & Above	77	1	0	8	0	0	0
Total	800	800	800	800	800	800	800

Source: Field Survey 2016-17
Note: CPR = Common Property Resources, SPS = Social Protection Schemes

Earnings of the households other than labour entitlement are categorized as production-based entitlement (both agriculture and other than agriculture), trade-based entitlement, transfer entitlement (from common property resources (CPR) and social protection schemes (SPS)) and are presented in Table 7.5. Majority of the households earning are from their sale of labour power. The per capita per day labour income for 1.3 per cent households was zero and other 54.7 per cent household's earning was less than Rs.40 and 32.7 percent of households have earning more than Rs 50. Earning from production was insufficient for majority of the households. The per capita per day income from agriculture production of 38.6 per cent non-cultivating households was zero and other 46.4 per cent household's earning was less than Rs.10.

As many as 86.3 per cent and 77 per cent households were not able to earn from other than agricultural production and trade respectively. CPR is also an important source of earning. Most of the sample villages were located in nearby forest. Forest resources were used by the villagers for their own purpose as well as for sale. Other households who are located near river were also benefited from the river resources. By exchange entitlement mapping, CPRs are transformed into household's income through the process of either production or trade or both. Exchange entitlements also dependent on the exchanges of SPS that the state provides. These SPSs affect the commodity bundle over which a person can have command. The benefits of social protection programmes are also treated here as the earnings of the household. All households, as they fall under the BPL category, have enjoyed the benefit of SPS. There are 88.7 per cent of the households who were benefiting Rs. 1 to Rs.10 and other 2 per cent households were benefiting Rs.10 to Rs.20 per capita per day from SPS.

Table 7.6 Distributions of Households by percentage Share of Income earned from different entitlement

Per Capita Per Day Income (Rs)	labour Income	Income from Agriculture Production	Income from other than Agriculture Production	Income from Trade activities	Income from Asset	Income from CPR	Income from SPS
0	1.3	38.6	86.3	77.0	58.0	75.0	9.0
1 to10	6.0	46.4	7.3	7.0	38.5	22.7	88.7
10 to 20	13.1	9.3	3.0	4.6	2.0	0.9	0.3
20 to 30	18.0	3.3	1.6	3.6	1.5	1.4	2.0
30 to 40	16.3	1.1	0.6	3.8	0.0	0.0	0.0
40 to 50	12.6	0.4	0.5	1.1	0.0	0.0	0.0
50 to 60	7.0	0.3	0.0	1.3	0.0	0.0	0.0
60 to 70	6.9	0.3	0.5	0.3	0.0	0.0	0.0
70 to 80	4.0	0.1	0.1	0.0	0.0	0.0	0.0
80 to 90	5.2	0.1	0.1	0.3	0.0	0.0	0.0
90 & Above	9.6	0.1	0.0	1.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

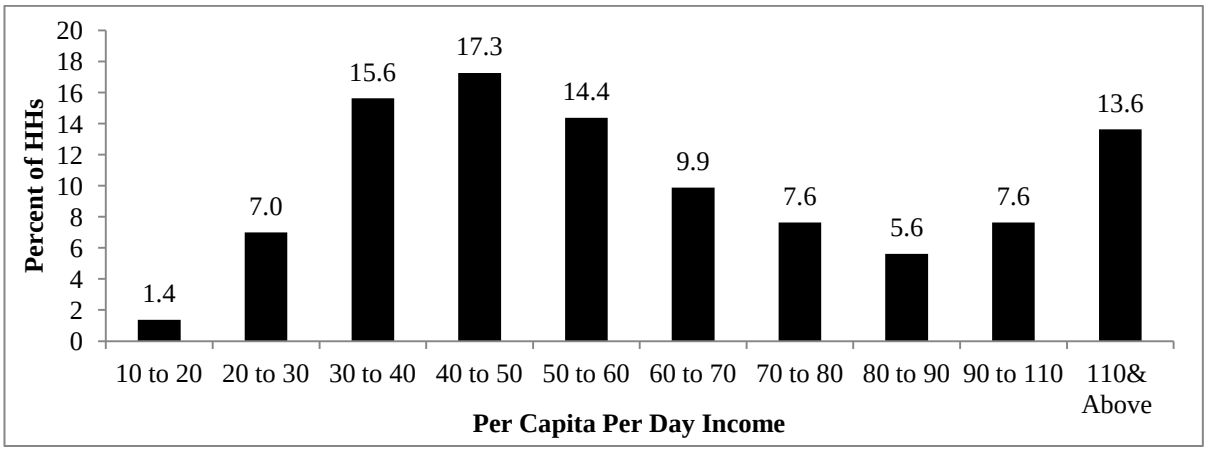
Source: Field Survey 2016-17
Note: CPR = Common Property Resources, SPS = Social Protection Schemes

The relative importance of different entitlements is easily understood from the distribution of households by the share of income from different sources. From Table 7.6, it is evident that labour entitlement and social protection entitlement were relatively more important as compared to others.

Total income of the household is composed of the earning from different entitlements. Distribution of the households by level of income is depicted in Figure 7.8. The median income (per capita per day) of 800 sample households was Rs. 30.3 which was relatively low (where poverty line is the equivalent expenditure of Rs. 36.42 at 2016-17 price). Per capita

per day earning was Rs.30 or less for 7 per cent households and Rs 20 or less for 1.4 per cent households (Figure 7.8).

Figure7.8 Distribution of the households by per capita per day income



Source: Field Survey 2016-17

7.4 Status of Food Security of the Sample Households

In the present study the food insecurity line is estimated from the poverty line. Poverty line is given by the Expert Group under the chairmanship of Rangarajan on behalf of the Planning Commission of India (Planning Commission, 2014). The methodology is based on an exogenously determined poverty line expressed in terms of per capita consumption expenditure in a month. The Expert Committee gave two separate consumption baskets for the rural and urban areas in India as well as the state specific rural and urban poverty lines for the years 2004-05 and 2011-12. The budget share of food items around Poverty Line Class across the states of India is considered as a food insecurity line (Das & Basar, 2018). The food insecurity line (FIL) was the minimum amount of monetary value for a person's minimum food requirement during a month. The food insecurity line (FIL) is derived from poverty line as follows

$$\boldsymbol{FIL_{ij} = PL_{ij} * X_{ij}} \qquad \text{[i= 1, 2...28 and j=1, 2]}$$

Where FIL_{ij} is the food insecurity line of the i-th state in the j-th region

PL_{ij} is the poverty line of the i-th state in the j-th region and

X_{ij} is the share of food of the i-th state in the j-th region.

Percentage share of food basket in total consumption expenditure of poverty line class of rural West Bengal in 2011-12 was 60.4 per cent. The poverty line in West Bengal was Rs.783 in the rural area in 2011-12. The estimated food insecurity line (FIL) in West Bengal was Rs. 472.9 for the rural area in 2011-12. To find out the poverty as well as food insecurity line in 2016-17, the rural state poverty line was updated first with Consumer Price Index for

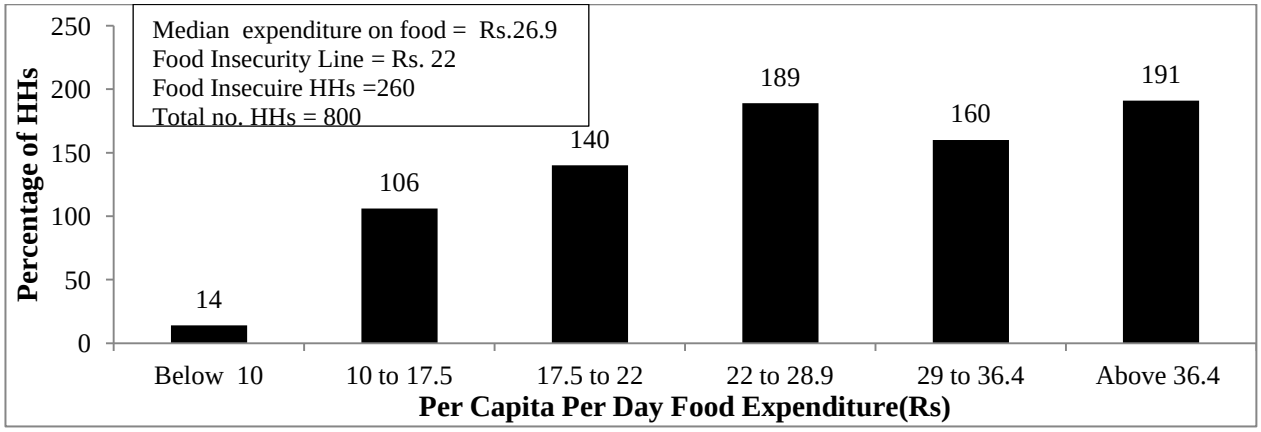
Agricultural Labourers (CPIAL). The poverty line of rural West Bengal became Rs. 1092.6 in 2016-17. Then 60.4 per cent budget shares of the poverty line was calculated to draw food insecurity line for each corresponding year. The estimated food insecurity lines were thus Rs. 524.5 and Rs. 659.9 respectively (Table 7.7).

Table 7.7 Poverty and Food security line of rural West Bengal, 2016-17

	2016-17
Poverty Line	1092.6
Food Security Line	659.9

Sources: Report of the Expert Group to Review the Methodology for Measurement of Poverty, Planning Commission, Government of India, 2009 and 2014

Figure 7.9 Distributions of Sample Households by Per Capita per Day Food Expenditure in 2016-17



Source: Field Survey 2016-17

The distribution of per capita monthly food expenditure of 800 sample households is shown in Figure 7.9. The median food expenditure (per capita per day) of the households is Rs.26.9 which was high as compared to food insecurity line of Rs.22. Among 800 sample households, 540 households were foods secure and 260 households were food insecure. Their entitlements were not able to command the minimum requirement of food.

Table 7.8 Status of Food Security of the Sample Households across the Districts in 2016-17

	IFI	**FIG**	**SFIG**
Bankura	47.4	11.7	0.02
Purulia	50.4	13.4	0.02
Paschim Medinipur	36.1	7.0	0.01
South 24 Parganas	23.6	7.1	0.01
Derjiling	8.5	0.5	0.00
Total	38.3	9.3	0.01

Source: Field Survey 2016-17

On the basis of the sample survey we have estimated the percentage share of food insecure people (IFI), food insecurity gap (FIG) and square food insecurity gap (SFIG). Among the five districts three backward districts namely Bankura, Purulia and Paschim Medinipur constitute the Jangalmahal Region. Incidence of food insecurity, food insecurity gap and

squared food insecurity gap were relatively high in Purulia districts, followed by Bankura and Paschim Medinipur. Least food insecure people were found in the Derjiling districts. The overall food insecure people were 38.3 per cent of the entire sample households (Table 7.8).

Table 7.9 Status of Food Security of the Sample Households across Social caste in 2016-17

	IFI	FIG	SFIG
General	41.6	9.4	0.01
OBC	42.1	10.3	0.02
SC	38.9	10.3	0.02
ST	31.8	6.9	0.01
Total	38.3	9.3	0.01

Source: Field Survey 2016-17

Number of food insecure households (FISH) varied across social classes. About 38 per cent general caste households, 34 per cent OBC households, 32 per cent SC households and 28 per cent ST households were food insecure. Food insecure people were relatively high for OBC (42.1 percent) and GEN (41.6 per cent). For the entire sample the incidence of food insecurity was 38.3 per cent. Food insecurity gap and squared food insecurity gap were also high for the OBCs and STs (which is shown in Table 7.9 & Table 7.10).

Table 7.10 Status of Food Insecurity of Sample Households by Caste in 2016-17

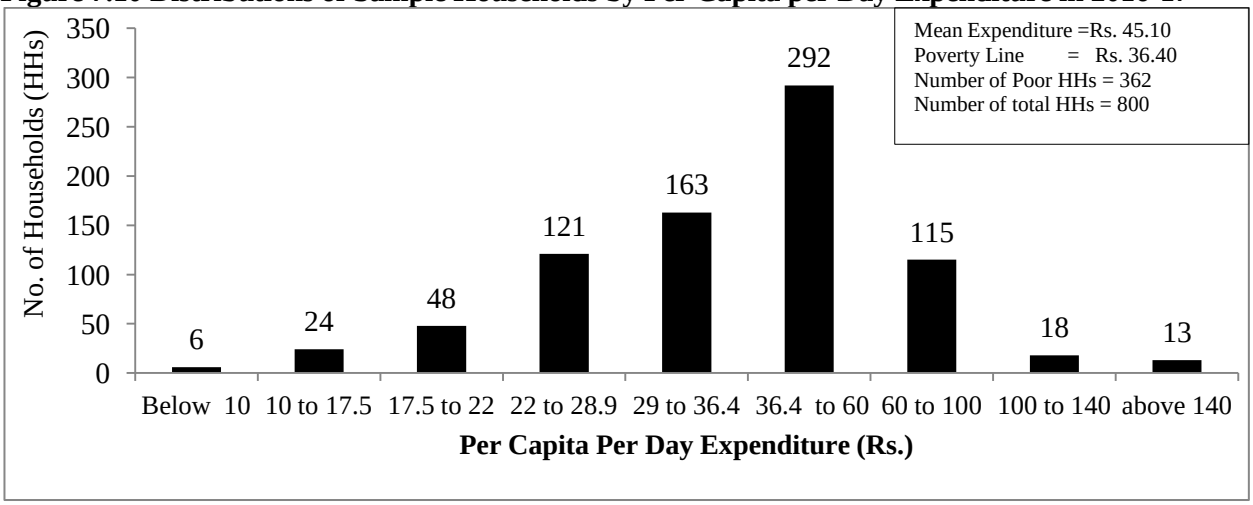
	GEN	OBC	SC	ST	Total
Total number of households	152	176	259	213	800
Total food insecure households	58	59	83	60	260
Share of food insecure households	38	34	32	28	33
Incidence of food insecurity	41.6	42.1	38.9	31.8	38.3
Food insecurity gap	9.4	10.3	10.3	6.9	9.3
Squared food insecurity gap	0.01	0.02	0.02	0.01	0.01
Share of food insecurity (%)	20.1	25.6	32.9	21.4	100
Decomposition of food insecurity (%)	7.7	9.8	12.6	8.2	38.3

Source: Field Survey 2016-17

7.5 Status of Monetary Poverty of the Sample Households

The distribution of per capita per day consumption expenditure (PCPDE) of 800 sample households is shown below in Figure 7.10. In our sample, as we noted earlier, on the basis of per capita per day expenditure the estimated poor households were 362 in 2016-17. The average PCPDE of the households was Rs. 45.10 and the rural poverty line was Rs.36.42 (per capita per day). There were 362 households whose PCPDE was below the poverty line. The entitlements of these households are not enough to command the minimum requirement of consumption.

Figure 7.10 Distributions of Sample Households by Per Capita per Day Expenditure in 2016-17



Source: Field Survey 2016-17

Table 7.11 Status of Poverty of Sample Households across the Districts in 2016-17

	Head Count Ratio	Poverty Gap	Squared Poverty Gap
Bankura	59.2	18.5	0.017
Purulia	60.5	17.5	0.016
Paschim Medinipur	51.5	10.6	0.010
South 24 Parganas	30.9	9.3	0.009
Derjiling	10.0	0.9	0.001
Total	48.7	13.3	0.012

Source: Field Survey 2016-17

We have estimated the status of poverty on the basis of sample households of five sample districts in 2016-17 (Table 7.11). Head count ratio or the percentage of poor people was found to be highest in Purulia (60.5 per cent) and Bankura (59.2 per cent) districts. Poverty gap and squared poverty gap were also high in Bankura and Purulia districts. Percentage of poor people were the lowest in Derjiling districts which was only 10.0 per cent. Poverty gap and squared poverty gap were also the lowest in Derjiling districts.

Status of Poverty of Sample Households across Castes in 2016-17

Here we have estimated the status of poor people across social castes on the basis of the sample households in Table 7.12. Our subgroup analysis reveals that across social classes the number of poor households was relatively high for GEN (44.7 per cent), SC (42.3 per cent) followed by, OBC (42.6 per cent) and little lower for ST (42.3 per cent). The head count ratio (HCR) was also high for SC, OBC and GEN – 50.3 per cent, 49.3 per cent and 47.8 per cent respectively whereas for ST it was 46.7 per cent. Among the five sample districts number of STs were substantially high (71 per cent of total population according to Census 2011) in Darjeeling and the HCR of the sample households were also low (10 per cent) in this district.

Therefore, as a whole (for entire sample) the HCR of STs was relatively low. However, the HCR of STs of Purulia, Bankura, Paschim Midnapore and South-24 Parganas were higher than that of other social castes. Poverty gap (PGP) and squared poverty gap (SPGP) were also high for the SCs and OBCs (Table 7.12). That is, the poverty risk was relatively high for SCs and OBCs than others.

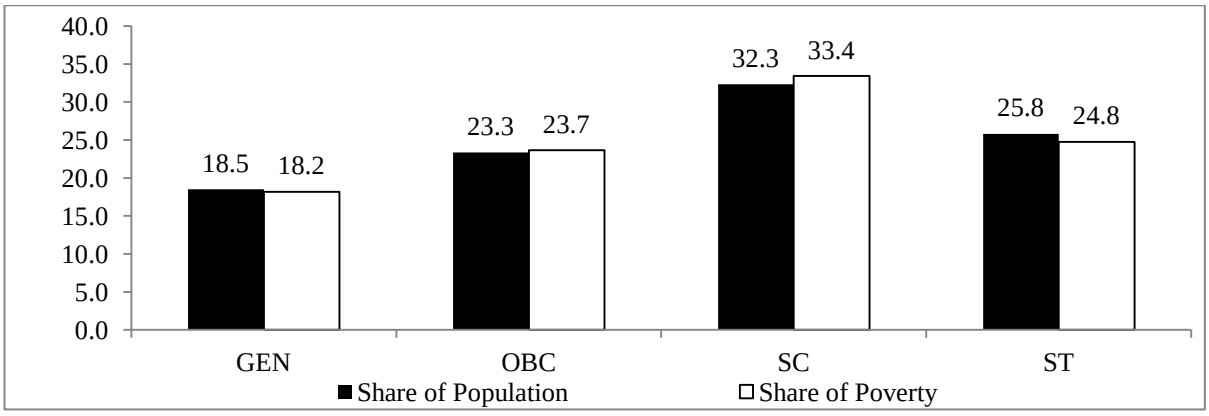
Table 7.12 Status of Poverty of Sample Households by Castes in 2016-17

	GEN	OBC	SC	ST	Grand Total
Total number of HHs	152	176	259	213	800
Number of Poor HHs	68	75	112	90	345
Percent of Poor HHs	44.7	42.6	43.2	42.3	43.1
Head Count Ratio	47.8	49.3	50.3	46.7	48.7
Poverty Gap	12.7	14.4	14.5	11.0	13.3
Squared Poverty Gap	0.012	0.013	0.013	0.010	0.012
Share of Poverty	18.2	23.7	33.4	24.8	100.0
Decomposition of Poverty	8.8	11.5	16.3	12.1	48.7

Source: Field Survey 2016-17

Among the social castes the share of poor people was higher than the share of population for STs. For SCs, Gen, and OBC the shares of population were higher than the shares of poor (Figure 7.11).

Figure 7.11 Percentage Share of Poor in comparison to Percentage Share of Population across Castes



Source: Field Survey 2016-17

7.6 Status of Multidimensional Poverty and Deprivations

7.6.1 Methodology of Measurement of Multidimensional Poverty

The Oxford Poverty and Human Development Initiative (OPHI) has developed a new international measure of poverty – the Multidimensional Poverty Index (MPI) – for the 20th Anniversary edition of the United Nations Development Programme's flagship Human Development Report. The international Multidimensional Poverty Index (MPI), which was developed by Alkire and Santos (2010, 2013) in collaboration with the UNDP and first

appeared in the *Human Development Report* 2010, is one particular adaptation of the adjusted headcount ratio (M_o) as proposed by Alkire and Foster (2011).

The Multidimensional Poverty Index (MPI) identifies multiple deprivations at the individual level in education, health and standard of living. It uses micro data from household surveys, and—unlike the Inequality-adjusted Human Development Index—all the indicators needed to construct the measure must come from the same survey (more details can be found in Alkire and Santos 2010). The international MPI is an adaptation of a particular choice of indicators, deprivation cutoffs and relative weights, and a poverty cutoff. The international MPI is based on ten indicators grouped into three dimensions reported in Table 7.13. The first column reports three dimensions: health, education and standard of living. The second column reports ten indicators. Each dimension is equally weighted and indicators within each dimension are also equally weighted. The third column reports the deprivation cutoff of each of the ten indicators.

Table 7.13 Dimensions, Indicators, Deprivation Cutoffs and Weights of the International MPI

Dimension (Weight)	*Indicator (Weight)*	*Deprivation Cutoff*
Education (1/3)	Schooling (1/6)	No household member has completed six years of schooling
	Attendance (1/6)	Any school-aged child in the household is not attending school up to class VIII
Health (1/3)	Nutrition (1/6)	One household member who is malnourished
	Mortality (1/6)	Any child has passed away in the household
Standard of Living (1/3)	Electricity (1/18)	The household has no electricity
	Water (1/18	The household does not have access to safe drinking water or safe water is more than a 30-minute walk (round trip)
	Sanitation(1/18)	The household's sanitation facility is not improved or it is shared with other households
	Flooring (1/18)	The household has a dirt, sand or dung floor
	Cooking fuel (1/18)	The household cooks with dung, wood or charcoal
	Assets (1/18)	The household does not own more than one of: radio, telephone, TV, bike, motorbike or refrigerator; and does not own a car or truck

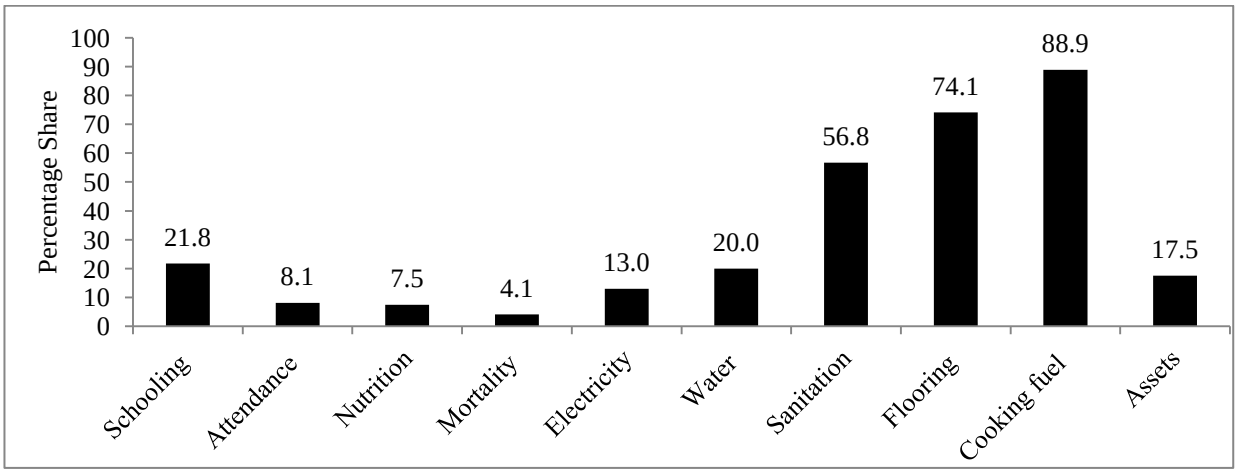
Source: Alkire, Roche, Santos, and Seth (2011)

7.6.2 Empirical Findings of Multidimensional Poverty

We have made an attempt to measure the Multidimensional Poverty Index (MPI) on the basis of field survey data of 800 sample households. For each household we have collected the response in respect of ten specified indicators of MPI under three dimensions (as given in Table 7.13).

According to the MPI measurement a household is deprived or poor in respect of a particular indicator if the deprivation score is more or equal to 33.3 per cent. Percentage share of deprived (poor) households across different indicators of MPI is shown in Figure 7.12. The percentage share of deprived households was significantly high in respect of the indicators namely cooking fuel (89 per cent), flooring (74.1 per cent) and sanitation (56.8 per cent). Most of the sample households in the village have used natural products for their cooking therefore, the deprivated households were significantly higher in case of cooking fuel. There were 56.8 per cent household's having no sanitation facility so they either use open space or that of other households.

Figure 7.12 Percentage Shares of Deprived Households across Indicators in 2016-17

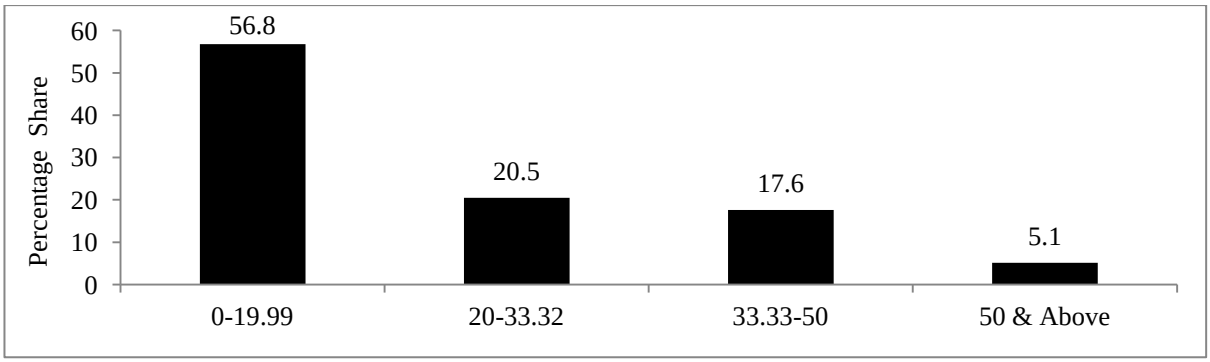


Source: Field Survey 2016-17

To identify the multidimensionally poor the deprivation scores for each household are summed to obtain the household deprivation that is '**c**'. A cut-off of 33.3 per cent which is the equivalent of one-third of the weighted indicators is used to distinguish between the multidimensional poor and the non-poor. If c is 33.3 per cent or greater the household (and everyone in it) is consider as multidimensionally poor. Households with a deprivation score greater than or equal to 20 per cent but less than 33.3 per cent are vulnerable to or at risk of becoming multidimensionally poor. Households with a deprivation score of 50 per cent or higher are severely multidimensional poor. For the sample 800 households the percentage

share of households being severely multidimensionally poor was 5.1 in 2015-16 (Figure 7.13).

Figure7.13 Distribution of Sample Households by their Deprivations Scores in 2016-17



Source: Field Survey 2016-17

Multidimensional HCR, intensity of multidimensional poverty and multidimensional poverty index (MPI) of the 800 sample households across the districts is represented in Table 7.14. The multidimensional HCR, intensity of poverty and MPI of the households were higher for the sample households of Purulia districts. The overall multidimensional HCR and the MPI of the sample households were 21.8 and 0.10 respectively (Table 7.14).

Table 7.14 Status of Multidimensional Poor of the Sample Households across the districts in 2016-17

Districts	Multidimensional Head Count Ratio (%)	Intensity of Multidimensional Poverty (%)	MPI
Bankura	24.1	43.3	0.10
Purulia	31.2	45.0	0.14
Paschim Medinipur	18.8	43.2	0.08
North-24_Porgonas	17.8	40.1	0.07
Darjeeling	4.1	42.7	0.02
Grand Total	21.8	43.6	0.10

Source: Field Survey 2016-17.

The monetary measurement of poverty was substantially higher than multidimensional poverty for sample households. The monetary HCR was 50.8 per cent compared to multidimensional HCR which was 21.8 per cent. Across the social groups multidimensional HCR was higher for STs and OBCs whereas monetary HCR was higher for SCs and OBCs (Table 7.15).

Table 7.15 MPI Indicators of the Sample Households (HHs) in 2016-17

	GEN	OBC	SC	ST	Total
Multidimensional Head Count Ratio (%)	17.2	21.6	20.3	27.1	21.8
Intensity of Multidimensional Poverty (%)	43.5	43.9	39.6	47.3	43.6
MPI	0.07	0.10	0.08	0.13	0.10
Monetary Head Count Ratio (%)	49.0	49.9	54.2	48.5	50.8

Source: Field Survey 2016-17

On the basis of total deprivation scores (k) we have categorized the sample households across the social groups into four categories, viz., multidimensional non poor, vulnerable to multidimensional poor, ordinary multidimensional poor and severely multidimensional poor (Table 7.16). The percentage share of vulnerable to poor households, multidimensionally deprived households and severely poor households were 20.5 per cent, 17.6 per cent and 5.1 per cent respectively. The percentage share of ST households belonging in the categories of higher degree of deprivations was relatively high for STs.

Table 7.16 Status of Multidimensional Poverty of the Sample Households across Castes in 2016-17

	GEN	OBC	SC	ST	Total
Multidimensional Non Poor ($0 \leq k < 20.00$)	61.6	55.4	60.6	49.8	56.8
Vulnerable to Multidimensional Poor ($20.00 \leq k < 33.33$)	18.5	22.0	21.2	19.7	20.5
Ordinary Multidimensional Poor ($33.33 \leq k < 50.00$)	14.6	19.2	15.8	20.7	17.6
Severely Multidimensional Poor ($k \geq 50.00$)	5.3	3.4	2.3	9.9	5.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Field Survey 2016-17.

7.7 Relationship among Poverty, Food Security and Multidimensional Poverty

Relationship between Poverty and Food Security

The present section discusses the relationship between the status of poverty and the status of food insecurity. The estimations of the food secure and insecure households as well as poor and non-poor households on the basis of monetary measurement are presented in Table 7.17. Out of total 800 sample households 43.1 per cent households were poor and 56.9 per cent household were non-poor. On the other hand, 67.6 per cent households was food secure and 32.4 per cent households were food insecure. Among total sample households 54.8 per cent were non poor as well as food secure and about 30.3 per cent people were poor as well as food insecure. There were 2.1 percent households who were non poor but food insecure. They had the purchasing power but they spent more on non-food then food items, therefore, they were food insecure.

Table 7.17 Poor vs. Food Secure across the sample households in 2016-17.

	Food Secure	Food Insecure	Total
Poor	12.8	30.3	43.1
Non Poor	54.8	2.1	56.9
Total	67.6	32.4	100

Source: Field Survey 2016-17

Relationship between Monetary Poverty and Multidimensional Poverty

The estimations of poor and non-poor on the basis of monetary and multidimensional measurement of poverty are presented in Table 7.18. Among 43.1 per cent monetary poor households 13.6 percent was multidimensional poor and 29.5 per cent was

multidimensionally non poor. Whereas among 22.7 per cent multidimensional poor households, 13.6 per cent was monetary poor and 9.1 per cent was monetary noon poor. A significant percentage of households (29.5 per cent) were monetary poor but non poor in multidimensional measurement. Similarly, 9.1 per cent households was monetary non poor but poor in multidimensional measurement. Therefore, not only monetary measurement but also the multidimensional measurement is important for effective policy targeting.

Table 7.18 Monetary Poor vs. Multidimensional Poor across the sample households in 2016-17

	Monetary Poor	Monetary Non-Poor	Total
Multidimensional Poor	13.6	9.1	22.7
Multidimensional Non-Poor	29.5	47.8	77.3
Total	43.1	56.9	100

Source: Field Survey 2016-17.

7.8 Role of SPPs to Overcome Poverty and Deprivation

7.8.1 Social Protection Programmes and Their Benefits

Social protection is a powerful instrument for poverty reduction and social cohesion. Social transfers can directly and immediately reduce vulnerability and are effective tool to fight poverty. Cash transfers that bring about improvements in children's health, nutrition and education have long-term effects on productivity and earnings, and thus contributes in breaking the intergenerational poverty cycle. In the last two decades, there has been an increase in the number of large-scale social protection programmes (SPPs) in India. Moreover, these programmes make a significant contribution to address poverty and deprivation among the poor and poorest households.

We have discussed social protection benefits at the household level and individual level to show at what extent the households (specifically poor households) are benefited from social protection programmes. The major problem of this analysis is that the data on benefits derived by the households from different social protection programmes are not available in the secondary data. Therefore, for the sake of an analyzing the social protection benefits at the households and individual level, specifically for the poor households, which is needed for an evaluation of social protection benefits of the poor is done on the basis of grass root reality. This is what is done in this chapter which is based on the field survey data collected from 24 sample villages and 600 households of 12 sample blocks in the three backward districts of West Bengal namely Purulia, Bankura and Paschim Medinipur. The households have been surveyed in 2016-17 to analyse the extent of social protection benefits (SPBs) along with other entitlements of the households and their resultant outcomes on poverty and deprivation.

Table 7.19 Scope, Coverage and Extent of Social Protection Programme, 2012-13 & 2016-17

	Scope (%)		Coverage (%)		Extent (Average Benefit per month in Rs.)	
	2016-17		2016-17		2016-17	
	HHs	Person	HHs	Person	HHs	Person
A. Food Related Programme						
1. TPDS for BPL Ration Card Holders	86	83	96	90	559	122
2.TPDS under Antyodaya Anna Yojana (AAY)	11	10	100	91	366	86
3.TPDS under Annapurna Yojana (AY)	14	13	70	61	657	157
4.TPDS for APL Ration Card Holders	9	2	6	13	651	217
B. Health Related Programme						
5 Rural Primary Health Care	100	100	86	84	NE	NE
6. Janani Suraksha Yolana (JSY)	19	6	83	74	83	54
7. Total Sanitation Campaign (TSC)	100	100	15	15	740	146
C. Education Related Programme						
8. Integrated Child Development Services (ICDS)	23	6	92	89	339	259
9.Sishu Siksha Karmasuchi (SSK) and Madhyamik Siksha Karmasuchi (MSK)	51	17	95	96	NE	NE
10. Mid Day Meal (MDM)	49	16	95	94	392	235
11.Free Books	57	20	87	87	68	37
12.Other Grants	46	15	41	42	112	65
13. Minority	4	1	56	62	250	125
D. Housing Related Programme						
14. Indira Awas Yojana (IAY)	30	28	61	64	7235	1482
E. Economic Security Related Programme						
15. National Rural Employment Guarantee Act (NREGA)	89	45	50	50	524	204
16. Self Help Group (SHG)	54	15	34	36	NE	NE
17. Non-timber Forest Produces(NTFP)	46.7	46.7	66	67	65	13
F. Social Security Related Programme						
18. National Old Age Pension Scheme(NOAPS)	19	5	49	48	583	427
19. National Family Benefit Scheme(NFBS)	1	1	0	0	NE	NE
20. National Widow Pension Scheme (NWPS)	15	3	14	14	469	430
21. National Disability Pension Scheme (NDPS)	2	0	25	25	150	150
22 .Indira Gandhi Matritya Sahayog Yojana (IGMSY)	8	2	33	33	207	207
23 .Bi-Cycle for Tribal Girl's	26	7	64	59	194	155
24. Kannashri	15	3	30	28	1205	1085

Source: Authors calculation from Field Survey Data, 2016-17.

Note: NE = Not Estimated, i.e., the benefit of this programmes is not measured in the monetary term.

The benefits of different social protection programmes for 600 sample households are shown in Table 7.19. List of the social protections are not exhaustive. Here we have listed programmes which carry benefit to at least one sample household. Accordingly, to our sample survey we have observed 24 social protection programmes in 2016-17. For each programme we have estimated the average amount of benefit per household (or per person) in

Rupees. The monetary benefits of some of the programmes are not estimable (NE) though their benefits have been considered to assess the impact of SPPs on multidimensional poverty and deprivations.

Table 7.20 Distribution of the households by per capita per month income (Rs.) with SPBs and without SPBs, 2016-17

Per Capita Per Month(Rs.)	Presence of SPBs		Absence of SPBs	
	HHS	Percentage Share	HHS	Percentage Share
Less than 300	0	0.0	0	0.0
300.1 to 600	11	1.8	35	5.8
600.1 to 900	54	9.0	110	18.3
900.1 to 1200	111	18.5	119	19.8
1200.1 to 1500	126	21.0	120	20.0
1500.1 & Above	298	49.7	216	36.0
Total	600	100	600	100

Source: Field Survey 2016-17.

The contribution of social protection benefits to the household's income is realized by comparing between the income without social protection benefits (SPBs) and income with social protection benefits. In 2016-17, the average per capita per month income (PCPMI) of 600 sample households has been estimated to be Rs. 1552 without SPBs and Rs. 1691 with SPBs. When the SPBs are added with income, the percentage shares of the households with lower ranges have declined significantly. Overtime SPBs uplifts the households to the upper income groups (Table 7.20).

7.8.2 Status of Monetary Poverty of the Sample Households in relation to SPPs

The role of social protection programmes on poverty is analyzed by comparing the status of poverty in presence of SPBs with that of the status of poverty in absence of SPBs (as given in Table 7.21 and Table 7.22). The percentage share of poor has decreased from 59.9 per cent in absence of SPBs to 57.4 per cent in presence of SPBs. FIG and SFIG of the sample households have also decreased with the presence of SPBs. That is, the benefits from social protection programmes (SPPs) have reduced the incidence of poverty to the extent of 2.5 per cent. That is, with the help of entire SPBs only 2.5 per cent poor households can overcome poverty. This raises the question in regards to the effectiveness of SPPs on poor households. The leakages and inefficient delivery mechanisms are the main reasons for the insignificant effect of SPPs on poor households. The extent of the benefit of social protection floor in the backward region has only partially succeeded to overcome poverty of the BPL households.

Table 7.21 Status of Monetary poverty of the sample households in 2016-17

	Absences of Social Protection Programmes(SPPs)	Presence of Social Protection Programmes(SPPs)
Head Count Ratio(HCR)	59.9	57.4
Poverty Gap(PG)	17.1	15.8
Squared Poverty Gap(SPG)	0.016	0.011

Source: Field Survey 2016-17.

Table 7.22 Status of Monetary poverty of the sample households by Caste in 2012-13 and 2016-17

	Absences of Social Protection Programmes				Presence of Social Protection Programmes			
	General	OBC	SC	ST	General	OBC	SC	ST
Head Count Ratio(HCR)	56.4	57	64.1	59.9	54.6	56	59	57.6
Poverty Gap(PG)	17	17.8	18.1	15.2	15.4	16.8	16.7	14
Squared Poverty Gap(SPG)	0.016	0.016	0.017	0.014	0.014	0.015	0.015	0.013
Share of Population	17	24.7	32.1	26.3	17	24.7	32.1	26.3
Total Households	107	133	192	168	107	133	192	168
Poor Households	56	70	108	90	54	70	98	87
Share of Poverty	16	23.5	34.3	26.3	16.2	24.5	33	26.4
Decomposition of Poverty	9.6	14.1	20.6	15.7	9.3	14.1	18.9	15.1

Source: Field Survey 2016-17.

7.8.3 Econometric analysis of Monetary Poverty

The Specification of the Variables in the Model

The variables identified to capture these processes and their specifications are presented in Table 7.23. To estimate the Head Count Ratio (HCR) and Poverty Gap (PG) of the households four sets of independent variables have been included in the regression equations. The factor hypothesized to influence the status of poverty can be grouped into four categories: cultural, social, demographic and economic factor. Cultural Factor is specified as average education (YED) level of the households. The social factors are specified by the castes of the households. Three demographic factors are used in our analysis: size of the households (HHSZ), age of the head of the household (AGEH) and square age of the head of the household (SAGEH). Economic factors are specified as the household's earnings from production from agriculture and non-agriculture (PCPMPI), labour power (PCPMLI), trade (PCPMTI), asset and common property resources (PCPMRI), share food expenditure to total expenditure (SFE), social protection benefits (PCPMSPI) and per capita cultivable land (PCLAND). These entitlements create command over the household with higher entitlements to overcome poverty. The entitlement also includes transfer entitlement from the government in the form of social protection benefits.

Table 7.23 Notation, Specification and Descriptive Statistics of Variables Used in Regression Analysis at the household level

		2016-17			
Notation	Specification	MAX	MIN	Mean	SD
Dependent Variable					
Poor	Whether the household is poor (yes=1, No=0)	1.0	0.0	0.5	0.5
Poverty GAP	Poverty gap of the household	1.0	0.0	0.1	0.2
Independent Variable					
Cultural Factors					
AVEG	Average education level of the households	13.4	0.0	4.4	2.5
Demographic Factors					
HHSZ	Size of the households	12.0	1.0	5.0	1.9
HAGE	Age of the head of the households	94.0	27.0	52.3	12.4
SHAGE	Squared age of head of the households	8836.0	729.0	2889.0	1377.2
Social Factors					
SC & ST	Whether the household belongs to SC or St family or not(yes=1, No=0)	1.0	0.0	0.6	0.5
Economic Factors					
PCLAND	Per Capita Cultivable Land of Households	98.0	0.0	10.0	13.3
PCPMLI	Per Capita Per month labour income	24500	0.0	1206.6	1765.8
PCPMPI	Per Capita Per month agricultural income and Other agricultural income	8333.3	0.0	250.8	603.6
PCPMTI	Per Capita Per month Trade income	8333.3	0.0	158.8	583.0
PCPMRI	Per Capita Per month income from asset and common property resources	1681.3	0.0	97.8	236.6
PCPMSPPI	Per Capita Per month income from social protection Programmes	1631.0	0.0	246.3	182.9

The Empirical Results: Estimation of Heckman Two-Step

Heckman two-step model helps us to determine the poverty and the poverty gap. The two-step model is also useful to test selectivity bias (if any). Heckman (1979) noted that the sample selection bias might arise in practice for two reasons. *First*, there may be self-selection by the individuals or data units being investigated. *Second*, sample selection decisions by analysts or data processors operate in more or less the same fashion as self-selection. There is no selectivity bias if the coefficient of ***Inverse Mills Ratio (λ)*** is statistically not significant. The software package ***STATA*** offers the possibility to use the Heckman two-step procedure. The empirical results of Heckman selection model – two-step estimates (regression model with sample selection) are presented in Table 7.24. In Table 7.24, the lower panel presents the results of Probit estimation of poverty (HCR) and in the upper panel is the estimation of poverty gap (PG) that examines the impact of entitlements of

the households on poverty and poverty gap respectively. The ***Inverse Mills Ratio*** is not significant, it implies that there is no selectivity bias.

Our results indicate that the household's demographic, cultural, social and economic factor plays an important role in reducing poverty or poverty gap. We find statistically significant coefficient of HHSZ, AVEG, HAGE, ST&SC, SHAGE, PCLAND, SFE, PCPMLI, PCPMPI, PCPMTI and PCPMSPPI for poverty and HHSZ, AVEG, HAGE, SHAGE, SFE, PCPMLI, PCPMPI, PCPMTI and PCPMSPPI for poverty gap. The result suggests that as the income from labour (PCPMLI), production (PCPMPI), trade (PCPMTI), social protection benefit (PCPMSPPI) and the average years of schooling (AVEG) of the households increases, the probability of the percentage of poor people as well as poverty gap (PG) of the household decreases.

Table 7.24 Heckman Selection Model- Two step Estimates based on STATA

Dependent Variable	Independent Variable	Coefficient	Z stat	P>z	
Poverty Gap	AVEG	-0.0170	-3.530	0.000	
	HHSZ	0.0430	5.640	0.000	
	HAGE	-0.0094	-2.430	0.015	
	SHAGE	0.0001	2.470	0.014	
	PCLAND	-0.0024	-2.810	0.005	
	PCPMLI	-0.0001	-4.330	0.000	
	PCPMPI	-0.0001	-2.440	0.015	
	PCPMTI	-0.0002	-3.740	0.000	Number of Observation = 1200
	PCPMRI	0.0000	0.730	0.465	Censored Observation = 435
	PCPMSPB	-0.0003	-3.670	0.000	
	Constant	0.4041	4.180	0.000	Uncensored Observation = 765
					Wald chi2(11) = 47.09
Poor	AVEG	-0.0774	-4.290	0.000	
	HHSZ	0.1820	6.720	0.000	Prob > chi2 = 0.0000
	HAGE	-0.0276	-1.290	0.197	
	SHAGE	0.0003	1.490	0.137	Rho = 1
	SC& ST	0.1847	2.140	0.032	Sigma=0.237
	PCLAND	-0.0091	-2.570	0.010	
	PCPMLI	-0.0004	-5.540	0.000	
	PCPMPI	-0.0003	-1.190	0.235	
	PCPMTI	-0.0010	-5.430	0.000	
	PCPMRI	0.0005	2.150	0.032	
	PCPMSPB	-0.0011	-3.090	0.002	
	Constant	1.1190	2.040	0.041	
	Mills Lambda	0.2371	2.720	0.006	

In case of household with inadequate cultivable land and low productivity (due to drought), the agricultural production is not sufficient to overcome the poverty gap. For insufficient productive assets endowment, labour entitlement is much more important than production

entitlement. They are surviving by selling their labour power. But the labour entitlement is also not sufficient for the poor households to cope with the poverty.

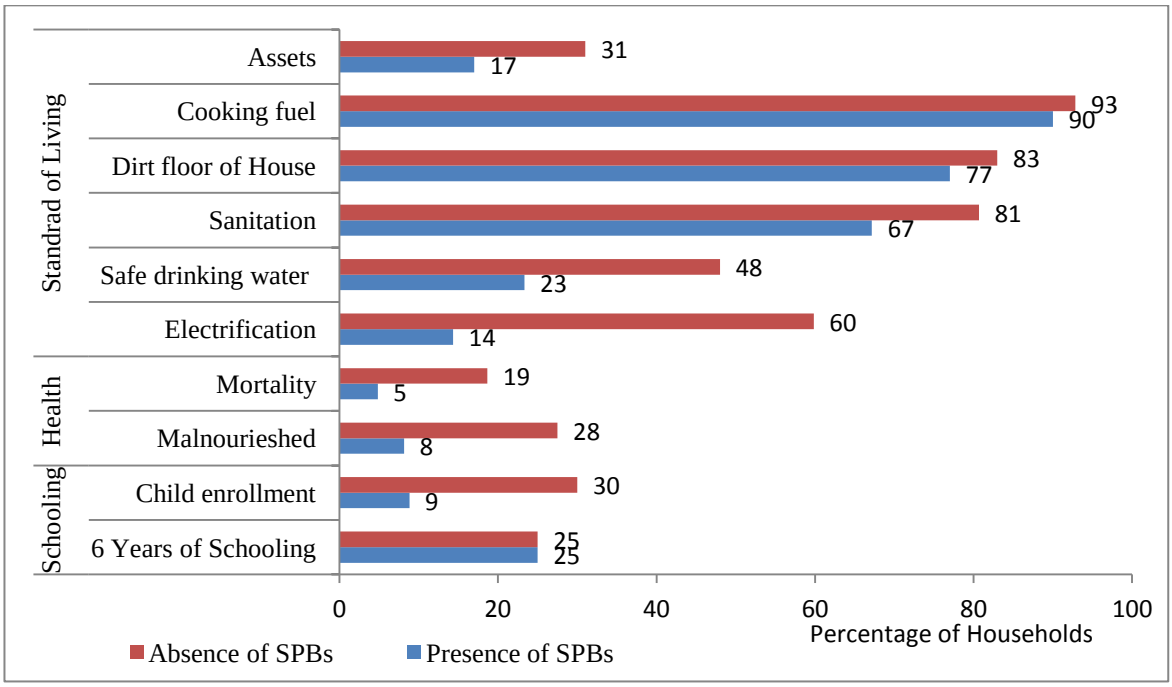
The households who are able to earn by participating in trading, increase the overall income and are able to reduce the level of poverty. Demographic factors, namely household size (HHSZ) significantly explains the household poverty and poverty gap. Age of head of household (AGEH) and square of age of head of household (SAGEH) are also significantly related with the poverty, former is negatively and the latter is positively related. The benefits of social protection programmes, particularly public distribution system (PDS) has also played a crucial role in improving the condition of the poor households.

7.8.4 SPPs and the Status of Multidimensional Poverty of the Sample Households

Deprivations of the Sample households by Indicators

In this section we have analysed the status of multidimensional poverty of 600 sample households in the presence as well as in the absence of SPBs for the year 2016-17. The percentage share of deprived households with the presence and absence of SPBs in ten indicators of multidimensional poverty is represents in Figure 7.14.

Figure 7.14 Percentage of households deprived in MPI indicators in the Presence and Absence of SPPs, 2016-17



Source: Field Survey 2016-17.

The percentage shares of deprived households widely varied across indicators. It increased in all indicators in the absence of SPPs. In absence of SPPs the deprivation was highest in case of cooking fuel (93 per cent), followed by sanitation (81 per cent) and housing (83 per cent). The SPPs is able to decrease the deprivation of the sample households in all indicators.

The percentage share of deprived households with social protection benefits has decreased to a great extent for electrification (from 60 per cent to 14 per cent), safe drinking water (from 48 per cent to 23 per cent), child enrollment (from 30 per cent to 9 per cent) and malnourished (from 28 per cent to 8 per cent). The decrease of deprivation is least in case of cooking fuel and housing (i.e., dirt floor of house). The percentage of deprived households for the indicator 'assets' was 31 per cent in absence of SPBs and 17 per cent in presence of SPBs.

Status of Multidimensional Poverty

Using the Alkire-Forster (2011) method for the measurement of multidimensional poverty 'H', 'A' and 'MPI' have been estimated for the entire 600 sample households in three districts of West Bengal, namely Purulia, Bankura and Paschim Medinipur. We have also separately calculated these three components of multidimensional poverty in the presence as well as in the absences of SPBs for the year 2016-17. The measurement of multidimensional poverty in terms of multidimensional head count ratio (H), multidimensional intensity of poverty (A) and multidimensional poverty index (MPI) for the sample population are given in Table 7.25. Out of the total sample population 25.18 per cent were multidimensional poor in 2016-17 in the presence of SPBs. In the absences of SPBs the percentage of multidimensional head count ratio was 62.60 per cent. Intensity of multidimensional poverty has also decreased in presence of SPBs as compared to the absence of SPBs. Both the multidimensional poor and the intensity of multidimensional poverty reduced in presence of SPPs. The value of MPI also reduced from 0.34 in absence of SPPs to 0.11 in presence of SPBs in 2016-17. That is the SPPs play a crucial role in the reduction of multidimensional poverty.

Table 7.25 Multidimensional Poverty Indicators of the Sample Population, 2012-13 and 2016-17

Deprivation	Presence of SPBs	Absence of SPBs
Multidimensional Head Count Ratio(H)	25.18	62.60
Intensity of Multidimensional Poverty(A)	44.04	53.72
Multidimensional Poverty Index(MPI)	0.11	0.34

Source: Field Survey 2016-17.

To identify the multidimensionally poor households, the deprivation scores for each household are summed to obtain the households deprivation (C). Here we have classified the households into four categories on the basis of the aggregate deprivation score of the

household. A cut-off of 33.3 per cent, which is equivalent to one-third of the weighted indicators, is used to distinguish between the poor and non-poor. If C is 33.3 per cent or greater than the household (and everyone in it) is considered as multidimensionally poor. Households having the value of C greater than or equal to 20 per cent but less than 33.3 per cent are vulnerable to risk of becoming multidimensionally poor i.e. 'vulnerable to poor' and households with the value of C greater than 33.33 per cent but less than or equal to 50 per cent are 'ordinary multidimensional poor'. Households with a deprivation score of 50 per cent or higher are 'severely multidimensional poor' (Table 7.26).

Table 8.19 Percentage Distribution of Households Deprivations in both Presence and Absence Social Protection Benefits, 2012-13 and 2016-17

Level of Multidimensional Poor	Presence of SPPs	Absence of SPPs
Multidimensionally Non-Poor (0≤ C<20.00)	50	17
Vulnerable to Poor (20.00≤ C<33.33)	25	21
Ordinary multidimensional Poor (33.33≤ C<50.00)	17	27
Severely Multidimensional Poor (C≥50.00)	8	35
Total	100	100

Source: Field Survey 2016-17.

For 600 sample households 25 per cent people were multidimensionally poor and 8 per cent were severely poor in 2016-17 in the presence of SPPs. In the absence of SPPs, i.e., if the SPPs were not received by the households then the severity of the multidimensional poor people became 35 per cent. The multidimensional non-poor people increased from 17 per cent in the absence of SPBs to 50 per cent in the presence of SPBs in 2016-17, i.e. the SPBs reduced the deprivation of the sample households (Table 7.26).

Table 8.27 Multidimensional Poverty Indicators of the Sample Population, 2012-13 and 2016-17

Dimensional Contribution	Presence of Social Protection		Absence of Social Protection	
	2012-13	2016-17	2012-13	2016-17
Education	33.8	23.3	28.3	23.4
Health	25.0	8.9	41.5	19.6
Standard of Living	41.2	67.8	30.1	57.0

Source: Field Survey 2016-17.

The relative contribution of the various dimensions to overall multidimensional poverty is shown in Table 7.27. The contribution of the different dimensions also alters in presence and in absence of SPBs. In absence of SPPs the contribution of 'standard of living' dimension was the highest followed by 'education' and 'health' in 2016-17. While in the presence of

SPPs the contribution of ‘standard of living’ in multidimensional poverty was the highest followed by ‘education’ and ‘health’, i.e., the SPPs were more effective in the reduction of standard of living than that of education and health deprivation.

Across the social groups STs and SCs have the highest multidimensional head count ratio (HCR), intensity of multidimensionally poor and MPI for both the years. The percentage point declined and also the percentage change in multidimensional HCR was also the highest for them and the least percentage change was for OBCs. Intensity of multidimensional poverty of SCs decreased from 51 per cent in 2012-13 to 39.9 per cent in 2016-17 (Table 7.28).

Table 7.28 Multidimensional Poverty Indicators of the Sample Population by castes, 2012-13 & 2016-17

	2016-17		
	H	A	MPI
General	15.3	44.7	0.07
OBC	25.2	43.9	0.11
SC	24.0	39.9	0.10
ST	32.9	47.6	0.16
Total	25.2	44.0	0.11

Source: Field Survey 2016-17.

Chapter 8

Concluding Observations and Policy Recommendation

8.1 Concluding Observations

The estimation of poverty in India much debated during the recent years. However, most of the studies in India have tended to focus on poverty at a point of time and their methods of analyses have usually suffered from a uni-dimensional limitation. They fail to capture many aspects of deprivation. These limitations of uni-dimensional poverty measures are also compounded by other technical difficulties of income measurement, especially, in developing countries that reduce the value of such income based uni-dimensional poverty results. There is a need to supplement India's long and august tradition of monetary poverty measurement with multidimensional poverty measures that capture the joint distribution of deprivations across the population.

The measurement of monetary poverty is based on monthly per capita consumption expenditure while the estimation of multidimensional poverty is based on three dimensions namely education, food and nutrition and living condition. In these three dimensions of multidimensional poverty we have considered nine indicators which are schooling, school attendance, food security, nutritional security, electricity, cooking fuel, own house, own land and assets. Both the monetary and multidimensional measurement of poverty, based on the NSSO unit level data, declined during 2004-05 to 2011-2 in India and her states. But the monetary as well as multidimensional poverty in rural area was significantly higher than that of the urban area. There is a relatively poorer consumption situation in the SCs and STs population as compared to non-SC/STs. There is a similarity, 77 per cent in 2004-05 and 76.6 per cent in 2011-12, in the measurement of poor and non poor in the two methods. There were 19.1 per cent and 17.6 per cent people in 2004-05 and 2011-12 respectively in India have shaken off monetary poverty, but they are multidimensionally poor in at least at one third of the dimensions. If the poverty-reduction policies were undertaken target only at those in monetary poverty, then these shares of people will continue to live in multidimensional poverty of various degrees. Therefore, the poverty-reduction policies should cover not only monetary poverty but also multidimensional poor and deprived.

On the basis of the methodology for identifying BPL provided in Socio Economic Caste Census 2011 by the Ministry of Rural Development present study has estimated that 39 per cent households were non-deprived, i.e., excluded from BPL list, only one per cent households were extremely poor who included into the BPL list. The SECC 2011 gives the

insights about the status of the development and underdevelopment of rural households in India across different social castes. In a number of indicators ST households were more deprived in West Bengal compared to all India level. More than the half of the ST people was illiterate in West Bengal. About one third of the ST households in West Bengal were deprived in respect of housing. They did not owned any house with one room. Manual casual labour and cultivation was the main occupations of rural ST households. The resulting outcome of these types of occupations was the low income. The multidimensional headcount ratio of ST was relatively higher in West Bengal compared to all over India. The percentage shares of moderate deprived ST households were many folds than that of Non-ST households in West Bengal. The share of moderately deprived ST households was relatively low in some districts where STs were densely populated.

On the basis of unit level data of NFHS-3 and NFHS-4 the present study also estimates the multidimensional poverty and deprivations in India and her states by the dimension and indicators that are used by UNDP in their Human Development Report. This estimation is different from our earlier estimation of multidimensional poverty based on the NSSO unit level data in respect of the specification of dimensions and indicators. The multidimensional poverty significantly reduced in India between 2005-06 and 2015-16. Uncensored head count ratio of assets showed the highest reduction, followed by electricity and sanitation. In India, reduction of health and education deprivation has been slower than all the standard of living indicators. Considering health dimension, the highest absolute reduction was observed in 'nutrition' whereas the highest relative reduction was observed in 'mortality'. In censored HCR the highest absolute reduction in deprivation was observed in 'schooling'. The deprivation in the 'asset' indicator of multidimensionally poor people reduced drastically, followed by 'cooking fuel' and 'sanitation' indicators. The dimensional contribution of 'standard of living' to multidimensional poverty measurement was the highest in both the years. Our sub-group analysis pointed out that across social castes the multidimensional poverty was the highest among the STs and SCs. The maximum reduction of MPI was observed in case of ST group and the least reduction was observed in case of general group. The religion wise pattern shows that Hindu and Muslim had higher multidimensional poverty compare to other religions like Christian and Sikh. The rural households are more likely ordinary and severely multidimensional poor than multidimensional non-poor. The backward castes like ST, SC and OBC were more likely ordinary and severely multidimensional poor households than multidimensional non-poor. Years of education of the head of the households were more likely multidimensional non-poor household than ordinary multidimensional poor and severely multidimensional poor households. We have used cross

dummies of social caste and religion for econometrics analysis of multidimensional poor. Over all Hindu and Muslim and all social castes of Muslim community households were more likely ordinary multidimensional poor and severely multidimensional poor than multidimensional non- poor. The likelihood of ordinary and severely multidimensional poor was more in relatively less developed castes like ST, SC and OBC of Hindu community households than General caste of Hindu households. Christian and Sikh community households are more likely multidimensionally non- poor than severely multidimensional poor households.

Poverty and Deprivation of the rural sample households of West Bengal has been analysed on the basis of field survey data of 800 sample households of 32 sample villages in 16 sample blocks from five less developed districts of West Bengal, namely Bankura, Purulia, Paschim Medinipur, South 24 Parganas and Derjiling for the year 2016-17. Households having the membership of different social protection programmes (SPPs) were given the opportunity to increase their entitlements. Here we have considered the social protection programmes that have directly benefited to the households and they are related to food, health, housing, economic security and social security of the households. Earnings of the households by means of different forms of entitlements are categorized as labour entitlement, production based entitlement (both agriculture and other than agriculture), trade-based entitlement and transfer entitlement (from common property resources and social protection programmes). Among all entitlements the contribution of labour entitlement was highest followed by social protection. Among SPPs the relative importance in terms of the coverage was the highest in PDS, followed by NREGP, ICDS and MDM. The social protection benefits contribute for the reduction of 15.5 per cent food insecurity and 2.5 per cent poverty of the sample households. Multidimensional poverty in terms of multidimensional head count ratio, multidimensional intensity of poverty and multidimensional poverty index for the sample population decreased in presence of SPPs. The SPPs are also multidimensional in nature and they have mitigated different aspects of deprivations of the household. Therefore, the impact of SPPs was better addressed in the multidimensional poverty measurement. SPPs contribute for the reduction of 37.4 per cent multidimensional head count ratio and 23 per cent of MPI of the sample households. Average education of the households was negatively and significantly related to the incidence of poverty. Higher per capita gross cultivable land of the households decreases the probability of the incidence of poverty but not the depth of poverty. The agricultural production was not sufficient to overcome the poverty gap. Labour entitlement was much more important than production entitlement. Households were surviving by selling their labour power but the labour entitlement was also not sufficient for the poor households to

cope with the poverty. Trade activities of the households significantly reduced the incidence of poverty. Demographic factors, namely household size, age of head of household and square of age of head of the household significantly explained the incidence and depth of poverty. The benefits of social protection programmes, particularly public distribution system (PDS) had played a crucial role in increasing food security of the poor households – higher access of food grains from PDS reduced the incidence and depth of food security and poverty.

8.2 Policy Recommendations

From the above discussion the following policy recommendations may be made.

First, if the poverty-reduction policies are undertaken target only at those in monetary poverty, then a specific share of people will continue to live in multidimensional poverty of various degrees. Therefore, the poverty-reduction policies should cover not only monetary poverty but also multidimensional poor and deprived.

Second, since the ration cards are old documented and some of the households or the members have no ration cards on account of exclusion and inclusion errors, there is the urgent need for the issue of new ration card. Since the Government of India in implementing the National Food Security Bill-2013 for benefits of 75 per cent targeted rural people, the identification of the poor or stakeholders by appropriate statistical method at frequent time intervals is important. In this context the identification of extreme poor, poor, multidimensionally deprived and non-deprived on the basis of available information of Socio Economic Caste Census 2011 will play the crucial role.

Second, since PDS benefit in kind certainly increases the food consumption baskets while cash benefits from other programmes diversify the consumption of the poor households in favour of luxury items, the study strongly recommends for PDS benefits in kind to overcome food insecurity and poverty.

Third, to bridge the gap between demand and supply in most of the sectors where social protection programmes are being implemented, management and supervision has been decentralized to the local level and steps are being taken to strengthen the capacity of local governments, rules have to be enforced for the creation of stakeholder committees at the local institutional level.

Fourth, digitization of the records of the functioning of SPPs by Information Technology-enabled service is important for transparency and to minimize corruption.

Fifth, for effective execution of social protection programmes such rules for quality of services for each programme are essential.

Sixth, since the household's income from labour is supportive to overcome the incidence of food insecurity and poverty and since the education level and the skill formation of workers are relatively poor, in order to strengthen the labour entitlement spread of education is needed. Besides basic education, vocational training and technical skills are useful in gaining access to non-agricultural jobs or self-employment. Effective micro-entrepreneurship development programme is helpful for promotion of non-farm activities.

Seventh, since as per our finding the production entitlement, specifically agricultural production is important for food security and to overcome poverty and the greater part of the backward region is deficient in respect of irrigation, for the sake of multiple cropping which helps the households to increase production on one hand and increase labour demand on the other, spread of irrigation for production of compatible crops in the dry region is indispensable for production-led food security.

Eighth, while access to income from common property resources significantly reduces the incidence of food insecurity and poverty, for the sake of improvement of the existing right to use the forest resources by villagers is strongly recommended.

Ninth, While in the short run the social protective measures are important for the poor and vulnerable and the excessive dependence on social protection has raised the question of sustainability of livelihood in the long run the study strongly recommends measures to enhance the own entitlement of the households to cope with poverty and deprivations.

lastly, given the limitations of the SPPs for poverty alleviation the accent should be placed on the overall development of rural areas because the backward region is predominantly rural. For rural transformation of this region the rapid development of infrastructure like road and power is a must. Rural development programs are to be so designed and directed as to gradually make the poor and vulnerable reliant on their own selves based on infrastructure.

Appendix

Table A1.1 Sample Frame

		1st Stage	2nd Stage	3rd Stage	4th Stage
State	Region	District	Block	Village	Households
West Bengal	Jangalmahal	Paschim Medinipur	Jamboni	Belia	25 Households from each Village
				Murakati	
			Dantan-1	Kotpada	
				Daskhin Andia	
			Sankrail	Jorashal	
				Fulboni	
			Keshiary	Murakata	
				Langamara	
		Bankura	Vishnupur	Baramara	
				Kulupukur	
			Taldangra	Saldaha	
				Panchmura	
			Khatra	Bantilla	
				Chandania	
			Ranibundh	Mitha-Am	
				Nachna	
		Purulia	Joypur	Natundi	
				Mukundapur	
			Kashipur	Rudra	
				Shampukur	
			Hura	Dolkata	
				Khairipihira	
			Jhalda-II	Chekya	
				Dimu	
	Coastal	South-24-Porganas	Mandirbazar	Baji Shukdebpur	
				Ramnathpur	
			Kakdwip	Srinagar	
				kashinagar	
	Hill	Derjiling	Derjiling Phulbazar	Lebong Tea Garden	
				Alubari Basty	
			Mirik	Murma Tea Garden	
				Mirik Khasmahal	

Table A3.1 Status of Monetary Poverty (HCR, PGP, and SPGP) by Sector (R, U, T) across States in India, 2004-05

	Monetary poor			Poverty gap			Square Poverty gap		
States	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	32.1	23.4	29.9	6.9	4.8	6.4	2.3	1.5	2.1
Assam	36.5	21.8	35.1	7.1	4.3	6.8	2.0	1.2	1.9
Bihar	55.6	43.7	54.5	12.6	11.4	12.5	3.9	3.9	3.9
Chhattisgarh	55.2	28.4	51.1	13.7	7.2	12.7	4.9	2.6	4.6
Gujarat	39.2	20.0	32.6	9.4	3.9	7.5	3.2	1.1	2.5
Haryana	24.7	22.4	24.1	4.7	4.9	4.8	1.3	1.6	1.4
Himachal Pradesh	25.0	4.6	23.0	4.2	1.1	3.9	1.1	0.4	1.0
Jammu & Kashmir	14.1	8.9	12.8	2.0	1.7	2.0	0.5	0.5	0.5
Jharkhand	51.7	23.8	47.2	11.2	5.8	10.3	3.4	1.9	3.2
Karnataka	37.5	25.9	33.9	6.5	6.2	6.4	1.7	2.1	1.8
Kerala	20.1	18.4	19.7	4.4	4.1	4.3	1.5	1.3	1.4
Madhya Pradesh	53.5	35.1	49.2	12.5	8.6	11.6	4.1	2.9	3.9
Maharashtra	47.9	25.6	38.9	11.9	6.5	9.7	4.3	2.3	3.5
Odisha	60.9	37.5	57.7	17.4	9.6	16.3	6.6	3.5	6.2
Punjab	22.3	18.6	21.1	3.8	3.2	3.6	1.0	0.8	0.9
Rajasthan	35.8	29.7	34.5	7.0	5.7	6.7	2.0	1.7	1.9
Tamil Nadu	37.5	19.7	30.7	7.5	4.1	6.2	2.1	1.3	1.8
Tripura	44.4	22.5	41.3	9.5	3.8	8.7	2.9	1.0	2.6
Uttar Pradesh	42.7	34.1	41.0	9.2	7.8	8.9	2.8	2.5	2.7
Uttarakhand	35.1	26.2	33.0	5.8	5.1	5.6	1.4	1.4	1.4
West Bengal	38.1	24.4	34.7	7.9	5.3	7.3	2.3	1.6	2.2
Sikkim	31.9	25.9	31.2	5.6	3.4	5.4	1.4	0.9	1.4
Arunachal Pradesh	33.6	23.5	32.4	16.0	4.6	14.7	8.2	1.2	7.4
Nagaland	9.7	4.3	8.1	1.0	0.5	0.9	0.2	0.1	0.2
Manipur	39.2	34.3	38.0	5.7	5.1	5.6	1.3	1.0	1.2
Mizoram	23.0	7.9	17.1	3.5	1.0	2.5	0.9	0.2	0.6
Meghalaya	14.0	24.7	15.4	1.4	13.1	2.9	0.2	7.1	1.1
Delhi	15.6	12.9	13.1	1.9	2.0	2.0	0.3	0.5	0.5
Goa	28.1	22.2	25.9	5.6	4.3	5.1	1.7	1.5	1.6
Pondicherry	22.9	9.9	14.5	4.0	1.3	2.3	0.8	0.3	0.5
Chandigarh#	8.3	8.6	8.6	2.1	1.5	1.5	0.6	0.4	0.4
Daman & Diu#	0.0	3.2	1.1	0.0	0.3	0.1	0.0	0.0	0.0
Dadra & Nagar Haveli#	54.2	16.6	49.8	14.7	3.9	13.5	5.5	1.1	5.0
Lakshadweep#	0.2	10.3	5.2	0.0	3.7	1.8	0.0	1.8	0.9
A & NIslands#	3.6	0.9	2.4	0.3	0.0	0.2	0.03	0.00	0.02

Table A3.2 Status of Monetary Poverty (HCR, PGP, and SPGP) by Sector (R, U, T) across States in India, 2011-12

	Monetary poor			Poverty gap			Square Poverty gap		
state	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	11.0	5.8	9.3	1.6	0.9	1.4	0.4	0.2	0.3
Assam	33.9	20.6	32.5	5.8	3.8	5.6	1.4	1.0	1.4
Bihar	34.4	31.2	34.1	6.2	6.8	6.3	1.6	2.1	1.7
Chhattisgarh	44.6	23.9	40.2	9.0	5.2	8.2	2.7	1.9	2.5
Gujarat	21.5	10.2	17.0	3.3	1.6	2.6	0.8	0.4	0.6
Haryana	11.6	10.3	11.2	2.1	1.8	2.0	0.5	0.4	0.5
Himachal Pradesh	8.5	4.3	8.0	1.0	0.8	1.0	0.2	0.2	0.2
Jammu & Kashmir	11.5	7.2	10.6	1.9	0.9	1.7	0.5	0.2	0.4
Jharkhand	40.8	24.8	37.5	6.9	5.1	6.5	1.7	1.5	1.7
Karnataka	24.5	15.3	21.2	3.3	3.1	3.2	0.7	0.9	0.8
Kerala	9.2	5.0	8.1	1.6	0.8	1.4	0.5	0.2	0.4
Madhya Pradesh	35.7	21.0	32.0	8.3	3.9	7.2	2.8	1.0	2.3
Maharashtra	24.2	9.1	17.3	4.7	1.5	3.2	1.6	0.4	1.0
Odisha	35.7	17.3	32.9	7.0	3.2	6.4	2.0	0.9	1.8
Punjab	7.7	9.2	8.2	1.2	1.6	1.3	0.3	0.4	0.3
Rajasthan	16.1	10.7	14.8	3.2	1.6	2.8	1.0	0.4	0.9
Tamil Nadu	15.8	6.6	11.7	2.5	1.1	1.9	0.6	0.3	0.5
Tripura	16.2	7.4	14.9	2.2	1.7	2.1	0.4	0.5	0.5
Uttar Pradesh	30.4	26.2	29.5	5.7	5.3	5.6	1.6	1.5	1.6
Uttarakhand	11.7	10.5	11.4	1.2	1.6	1.3	0.2	0.4	0.2
West Bengal	22.5	14.7	20.4	3.7	2.7	3.4	0.9	0.7	0.9
Sikkim	9.9	3.7	8.8	1.0	0.5	0.9	0.1	0.1	0.1
Arunachal Pradesh	58.3	16.2	50.1	20.2	3.9	17.0	8.8	1.5	7.4
Nagaland	19.9	16.5	18.7	3.8	1.8	3.0	1.0	0.3	0.8
Manipur	38.8	32.4	37.1	6.6	6.1	6.5	1.6	1.7	1.6
Mizoram	35.4	6.4	22.0	7.5	0.6	4.3	2.4	0.1	1.3
Meghalaya	12.5	9.3	11.8	1.6	1.5	1.6	0.3	0.3	0.3
Delhi	12.9	9.8	10.1	1.8	1.6	1.6	0.3	0.4	0.4
Goa	6.8	4.1	5.4	0.7	0.7	0.7	0.1	0.2	0.2
Pondicherry	17.1	6.3	10.0	3.7	0.8	1.8	1.3	0.2	0.6
Chandigarh#	1.6	12.6	11.8	0.2	2.0	1.9	0.0	0.6	0.6
Daman & Diu#	0.0	8.7	3.4	0.0	1.2	0.5	0.0	0.2	0.1
Dadra & Nagar Haveli#	53.3	5.2	33.2	10.5	0.5	6.3	2.9	0.1	1.7
Lakshadweep#	0.0	4.1	2.0	0.0	0.4	0.2	0.0	0.1	0.0
A & N Islands#	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

Table A3.3 Status of Monetary Poverty (HCR, PGP, and SPGP) by Castes across States in India, 2004-05

	Monetary Poor				Poverty Gap				Square Poverty Gap			
States	ST	SC	OBC	Other	ST	SC	OBC	Other	ST	SC	OBC	Other
Andhra Pradesh	59.1	40.2	29.6	16.1	16.9	8.7	5.8	3.1	6.8	2.9	1.7	0.9
Assam	28.9	45.0	31.2	36.7	4.2	8.8	6.5	7.4	1.0	2.5	1.8	2.2
Bihar	59.1	77.2	52.3	33.9	12.8	20.3	11.5	6.5	3.1	6.8	3.5	1.7
Chhattisgarh	63.1	48.0	48.4	26.3	17.9	10.8	11.0	5.5	7.0	3.3	3.8	1.8
Gujarat	54.7	40.7	40.4	12.4	16.3	8.9	8.6	2.1	6.5	2.7	2.6	0.6
Haryana	6.7	47.0	28.1	8.1	0.1	10.4	5.2	1.3	0.0	3.3	1.4	0.3
Himachal Pradesh	33.7	37.4	18.5	16.4	7.5	7.0	3.0	2.3	2.7	1.9	0.7	0.5
Jammu & Kashmir	19.8	14.3	19.3	11.3	2.2	1.7	3.7	1.7	0.3	0.4	1.1	0.4
Jharkhand	59.8	59.7	43.0	27.1	14.6	14.3	8.1	5.9	4.9	4.5	2.2	1.7
Karnataka	51.2	53.8	34.7	20.1	9.1	10.8	6.6	3.6	2.4	3.3	1.8	1.0
Kerala	54.4	31.0	21.3	10.1	21.8	7.0	4.4	2.0	11.4	2.3	1.4	0.7
Madhya Pradesh	77.4	62.0	45.2	19.0	20.3	16.0	9.6	3.3	7.0	5.9	2.9	0.9
Maharashtra	68.1	52.9	39.1	27.6	22.4	14.8	8.4	6.2	9.5	5.7	2.6	2.0
Odisha	83.0	67.4	51.6	33.3	29.8	18.9	12.4	6.6	12.7	7.2	4.2	1.9
Punjab	18.7	38.0	21.8	6.7	5.6	6.4	3.9	1.1	1.7	1.6	1.0	0.3
Rajasthan	57.9	49.0	28.0	19.4	12.2	10.6	5.1	2.9	3.7	3.2	1.4	0.6
Tamil Nadu	41.9	48.6	26.5	10.1	10.5	9.9	5.2	2.5	3.3	3.0	1.5	0.9
Tripura	50.7	44.1	37.4	35.4	10.7	9.7	7.4	7.5	3.3	2.9	2.0	2.3
Uttar Pradesh	41.7	55.1	42.3	24.3	6.8	12.6	9.0	5.0	1.7	4.0	2.7	1.5
Uttarakhand	32.8	46.5	41.4	25.2	4.8	8.8	7.3	3.9	0.9	2.4	1.8	0.9
West Bengal	53.6	37.7	27.5	32.1	12.1	7.8	5.5	6.7	3.7	2.3	1.8	2.0
Sikkim	33.1	43.1	29.4	22.1	6.0	6.1	5.2	3.0	1.5	1.4	1.3	0.8
Arunachal Pradesh	29.3	10.9	34.0	41.8	14.1	2.4	16.3	16.7	7.4	0.6	8.4	7.6
Nagaland	6.8	17.1	36.7	16.7	0.5	2.0	9.8	3.1	0.1	0.3	2.7	0.8
Manipur	52.9	17.2	28.9	27.2	8.3	2.3	3.8	3.8	1.9	0.4	0.7	0.8
Mizoram	17.1	13.7	20.4	0.0	2.5	2.1	1.1	0.0	0.6	0.3	0.1	0.0
Meghalaya	16.1	10.0	6.2	8.6	2.9	0.1	1.4	4.2	1.1	0.0	0.6	2.1
Delhi	0.0	25.1	23.2	6.8	0.0	3.9	3.0	1.1	0.0	1.1	0.7	0.3
Goa	49.8	46.9	38.0	21.9	18.2	11.1	8.2	3.8	6.6	4.6	3.3	1.0
Pondicherry	0.0	42.3	8.5	5.4	0.0	7.6	1.1	0.9	0.0	1.6	0.2	0.2
Chandigarh#	22.5	18.7	10.3	4.7	0.8	2.5	3.8	0.9	0.1	0.5	1.6	0.2
Daman & Diu#	0.0	1.5	3.0	0.3	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Dadra & Nagar Haveli#	59.4	11.8	11.2	5.9	16.1	1.0	3.8	1.4	6.0	0.1	1.3	0.4
Lakshadweep#	5.4	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0
A & N Islands#	0.0	NA	0.0	2.5	0.0	NA	0.0	0.2	0.0	NA	0.0	0.0

Table A3.4 Status of Monetary Poverty (HCR, PGP, and SPGP) by Castes across States in India, 2011-12

	Monetary Poor				Poverty Gap				Square Poverty Gap			
States	ST	SC	OBC	Other	ST	SC	OBC	Other	ST	SC	OBC	Other
Andhra Pradesh	23.1	12.7	8.0	5.6	4.4	2.3	1.0	0.6	1.2	0.6	0.2	0.1
Assam	32.4	28.6	32.9	33.1	4.2	4.7	6.2	5.9	0.8	1.2	1.7	1.4
Bihar	55.6	51.0	31.9	22.6	10.3	9.8	6.0	3.4	2.5	2.8	1.6	0.8
Chhattisgarh	51.1	46.7	34.9	9.6	11.0	10.6	6.3	1.3	3.5	3.4	1.9	0.3
Gujarat	35.9	18.4	17.8	5.5	5.8	3.3	2.7	0.6	1.6	1.0	0.6	0.1
Haryana	9.0	24.1	13.3	3.9	1.6	3.8	2.6	0.7	0.3	0.9	0.8	0.2
Himachal Pradesh	9.2	15.9	2.8	6.3	1.1	2.0	0.4	0.7	0.2	0.4	0.1	0.1
Jammu & Kashmir	15.3	18.7	7.1	9.1	2.1	3.8	1.5	1.3	0.4	1.0	0.6	0.3
Jharkhand	49.7	40.4	34.6	23.1	9.6	7.7	5.5	3.3	2.6	2.0	1.3	0.9
Karnataka	31.5	33.2	18.8	15.6	4.0	5.4	2.8	2.3	0.7	1.5	0.7	0.5
Kerala	39.4	16.0	7.1	5.8	9.1	3.7	1.1	0.8	3.0	1.4	0.3	0.2
Madhya Pradesh	53.4	39.6	23.6	16.6	14.1	8.7	4.6	2.9	5.1	2.6	1.4	0.8
Maharashtra	54.4	19.7	14.5	10.7	14.4	3.5	2.5	1.3	6.0	0.9	0.7	0.3
Odisha	62.5	39.0	23.9	11.8	14.2	7.7	3.8	1.7	4.5	2.1	0.9	0.4
Punjab	6.2	15.6	8.1	2.3	0.8	2.5	1.4	0.3	0.1	0.6	0.3	0.1
Rajasthan	40.3	18.7	9.2	3.7	9.8	3.1	1.4	0.4	3.3	0.9	0.4	0.1
Tamil Nadu	25.8	19.0	9.8	1.6	6.7	3.2	1.5	0.3	2.1	0.8	0.4	0.1
Tripura	25.1	10.3	5.2	9.8	3.5	1.4	0.7	1.6	0.7	0.3	0.1	0.4
Uttar Pradesh	25.6	40.9	31.0	12.6	6.1	8.1	5.8	2.3	2.0	2.2	1.7	0.6
Uttarakhand	13.5	14.9	16.1	8.3	1.8	1.6	2.1	0.9	0.5	0.3	0.4	0.2
West Bengal	49.4	21.5	18.2	17.8	10.0	3.7	3.4	2.8	3.0	0.9	0.9	0.7
Sikkim	7.6	17.6	9.5	4.7	0.8	1.8	0.8	0.7	0.2	0.3	0.1	0.2
Arunachal Pradesh	49.9	25.2	82.2	42.9	16.4	7.0	33.8	14.6	7.1	2.2	15.8	6.2
Nagaland	18.6	15.7	42.3	17.1	3.1	0.8	9.7	1.6	0.8	0.0	2.6	0.6
Manipur	42.9	44.4	31.7	44.8	7.4	8.0	5.4	9.5	1.7	2.1	1.3	2.6
Mizoram	20.4	0.0	66.5	26.9	3.4	0.0	29.1	6.4	0.8	0.0	14.8	1.6
Meghalaya	12.5	0.0	1.6	5.7	1.6	0.0	0.1	1.1	0.3	0.0	0.0	0.2
Delhi	0.0	19.0	9.2	7.6	0.0	3.5	2.1	0.9	0.0	0.8	0.8	0.1
Goa	0.0	33.1	10.5	3.2	0.0	2.3	1.7	0.5	0.0	0.3	0.6	0.1
Pondicherry	34.1	19.3	8.5	7.1	13.5	4.1	1.5	0.7	6.4	1.1	0.5	0.1
Chandigarh#	0.0	32.8	3.5	6.1	0.0	6.5	0.0	0.6	0.0	2.0	0.0	0.2
Daman & Diu#	13.1	0.0	3.6	1.2	1.8	0.0	0.5	0.2	0.2	0.0	0.1	0.0
Dadra & Nagar Haveli#	50.1	0.0	3.5	0.6	9.6	0.0	0.2	0.1	2.6	0.0	0.0	0.0
Lakshadweep#	2.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A & NIslands#	0.0	0.0	1.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0

Table A3.5 Status of Multidimensional Poverty (HCR, Intensity, and MPI) by Sector (R, U, T) across States in India, 2004-05

	Multidimensional HCR			Multidimensional Intensity			MPI		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	59.70	38.55	54.30	52.25	49.54	51.76	0.31	0.19	0.28
Assam	48.26	22.87	45.93	53.27	52.83	53.25	0.26	0.12	0.24
Bihar	67.93	39.74	65.32	62.43	54.42	61.98	0.42	0.22	0.40
Chhattisgarh	68.35	36.15	63.42	55.73	52.25	55.43	0.38	0.19	0.35
Gujarat	55.65	24.02	44.74	52.32	46.71	51.28	0.29	0.11	0.23
Haryana	43.07	32.37	40.22	51.82	47.11	50.81	0.22	0.15	0.20
Himachal Pradesh	33.58	15.57	31.88	47.92	49.15	47.98	0.16	0.08	0.15
Jammu & Kashmir	28.06	11.98	24.27	46.32	43.87	46.04	0.13	0.05	0.11
Jharkhand	67.19	24.02	60.19	56.77	47.94	56.20	0.38	0.12	0.34
Karnataka	57.75	35.30	50.84	51.76	48.75	51.12	0.30	0.17	0.26
Kerala	34.72	26.24	32.73	44.88	43.55	44.63	0.16	0.11	0.15
Madhya Pradesh	74.18	26.18	62.94	57.51	45.61	56.35	0.43	0.12	0.35
Maharashtra	60.98	34.39	50.26	52.50	44.74	50.36	0.32	0.15	0.25
Odisha	65.44	32.83	60.99	58.86	54.24	58.52	0.39	0.18	0.36
Punjab	42.94	28.61	38.35	50.03	44.16	48.63	0.21	0.13	0.19
Rajasthan	65.52	37.63	59.31	57.05	53.56	56.55	0.37	0.20	0.34
Tamil Nadu	56.07	31.75	46.72	49.62	46.35	48.76	0.28	0.15	0.23
Tripura	53.35	18.45	48.45	52.26	50.12	52.14	0.28	0.09	0.25
Uttar Pradesh	64.32	40.42	59.62	57.84	53.73	57.29	0.37	0.22	0.34
Uttarakhand	50.74	27.62	45.33	51.36	47.00	50.74	0.26	0.13	0.23
West Bengal	56.23	29.82	49.77	56.08	49.35	55.09	0.32	0.15	0.27
Sikkim	48.43	32.06	46.58	50.65	47.14	50.38	0.25	0.15	0.23
Arunachal Pradesh	58.81	43.05	57.00	53.81	47.48	53.26	0.32	0.20	0.30
Nagaland	20.31	9.24	17.06	49.09	40.90	47.79	0.10	0.04	0.08
Manipur	45.67	21.07	39.66	46.24	42.84	45.80	0.21	0.09	0.18
Mizoram	35.50	11.15	25.89	49.03	42.90	47.99	0.17	0.05	0.12
Meghalaya	57.57	31.03	54.04	50.08	45.19	49.70	0.29	0.14	0.27
Delhi	29.03	18.74	19.44	38.05	44.94	44.24	0.11	0.08	0.09
Goa	38.49	38.36	38.44	41.55	40.62	41.20	0.16	0.16	0.16
Pondicherry	46.35	20.69	29.76	48.16	45.70	47.05	0.22	0.09	0.14
Chandigarh#	33.82	13.57	15.64	46.98	39.80	41.39	0.16	0.05	0.06
Daman & Diu#	21.39	13.21	18.52	37.77	35.60	37.22	0.08	0.05	0.07
Dadra & Nagar Haveli#	68.27	19.86	62.56	56.81	49.05	56.52	0.39	0.10	0.35
Lakshadweep#	6.82	15.70	11.23	41.54	45.77	44.48	0.03	0.07	0.05
A & N Islands#	28.17	11.82	21.19	46.63	44.33	46.08	0.13	0.05	0.10

Table A3.6 Status of Multidimensional Poverty (HCR, Intensity, and MPI) by Sector across States in India, 2011-12

	Multidimensional HCR			Multidimensional Intensity			MPI		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Andhra Pradesh	37.7	14.1	30.0	43.0	42.3	42.9	0.16	0.06	0.13
Assam	36.8	21.7	35.2	49.4	42.5	49.0	0.18	0.09	0.17
Bihar	49.2	28.3	47.2	52.7	47.6	52.4	0.26	0.13	0.25
Chhattisgarh	59.0	36.3	54.2	46.6	45.3	46.4	0.27	0.16	0.25
Gujarat	33.3	12.1	24.7	45.3	42.9	44.8	0.15	0.05	0.11
Haryana	20.4	18.0	19.7	44.5	40.0	43.2	0.09	0.07	0.09
Himachal Pradesh	14.6	10.0	14.1	42.6	42.9	42.6	0.06	0.04	0.06
Jammu & Kashmir	21.2	9.0	18.4	45.1	41.8	44.8	0.10	0.04	0.08
Jharkhand	48.5	21.8	43.0	49.7	43.4	49.1	0.24	0.09	0.21
Karnataka	31.7	7.8	23.0	44.8	44.0	44.7	0.14	0.03	0.10
Kerala	16.2	6.7	13.7	41.0	39.4	40.8	0.07	0.03	0.06
Madhya Pradesh	51.6	22.1	44.1	47.8	44.6	47.4	0.25	0.10	0.21
Maharashtra	34.7	11.0	23.9	46.5	40.3	45.2	0.16	0.04	0.11
Odisha	45.6	21.3	41.9	50.3	47.4	50.1	0.23	0.10	0.21
Punjab	18.7	16.0	17.7	42.3	44.1	42.9	0.08	0.07	0.08
Rajasthan	43.9	21.4	38.6	50.0	43.1	49.1	0.22	0.09	0.19
Tamil Nadu	26.3	7.1	17.8	42.3	40.7	42.0	0.11	0.03	0.07
Tripura	38.2	13.8	34.4	44.8	45.5	44.9	0.17	0.06	0.15
Uttar Pradesh	52.3	28.7	47.3	52.7	48.6	52.1	0.28	0.14	0.25
Uttarakhand	24.7	12.9	21.8	43.6	43.1	43.5	0.11	0.06	0.09
West Bengal	42.2	18.4	35.9	47.6	43.9	47.1	0.20	0.08	0.17
Sikkim	29.7	14.8	27.1	42.2	42.5	42.3	0.13	0.06	0.11
Arunachal Pradesh	65.8	26.8	58.1	49.3	41.7	48.6	0.32	0.11	0.28
Nagaland	15.6	10.1	13.7	40.5	35.8	39.3	0.06	0.04	0.05
Manipur	36.6	24.0	33.2	43.8	38.0	42.7	0.16	0.09	0.14
Mizoram	34.0	7.6	21.8	45.6	39.1	44.6	0.16	0.03	0.10
Meghalaya	26.9	10.7	23.5	43.3	38.8	42.9	0.12	0.04	0.10
Delhi	16.6	19.8	19.5	34.1	44.8	44.1	0.06	0.09	0.09
Goa	15.8	5.4	10.5	41.8	39.6	41.2	0.07	0.02	0.04
Pondicherry	17.2	7.7	11.0	40.8	39.8	40.3	0.07	0.03	0.04
Chandigarh#	11.1	21.4	20.6	48.3	47.9	47.9	0.05	0.10	0.10
Daman & Diu#	11.4	18.1	14.0	38.3	40.3	39.3	0.04	0.07	0.05
Dadra & Nagar Haveli#	65.9	10.4	42.8	50.4	40.5	49.4	0.33	0.04	0.21
Lakshadweep#	11.1	0.3	5.7	41.4	40.0	41.3	0.05	0.00	0.02
A & N Islands#	19.6	8.3	15.4	46.0	36.4	44.1	0.09	0.03	0.07

Table A3.7 Status of Multidimensional Poverty (HCR, Intensity, and MPI) by Caste across States in India, 2004-05

	Multidimensional HCR				Multidimensional Intensity				MPI			
	ST	SC	OBC	Other	ST	SC	OBC	Other	ST	SC	OBC	Other
Andhra Pradesh	79.1	64.0	55.9	39.0	58.7	52.2	51.4	48.6	0.464	0.334	0.287	0.189
Assam	38.2	54.9	43.5	47.6	51.8	52.5	51.8	54.2	0.198	0.289	0.225	0.258
Bihar	77.3	85.8	65.2	40.0	66.0	67.3	60.4	56.3	0.510	0.577	0.394	0.225
Chhattisgarh	75.1	64.1	61.7	29.7	58.9	52.3	53.9	50.1	0.442	0.335	0.333	0.149
Gujarat	72.5	53.6	55.6	18.6	54.9	50.2	51.9	44.5	0.398	0.269	0.289	0.083
Haryana	11.9	70.1	43.3	20.9	39.0	53.2	51.2	45.6	0.046	0.373	0.222	0.095
Himachal Pradesh	42.1	46.4	29.6	24.5	49.2	48.9	46.4	47.5	0.207	0.227	0.137	0.116
Jammu & Kashmir	55.6	28.9	30.7	21.9	49.4	48.1	45.7	45.5	0.274	0.139	0.140	0.099
Jharkhand	74.3	72.7	57.2	33.9	57.4	58.3	55.0	53.7	0.427	0.424	0.315	0.182
Karnataka	76.7	70.3	53.2	34.1	53.5	53.4	50.7	48.5	0.410	0.375	0.270	0.165
Kerala	76.4	45.4	35.4	19.5	54.9	46.7	44.0	43.1	0.420	0.212	0.156	0.084
Madhya Pradesh	87.2	73.2	62.5	32.1	62.9	57.4	53.4	47.6	0.548	0.420	0.334	0.153
Maharashtra	78.1	63.6	50.6	39.3	59.9	51.9	49.1	46.6	0.468	0.330	0.248	0.183
Odisha	86.8	71.7	55.5	34.0	65.2	58.8	54.6	50.9	0.566	0.421	0.303	0.173
Punjab	61.4	59.4	42.7	18.6	50.5	51.5	47.6	42.2	0.310	0.306	0.203	0.078
Rajasthan	81.2	72.4	57.2	37.6	63.5	58.3	53.8	52.7	0.516	0.422	0.308	0.199
Tamil Nadu	43.8	63.3	43.7	16.8	61.0	50.6	48.0	44.0	0.267	0.320	0.210	0.074
Tripura	58.3	53.9	46.1	39.1	54.4	51.7	50.4	51.6	0.318	0.279	0.232	0.202
Uttar Pradesh	74.2	72.9	62.1	40.7	56.5	58.6	57.6	54.0	0.419	0.427	0.358	0.220
Uttarakhand	49.7	58.3	59.5	35.4	50.8	53.0	52.9	48.1	0.252	0.309	0.315	0.170
West Bengal	70.6	59.6	34.8	44.7	59.8	54.1	55.4	54.9	0.423	0.322	0.192	0.245
Sikkim	46.1	53.7	46.2	44.8	50.3	50.4	50.4	50.5	0.232	0.271	0.233	0.226
Arunachal Pradesh	56.0	46.6	64.0	59.8	53.9	46.0	63.0	50.9	0.302	0.214	0.403	0.304
Nagaland	15.1	17.1	71.2	28.2	46.2	37.0	64.5	42.9	0.070	0.063	0.460	0.121
Manipur	55.9	28.3	27.7	49.9	48.4	38.8	41.9	48.3	0.270	0.110	0.116	0.241
Mizoram	25.7	30.5	45.3	0.0	48.1	46.7	44.0	N/A	0.123	0.142	0.200	N/A
Meghalaya	56.2	23.0	31.4	34.1	49.8	45.6	53.9	46.2	0.280	0.105	0.169	0.158
Delhi	0.0	34.8	32.3	11.5	N/A	45.9	41.2	43.8	N/A	0.160	0.133	0.051
Goa	49.8	65.2	52.6	34.0	56.7	43.5	39.2	40.6	0.282	0.284	0.206	0.138
Pondicherry	0.0	63.7	23.3	8.7	N/A	51.1	44.5	42.4	N/A	0.325	0.104	0.037
Chandigarh#	17.8	26.7	16.7	12.1	40.3	40.0	44.4	41.7	0.072	0.107	0.074	0.050
Daman & Diu#	29.4	0.0	20.0	14.6	37.8	N/A	37.7	36.2	0.111	N/A	0.076	0.053
D & N Haveli#	69.6	61.2	24.7	30.4	57.7	37.9	45.5	45.7	0.402	0.232	0.112	0.139
Lakshadweep#	10.8	100.0	0.0	26.1	44.8	39.0	N/A	42.0	0.048	0.390	N/A	0.109
A & N Islands#	29.0	N/A	12.7	21.2	35.8		36.7	46.2	0.104	N/A	0.047	0.098

Table A3.7 Status of Multidimensional Poverty (HCR, Intensity, and MPI) by Caste across States in India, 2011-12

	Multidimensional HCR				Multidimensional Intensity				MPI			
	ST	SC	OBC	Other	ST	SC	OBC	Other	ST	SC	OBC	Other
Andhra Pradesh	52.1	36.9	30.0	19.2	42.4	43.5	43.2	41.4	0.221	0.160	0.129	0.079
Assam	31.3	30.6	37.7	36.0	48.8	45.1	49.8	49.2	0.153	0.138	0.188	0.177
Bihar	66.5	63.3	49.0	22.8	57.9	53.5	52.3	48.9	0.385	0.338	0.256	0.112
Chhattisgarh	66.1	64.6	47.5	19.3	48.0	44.4	45.9	42.7	0.317	0.287	0.218	0.083
Gujarat	37.4	34.7	31.4	7.6	45.3	41.3	46.4	38.7	0.169	0.143	0.146	0.029
Haryana	21.1	28.8	28.6	10.1	43.7	45.7	42.8	40.5	0.092	0.132	0.123	0.041
Himachal Pradesh	13.4	22.7	7.5	12.8	41.78	43.64	44.41	41.54	0.056	0.099	0.033	0.053
Jammu & Kashmir	30.8	28.8	18.8	14.8	45.50	48.95	44.26	43.26	0.140	0.141	0.083	0.064
Jharkhand	57.6	47.5	37.8	30.2	51.7	51.6	46.5	46.3	0.298	0.245	0.176	0.140
Karnataka	26.5	33.2	21.3	19.1	49.2	44.5	44.3	44.7	0.130	0.148	0.094	0.085
Kerala	53.0	26.3	12.1	10.9	50.2	42.1	39.8	39.9	0.266	0.111	0.048	0.043
Madhya Pradesh	67.7	54.0	37.4	19.8	50.3	47.8	45.2	43.4	0.340	0.258	0.169	0.086
Maharashtra	58.2	25.1	23.5	16.3	50.7	44.6	43.4	43.4	0.295	0.112	0.102	0.071
Odisha	65.7	52.1	37.0	15.9	53.4	50.8	47.2	45.1	0.351	0.265	0.175	0.072
Punjab	30.1	28.7	16.1	9.2	40.30	44.08	39.96	41.47	0.121	0.127	0.064	0.038
Rajasthan	66.6	47.7	34.6	15.8	57.7	48.5	45.6	40.3	0.384	0.232	0.158	0.064
Tamil Nadu	38.1	26.4	15.3	9.8	48.9	42.8	41.4	40.4	0.186	0.113	0.063	0.040
Tripura	42.2	34.6	31.1	25.6	46.4	42.8	44.1	43.9	0.195	0.148	0.137	0.113
Uttar Pradesh	41.4	61.4	49.7	25.1	55.3	53.3	52.4	47.2	0.229	0.327	0.261	0.119
Uttarakhand	23.1	29.8	29.3	16.0	50.2	45.0	42.6	42.4	0.116	0.134	0.125	0.068
West Bengal	55.4	43.8	27.7	31.8	51.3	47.5	45.8	46.4	0.284	0.208	0.127	0.147
Sikkim	27.6	33.7	27.4	17.5	41.0	50.1	42.1	43.9	0.113	0.169	0.115	0.077
Arunachal Pradesh	59.1	37.3	77.3	50.9	47.2	49.7	43.4	55.8	0.279	0.185	0.335	0.284
Nagaland	13.3	38.6	22.4	5.6	39.3	40.0	33.3	48.1	0.052	0.154	0.075	0.027
Manipur	39.0	42.9	27.6	41.6	44.0	41.2	40.5	47.9	0.172	0.176	0.112	0.199
Mizoram	19.9	3.3	67.9	33.6	44.0	46.7	49.6	44.2	0.088	0.015	0.337	0.148
Meghalaya	23.5	58.8	3.0	23.6	43.1	37.9	42.3	40.9	0.101	0.223	0.013	0.096
Delhi	4.5	30.2	26.8	13.8	38.2	51.1	41.5	40.3	0.017	0.154	0.111	0.056
Goa	18.5	3.2	6.5	11.1	40.7	40.0	33.7	42.3	0.075	0.013	0.022	0.047
Puducherry	34.1	15.2	9.4	15.7	54.0	40.3	41.0	35.5	0.184	0.061	0.039	0.056
Chandigarh#	0.0	54.3	5.3	12.3	N/A	53.76	51.50	36.34	N/A	0.292	0.027	0.045
Daman & Diu#	33.0	3.1	10.3	23.2	37.8	36.7	41.2	37.7	0.125	0.011	0.042	0.088
D & N Haveli#	60.1	0.0	18.6	8.0	50.1	N/A	42.4	41.3	0.301	N/A	0.079	0.033
Lakshadweep#	6.0	0.0	0.0	0.0	41.3	N/A	N/A	N/A	0.025	N/A	N/A	N/A
A & N Islands#	3.7	0.0	4.1	19.0	47.6	N/A	N/A	44.1	0.018	N/A	N/A	0.084

Table A 5.1 Status of Multidimensional Poverty (HCR, Intensity, and MPI) by Sector (R, U, T) across States in India, 2005-06 and 2015-16

	HCR				Intensity				MPI			
	Rural		Urban		Rural		Urban		Rural		Urban	
	2005-06	2015-16	2005-06	2015-16	2005-06	2015-16	2005-06	2015-16	2005-06	2015-16	2005-06	2015-16
Andhra Pradesh(combined)	55.6	22.8	22.4	5.3	46.3	40.8	42.9	40.4	0.26	0.194	0.1	0.043
Assam	67.5	41.3	24.2	11.4	50.3	44.5	45.7	41	0.34	0.184	0.11	0.047
Bihar	83	59.5	45.5	24.6	57.6	47.3	54.3	46.3	0.48	0.281	0.25	0.114
Chhattisgarh	79.1	43.8	27.4	11.8	50.8	41.9	44	39.8	0.4	0.184	0.12	0.047
Gujarat	54.1	33.7	12.8	6.9	48.2	42.8	45.3	42.8	0.26	0.144	0.06	0.029
Haryana	47.3	14.7	16.1	6.6	46.7	42.4	46.2	42.6	0.22	0.062	0.07	0.028
Himachal Pradesh	39.1	11.8	7.8	2.5	40.4	36.9	40.3	37.4	0.16	0.044	0.03	0.01
Jammu & Kashmir	53.5	23.8	11.4	5.1	46	41.9	43.7	41	0.25	0.1	0.05	0.021
Jharkhand	85.5	57.3	32	17.4	56.9	45	46.8	40.9	0.49	0.258	0.15	0.071
Karnataka	54.6	23.1	17.6	5.7	46.4	40.3	43.8	39.1	0.25	0.093	0.08	0.022
Kerala	16.9	1.7	9.2	0.7	38.8	37.9	37.6	35.3	0.07	0.006	0.03	0.002
Madhya Pradesh	79.1	52.4	30.1	14.3	53.1	45	48.4	42.5	0.42	0.236	0.15	0.061
Maharashtra	55.6	28.7	11.3	5.9	47.1	42	44.2	40.7	0.26	0.12	0.05	0.024
Orissa	68.9	40.7	29.6	13.6	51.7	43.5	46.9	42.7	0.36	0.177	0.14	0.058
Punjab	29.9	8.5	12.6	3.9	44.6	40.3	46.4	43.2	0.13	0.034	0.06	0.017
Rajasthan	74	40.2	21.7	11.3	53.5	45.3	44.7	42.7	0.4	0.182	0.1	0.048
Tamil Nadu	43.5	11.8	17.5	3	41.9	37.7	41	37.3	0.18	0.044	0.07	0.011
Tripura	57.2	26.7	28.2	9.4	48	42.9	44.5	38.9	0.27	0.115	0.13	0.037
Uttar Pradesh	74.4	50.2	34.5	17.6	52.3	44.7	48.8	45.1	0.39	0.225	0.17	0.079
Uttarakhand	47.4	25	13.2	9.6	45.4	40.7	47.3	43.9	0.22	0.101	0.06	0.042
West Bengal	71.1	33.7	23.9	13.4	51.5	41.9	44.2	42.4	0.37	0.141	0.11	0.057
Sikkim	47.3	7.6	9.2	3.2	46.7	38	42.8	39.5	0.22	0.029	0.04	0.013
Arunachal Pradesh	57.6	24.3	37.2	6.6	50.4	42.8	47.5	40.4	0.29	0.104	0.18	0.027
Nagaland	61.8	31.2	28.9	10.7	51.5	41	45.6	39.8	0.32	0.128	0.13	0.042
Manipur	47.4	22.2	23.6	9.8	46.5	40.3	44	38.6	0.22	0.089	0.1	0.038
Mizoram	41.5	19.6	9.6	2	44.2	42.8	41.3	38.3	0.18	0.084	0.04	0.008
Meghalaya	66.8	36.9	21.2	9	52.9	44.2	44.7	39.4	0.35	0.163	0.1	0.035
Goa	28.9	7.4	11.2	4	43.5	37	42.8	39.3	0.13	0.027	0.05	0.016

Table A 6.1 Type of multidimensional deprivation across social castes and districts of West Bengal

	ST			SC			Others		
	Deprived (LD)	Deprived (MD)	Deprived (ED)	Deprived (LD)	Deprived (MD)	Deprived (ED)	Deprived (LD)	Deprived (MD)	Deprived (ED)
Darjeeling	71.9	19.1	0.01	68.4	19.3	0.003	37.7	3.2	0.00
Jalpaiguri	82.4	35.9	0.01	80.0	23.8	0.018	50.2	4.9	0.00
Cooch Behar	81.6	36.7	0.00	82.4	20.9	0.008	52.8	5.3	0.00
Uttar Dinajpur	85.4	45.0	0.02	79.0	28.2	0.007	60.8	7.1	0.00
Dakshin Dinajpur	89.9	35.6	0.02	85.5	24.4	0.008	45.0	3.8	0.00
Maldah	88.3	45.7	0.03	83.8	38.8	0.009	67.3	13.7	0.00
Murshidabad	90.7	62.2	0.04	85.4	45.3	0.026	65.0	11.8	0.00
Birbhum	92.3	66.6	0.04	90.2	60.7	0.041	58.6	11.9	0.00
Burdwan	88.4	56.3	0.02	86.2	45.8	0.029	41.7	5.5	0.00
Nadia	90.0	56.8	0.03	81.6	28.8	0.011	58.5	10.0	0.00
North 24 Parganas	87.1	54.2	0.02	79.3	30.1	0.012	57.0	8.2	0.00
Hooghly	88.1	47.6	0.05	84.2	35.2	0.026	32.7	2.4	0.00
Bankura	89.8	35.6	0.02	90.6	55.6	0.054	38.2	5.3	0.00
Purulia	88.6	34.3	0.02	86.7	47.3	0.024	49.4	7.6	0.00
Howrah	62.7	24.8	0.00	82.8	26.7	0.004	46.3	3.1	0.00
South 24 Parganas	86.0	52.4	0.02	82.1	29.8	0.015	61.5	9.0	0.00
Paschim Medinipur	85.2	38.0	0.06	86.6	32.9	0.039	36.5	4.2	0.00
Purba Medinipur	80.9	49.0	0.00	83.7	30.8	0.009	51.9	4.5	0.00
West Bengal	86.0	41.6	0.03	83.6	34.8	0.020	52.6	7.4	0.00
All India	74.3	30.3	0.02	72.0	31.1	0.025	38.4	5.7	0.00

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