Chapter 10
A Study of Multidimensional Poverty in Northeast India

Supravat Bagli

Abstract The primary objective of this chapter is to compute a multidimensional poverty index (MPI) for each state and for each district in northeast India. This index covers three dimensions—Knowledge, Health and Living condition. We have taken illiteracy rate and financial illiteracy rate as deprivation indicators under knowledge dimension. Health dimension includes the use of unsafe drinking water and no access to improved sanitation as indicator of deprivation. The dimension of living condition is comprised of four indicators viz. households having dilapidated residence, no census assets, no access to electricity or solar energy for lighting and no access to improved fuel for cooking. The MPI has been calculated gauging the normalised inverse 'Euclidian distance' of the observed vector of the indicators of deprivation from the vector indicating worst state of multidimensional poverty. This study distributes weight equally across the selected dimensions and equal weight has been consigned with each indicator within a dimension. The study has mainly used the data published by Directorate of Population Census of India 2011. We have observed that Meghalaya is the most deprived state in northeast India while Mizoram, Tripura are in relatively better-off position among the northeastern states. This study has explored that the Kurung Kumey district belonging to Arunachal Pradesh is the poorest district among the 86 districts. However, among the ten most deprived districts eight are not located in Meghalaya. None of the districts in Mizoram, Tripura and Sikkim come in the ten most multidimensionally poor districts. On the other hand, Aizawl district of Mizoram is the least deprived among the districts in North-East India. No one of the ten least multi dimensionally poor districts belong to the state of Meghalaya. The disparities among the states and among the districts in terms of the indicators under consideration have also been revealed. However, there is no straightforward relation between MPI of the states and percentage of population live below poverty line income.

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10.1 Background

The state of poverty of a household/person is the manifestation of inadequate socio-economic well-being. Although, poverty is a multidimensional issue we usually calculate it taking per head income or consumption as yardstick. However, income or consumption centric measures of poverty have already been castigated as real measure to reveal multidimensional poverty of a country. Health, education and living standard are identified as major non income dimensions of poverty. In order to quantify multiple dimensions of poverty Mahbub ul Haq proposed the concept of Human Development Index (HDI). Since 1990 Human Development Reports at different levels have been reporting HDI as achievement index of the nations, states and districts. This measure takes into account of the arithmetic average of the standardised indicators. It fails to put more emphasis on more deprived indicators. In order to overcome this problem we have found Human Poverty Index. Recently the concept of Multidimensional Poverty Index (MPI) has been developed. The multidimensional poverty Index emphasised on non income aspects of poverty. Moreover, the methodology of MPI is applicable at the community level as well as individual/household level. However, all measures of poverty by UNDP assume indicators as substitute to each other. So far, the multidimensional poverty indices for the countries have been appearing in UNDP human development reports since 2010. In India as a whole more than half of the population are multidimensionally poor. But we have no idea regarding the multidimensional poverty of the states, particularly northeastern states, in India. Perhaps no district level human development report in India has reported the multidimensional poverty index of the district or of its block. With this end in view, the present study has tried to bring the close picture of multidimensional poverty of each state and for each district in northeast India.

Apart from the introductory section this chapter has four sections. A brief review of relevant literature and the objectives of this study have been presented in Sect. 10.2. In Sect. 10.3, research methodology applied in this study has been specified. We have discussed the empirical findings of this study in Sect. 10.4. Section 10.5 concludes this chapter indicating some policy prescription for further development of the people in northeast India combating the imbalances in development.

10.2 Literature Survey and Objectives

The issue of multidimensional poverty is as old as the idea of capability approach for development. Under the auspices of UNDP during the last quarter century we have got different poverty measures like HDI, HPI, GDI and MPI which cover

multiple dimensions of poverty. In addition to the measures of UNDP, several studies have tried to report the multidimensional poverty of different regions. Mehta and Shah (2003) have measured multidimensional poverty indices for the districts of 15 states in India including Assam from northeast India. The study has used published data reported in India Rural Development Report (NIRD), 1999 and Planning Commission Report 2000. They have considered infrastructure and agricultural productivity in addition to income, education and health, as dimension of multidimensional poverty. They have revealed that six of the seven most multidimensionally poor districts are located in four of the seven most income poor states. However, none of the district in Assam is included in the seven districts with highest multidimensional poverty. Applying household level data Alkire and Santos (2010) have first computed Multidimensional Poverty Index (MPI) for hundred and four developing countries. In order to cover multidimensional aspects of poverty they have considered three dimensions, viz. education, health and living standard, comprising ten indicators. The MPI combines a set of existing deprivations of the persons/households. UNDP Human Development Report (2010) has revealed that south Asia and Sub-Saharan Africa are the home of the majority of the multidimensional poor in the world. It is reported that in India 55.4% of the population is multidimensionally poor. Among the states in Indian the extent of multidimensional poverty is lowest in the state of Kerala and highest in Bihar. It is reported that for the northeastern states as a whole the value of MPI was 0.30 and 57.6% population are multidimensionally poor in 2008–9. Alkire et al. (2014) have proposed more advanced methodology for measuring MPI and thereby inequality among the multidimensionally poor households or subgroups. It is pertinent to note that MPI is a non-income measure of poverty and thereby the fundamental flaws concentrating upon income or consumption data for estimating poverty have been eradicated in the measure of MPI. The Indices of Housing Deprivation (IHD) for the Indian states have been reported by Bagli (2013). Percentage of households residing dilapidated residence; percentage of households not having access to safe drinking water; percentage of households without electricity and percentage of households without scientific sanitation facility are the indicators of housing deprivation. For measuring IHD the study has used the normalised inverse Euclidian distance of the observed deprivation index vector from the vector of acute deprivation. He has reported that housing deprivation is lowest in Delhi and highest in Orissa among the states in India. Among northeastern states housing deprivation is least in Sikkim and highest in Assam. The study has explored a negative and significant correlation of IHD with HDI of the states in India. The relation between backward population index and IHD is statistically insignificant. Bhattacharya and Halder (2014) have computed a weighted deprivation index and inequality of Reproductive and Child Health (RCH) status for the districts in West Bengal applying PCA and standard methodologies of measuring inequality. They have used data of Household and Facility survey under Reproductive and Child Health project at three time points. They have found that the districts are clearly uneven with respect to the health care services and its utilisation. They have found female literacy as an important determinant of RCH status. Based on a set of primary data Bagli (2015b) has also

reported the MPI of two CD blocks of the district of Bankura in West Bengal. It is reported that MPI of Chhatna block is almost three fold higher than that in Kotulpur block. In another paper Bagli (2015a) reveals that per capita household income, landholding, major occupations and castes as significant determinants of multidimensional poverty for SC and ST households in Bankura district. The probability to be an extreme multidimensional poor is lower for a tribal household compared to a scheduled castes household. However, in contrast to scheduled castes, scheduled tribes are more likely to be marginal poor and vulnerable. In order to become familiar with the Multidimensional poverty in northeast India and to locate the most multidimensionally poor district in this region we set the objectives of this study.

First, we seek to investigate the incidence and concentration of multidimensional poverty of the states in northeast India. Second, this study explores which states are found to be closed to each other based on the observed indicators of multidimensional poverty. Third, we determine the relative position of the districts of northeast India based on the computed multidimensional poverty Index for the districts in this zone.

10.3 Research Methodology

Keeping in mind the objectives this chapter computes a multidimensional poverty index (MPI) for each state and for each district of north east region of India. This index covers three dimensions—Knowledge, Health and Living condition. We have taken illiteracy rate and financial illiteracy rate as deprivation indicators under knowledge dimension. Illiteracy rate is measured by the percentage of population aged above six years, who are unable to read and write. Very recently, the financial literacy has been considered as an important indicator of inclusive development. By financial literacy, we mean the knowledge of how to avail formal financial services like savings, credit, payment, insurance, remittance, etc. Due to financial illiteracy people may fail to make their money plan in a proper way. Sometimes, people lose their money owing to financial illiteracy. 'Sarada Scam' in West Bengal is a burning example of how the financial loss arises due to financial illiteracy. To this end, we have taken financial illiteracy as an indicator of knowledge deprivation. It has been measured by the percentage of households having no access to any banking services. No point to deny that access to safe drinking water and scientific sanitation facility are the basement of health and hygiene in life. Health dimension of multidimensional poverty in this study covers the percentage of households using unsafe source of drinking water and households having no access to improved sanitation as indicator. In this study, tap water but untreated, water from uncovered well, water from spring, river, pond, lake, etc., as source of drinking water have been considered as unsafe drinking water. The households where members used to defecate in the open space have been taken as household having no access to improved sanitation.

The dimension of living condition is comprised of four indicators viz. households having dilapidated residence, no census assets, no access to electricity or solar energy for lighting and no access to improved fuel for cooking. In accordance with the population census, 2011 dilapidated residence refers to the residences which are in the verge of breaking down and require immediate repairs or those houses broke and are that cannot be repaired easily. If the household own no one of the assets like Bicycle, Transistor, Television, Computer, Mobile Phone, Motorcycle, etc. we refer it as a household with no census assets. The households who use fuel like crop residue, cow dung cake, firewood, coal lignite and charcoal, etc., which causes indoor pollution have been considered as the households using dirty fuel for cooking. The percentage of households, who use kerosene or other oil for lighting or have no lighting arrangement in residence are considered as deprived of electricity or solar energy for lighting in residence. In our index, each selected dimension has got equal weight and weight of a dimension equally distributed among the indicators under the dimension. The details of the dimensions, indicators and corresponding weights for measuring MPI have been specified in Table 10.1.

The conventional measures of multidimensional poverty except MPI ignores to present the number instances the people suffer from multidimensional poverty. In this study the incidence of multidimensional poverty, that is, a head count ratio of multidimensional poverty for each state and for each district has been computed following the simple formula

$$\text{MHCR} = \frac{\sum_{i=1}^{8} N_i}{8N} \times 100,$$

where $i = 1, 2, 3, \ldots, 8$, indicator, N_i number of persons/household deprived from ith indicator, and N stands for total households in the state/district.

Table 10.1 Multidimensional poverty: its dimensions and indicators with weight

Dimension	Indicators	Weight (W_i)
Knowledge	(1) Percentage of illiterate population	1/6
	(2) Percentage of financially literacy households	1/6
Health	(1) Percentage of households using unsafe source of drinking water	1/6
	(2) Percentage of households having no access to improved sanitation	1/6
Living standard	(1) Percentage of households having dilapidated residence	1/12
	(2) Percentage of households having no census assets	1/12
	(3) Percentage of households using dirty cooking fuel	1/12
	(4) Percentage of households having no access to electricity	1/12

Source Author's own justification

In order to gauge the intensity of multidimensional poverty first of all we have placed the indicator in scale 0 to W_i which indicates the deprivation index for the particular indicator. We have computed the weighted deprivation index (D_i) for ith indicator following the formula

$$D_i = W_i \frac{A_i - m_i}{M_i - m_i},$$

where i = 1, 2, 3,…, 8, W_i = weight attached to the dimension i, $0 \leq w_i \leq 1$, D_i = weighted deprivation index of ith indicator, A_i = actual value of ith indicator, M_i = maximum value of ith indicator and m_i minimum value of ith indicator.

The minimum and maximum values of the indicators are observed among the districts as applicable, in northeast India. Now based on the indicator deprivation indices the position of *j*th state/district in the eight dimensional 'Cartesian Space' can be plotted by the vector (D_{1j}, D_{2j}, D_{3j}, D_{4j}, D_{5j}, D_{6j}, D_{7j}, D_{8j},). In this Cartesian Space vector (0, 0, 0, 0, 0, 0, 0, 0) capture the best situation where multifaceted deprivation is absent. The acute multidimensional poverty is represented by the vector $(W_1, W_2, W_3, W_4, W_5, W_6, W_7, W_8)$. Finally, we have calculated the Multidimensional Poverty Index (MPI) measuring the normalised inverse 'Euclidian distance' of the vector of observed situation from the vector of acute multidimensional poverty. The formula for computation of MPI is as follows:

$$\text{MPI} = 1 - \sqrt{\frac{\sum_{i=1}^{8} (W_i - D_i)^2}{\sum W_i^2}}.$$

The normalisation of Euclidian distance is done in order to ensure the range of MPI from '0' to '1'. As the inverse distance has been taken, higher value of MPI represents higher level of poverty. Thus, the value '0' indicates no multidimensional poverty and '1' indicates extreme multidimensional poverty. This distance-based approach has an advantage over the UNDP methodology of measuring achievement or deprivation Index. In UNDP methodology, the index presents the arithmetic or geometric average of the standardized indicators. It assumes perfect substitutability across the dimensions or indicators. Under this assumption, a decrease in value of one indicator can be compensated by an increase of equal magnitude in another indicator. Thus, if all dimensions or indicators are equally important for the all over index value the perfect substitutability among the indicators is not appropriate. The distance-based approach does not suffer from this limitation. Our MPI formula does satisfy the properties of normalisation, symmetry, monotonicity, proximity, uniformity and signalling. But methodology of HDI follows only the properties viz. normalisation, symmetry, monotonicity. Thus, our distance-based measure of multidimensional poverty is superior to the measures based on UNDP methodology. In order to categorise the states or districts in accordance with its MPI value this study has set three sub-ranges. The high level of multidimensional poverty has been denoted by the range $0.5 < \text{MPI} \leq 1$. The range

$0.2 < \text{MPI} \leq 0.5$ indicates moderate level of poverty. The relatively low level of multidimensional poverty has been specified by the range $0 \leq \text{MPI} < 0.2$.

In order to investigate which states are similar with respect to the selected indicators of multidimensional deprivation we have employed the tool of cluster analysis following squared Euclidian distance method. Finally, to show the possible clusters of the states we have drawn a Dendrogram adopting average linkage method.

Secondary sources of data have been used for empirical analysis of this study. The data for the indicators of multidimensional poverty, and aggregate workforce participation for the states and districts in northeast India have been collected from Population Census Report (2011), Government of India. Data for income poverty has been collected from the report of the Planning Commission, Government of India (2014). We have considered all the states and districts in northeast India and census data for studying the nature and ranges of multidimensional poverty. Thus there is no sampling error problem in the findings and accordingly the findings are more reliable compared to the findings of any study based on sample.

10.4 Findings and Discussion

Table 10.2 presents the description of the indicators of multidimensional poverty across the states in northeast India. In Fig. 10.1 it is reported that illiteracy is highest in the state of Arunachal Pradesh while financial illiteracy is moderate in this state. Illiteracy rate is least in the state of Mizoram. The variation of illiteracy

Table 10.2 Descriptions of the indicators of MPI for the states in northeast India

Indicators	Mean	Median	SD	CV	Max	Min
Illiterate population	21.44	21.75	8.29	38.68	34.62	8.66
Households having no access to banking facility	50.04	51.45	17.19	34.36	71.40	20.80
Households use unsafe source of drinking water	58.18	59.45	15.96	27.43	80.80	29.80
Households have no improved sanitation facility	22.70	18.75	12.40	54.64	38.00	8.10
Households live in dilapidated residence	4.88	4.60	2.73	55.99	10.70	1.80
Households do not have census asset	25.93	25.70	6.68	25.78	35.80	18.20
Households have no access to electricity or solar power for lighting	28.80	29.30	16.88	58.61	62.20	7.30
Households use dirty fuel for cooking	72.20	75.95	13.41	18.57	86.40	47.20
MHCR	35.52	38.35	6.96	19.59	43.92	25.27

Source Author's computation based on census data, 2011

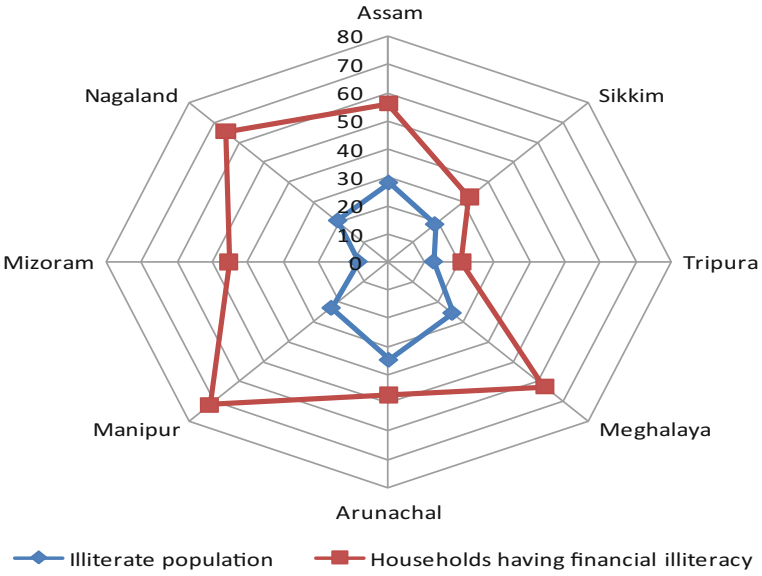


Fig. 10.1 Distribution of knowledge among the states in northeast India. *Source* drawn based on census data, 2011

rate across the states is not so prominent. The financial illiteracy is highest in Manipur followed by Nagaland and Meghalaya among the states in northeast India. In average half of the households in northeast India are financially excluded. The mean and variability of financial illiteracy are relatively high compared to normal illiteracy. Thus financial exclusion is a serious problem in North eastern states Fig. 10.2.

We observe that in average 58% households in northeast India collect drinking water from unsafe source. Percentage of households having access to unsafe source of drinking water is highest in Nagaland followed by Sikkim and Manipur. Problem of the use of unsafe drinking water is lowest in Assam, but in this state one third of the households have no improved sanitation facility. 38% of households in Arunachal Pradesh, which is highest among the states in northeast India, do not have improved sanitation facility. Average access to scientific sanitation facility is highest in the state of Mizoram. Moderate level disparity prevail among the states regarding the access to safe drinking water while a high level disparity is present among the states in respect of access to improved sanitation Fig. 10.3.

The problems of dilapidated residential house and non access to electricity or solar power for lighting are severe in Assam among the states under consideration. In terms of asset holding Meghalaya is poorest state in northeast India followed by Nagaland and Arunachal Pradesh. Poverty in terms asset is lowest in the state of Sikkim. Inequality of having dilapidated house across the states is very high. On the other hand, poverty in terms of asset holding has low mean and low variance.

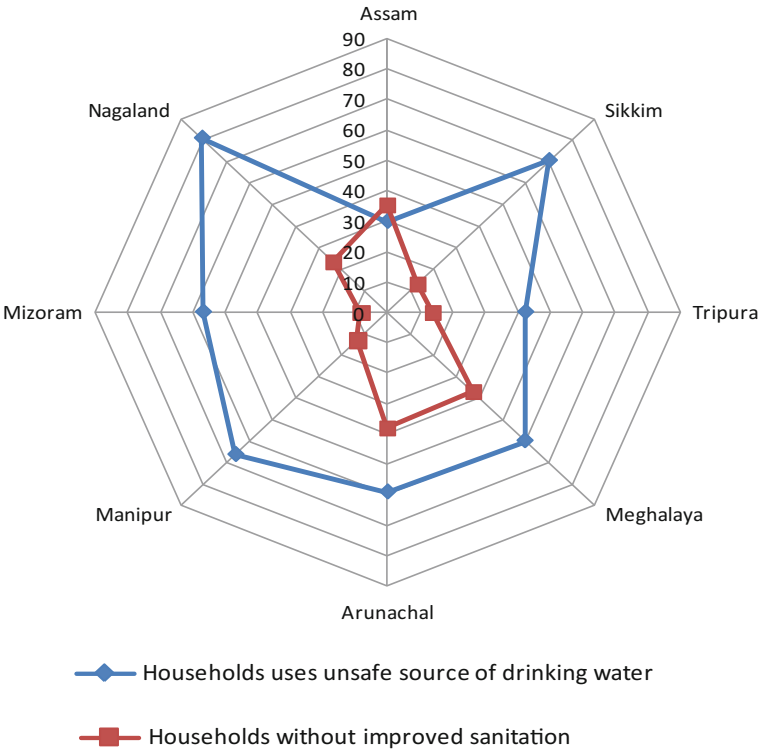
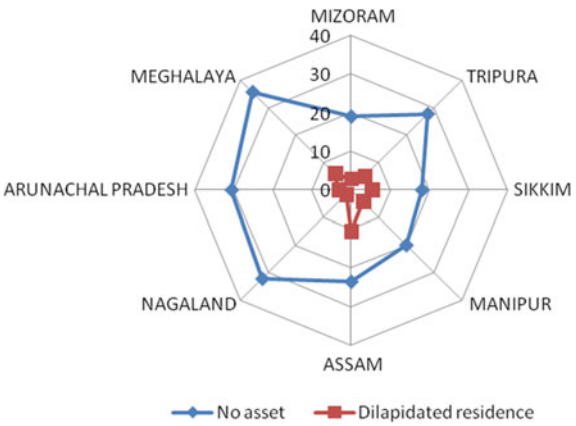


Fig. 10.2 Distribution of health indicators among the states in northeast India. *Source* drawn based on census data, 2011

Fig. 10.3 Distribution of asset and housing poverty among the states in northeast India. *Source* drawn based on census data, 2011



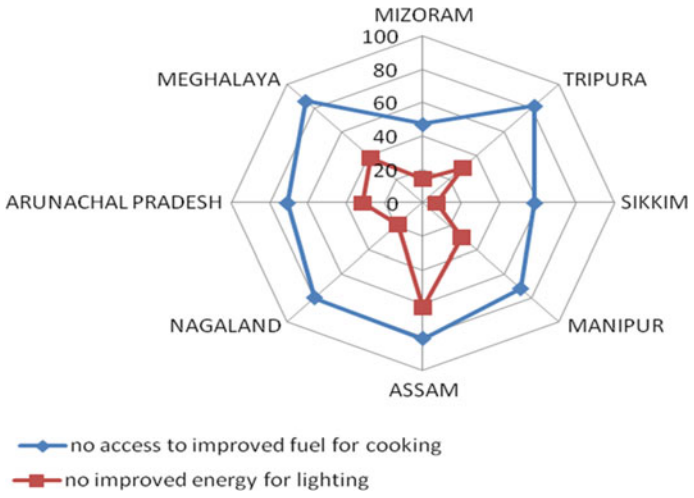


Fig. 10.4 Distribution of energy poverty across the states in northeast India. *Source* drawn based on census data, 2011

Meghalaya is also poorest among the north eastern states in terms of access to improved fuel for cooking. In average 72% households in the states in northeast India use dirty fuel for cooking. In North-Eastern states 28% of households cannot use electricity or solar power for lighting. It varies from 7 to 62% across the states. The state of Sikkim is best among the states in northeast India in terms of having access to improved power for lighting Fig. 10.4.

All these indicators provide important and useful information regarding the multidimensional poverty of an economy. However, individual indicator provides only partial information on the deprivation. Actually from the individual indicators we find head count ratio for the respective indicator. Using single indicator may also lead to a misinterpretation of the extent of multiple dimensions of poverty. Further, individual indicator fails to compare the state of multidimensional poverty among the states/districts. To this end, we have measured incidence of the multi-dimensional poverty computing multidimensional poverty head count ratio and gauged extent of multidimensional poverty computing MPI.

The measure of multidimensional poverty head count ratio reveals that 35% of the households across the states of northeast India are multidimensionally poor. The incidence of multidimensional poverty is highest in the state of Meghalaya where 43% households are multidimensionally poor. It is however, pertinent to note that only 12% households in Meghalaya are income poor. We have found that value of MPI ranges from 0.180 to 0.702 across the states. In accordance with computed MPI the state of Meghalaya is the most deprived followed by Arunachal Pradesh and Nagaland while Mizoram, Tripura are relatively better in position among the north-eastern states. Table 10.3 shows that multidimensional poverty level is high in the states of Meghalaya, Arunachal Pradesh and Nagaland. The states of Sikkim,

Table 10.3 Population below poverty line (Tendulkar methodology) and MPI of the states

States	BPL population (%)	Rank of poverty line	MHCR	MPI	Rank of MPI
Mizoram	20.4	4	25.27	0.1808	8
Tripura	14.0	6	29.35	0.2044	7
Sikkim	8.2	8	27.93	0.3010	6
Manipur	36.9	1	37.37	0.4641	5
Assam	32.0	3	40.75	0.4906	4
Nagaland	18.9	5	40.23	0.5578	3
Arunachal Pradesh	34.7	2	39.33	0.6175	2
Meghalaya	11.9	7	34.92	0.7023	1

Source Government of India planning commission June, 2014 and author's computation based on Census data 2011

Manipur and Assam suffer from moderate level of multidimensional poverty. The multidimensional poverty is relatively low in Mizoram and Tripura. In Mizoram, one fifth of the population live below poverty line and one fourth are multidimensionally poor. In Manipur 37% of population are income poor as well as multidimensionally poor while rank of this state in accordance with the value of MPI is five among the eight states. Comparison of the ranks of the states in terms of income poverty head count ratio and ranks in term of MPI infers hardly an association between income poverty and multidimensional poverty of the states in northeast India.

The closeness of the values of indices does not ensure the similarity of the states in respect of the multiple dimensions/indicators of poverty. To study the similarity of the states in respect of the indicators of multidimensional poverty we have done cluster analysis. The result has been presented in Fig. 10.5. It explores that in respect of the indicators of multidimensional poverty Assam is distinct from the other states in northeast India. It is different from Sikkim and Manipur which are moderate in respect of MPI. Further, Sikkim is similar to Mizoram which is least suffering from multidimensional poverty. However, Meghalaya, Nagaland and Arunachal Pradesh come under same cluster with Manipur. In accordance with the figure of MPI Tripura and Mizoram are relatively better but they fall in different clusters.

Least multidimensional poverty of the state of Mizoram as a whole does not imply that all the districts in Mizoram have least multidimensional poverty. Further, severe multidimensional poverty of Meghalaya does not indicate extreme multidimensional poverty of its all districts. We have extended our study at the district level to realize the incidence and extent of multidimensional poverty across the districts in northeast India. Table 10.4 has depicted the descriptive statistics of the indicators of MPI for the districts. In respect of the district level data one fourth population are illiterate which varies from 2 to 51%. More than half of the households in the districts have no access to banking facility. It ranges from 9 to 90%. We find that in some districts more than 80% households have no access to

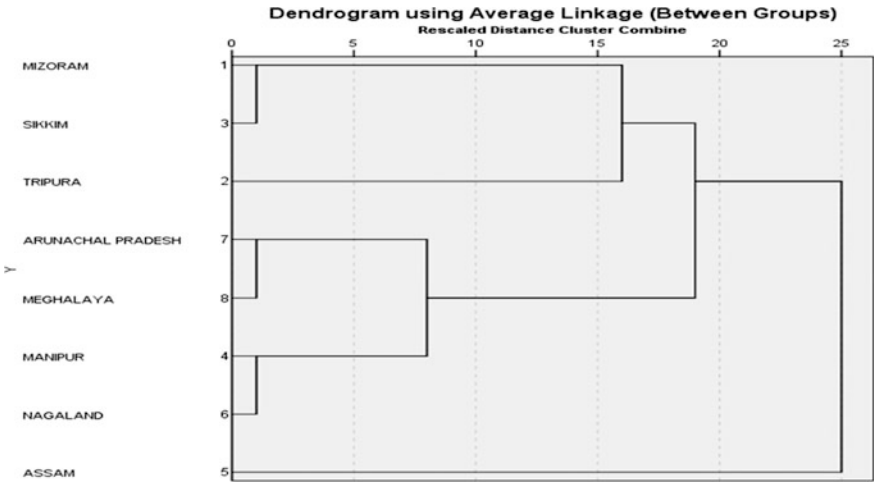


Fig. 10.5 Results of cluster analysis with respect to the Indicators of MDI. *Source* Author's computation

Table 10.4 Description of MPI and its indicators for the districts in northeast India

Indicator	Mean	Median	SD	CV	Skew	Max	Min
Illiterate population	25.39	25.59	10.56	41.61	−0.02	51.25	2.09
Households having no access to banking facility	55.40	58.65	18.83	33.99	−0.30	89.50	9.40
Households use unsafe source of drinking water	57.72	60.30	25.77	44.65	−0.45	94.10	3.80
Households have no improved sanitation facility	29.94	28.80	18.12	60.54	0.56	74.50	1.10
Households live in dilapidated residence	5.94	4.90	4.25	71.52	0.97	17.60	0.50
Households have no access to electricity or solar power for lighting	38.66	37.50	23.75	61.43	0.06	81.60	2.10
Households use dirty fuel for cooking	78.27	81.70	17.35	22.16	−1.31	99.20	20.70
Households do not have census asset	28.89	28.20	14.03	48.55	0.42	60.80	5.00
MHCR	40.30	40.96	10.56	26.38	−0.31	66.61	13.18
MDI	0.46	0.45	0.14	31.01	0.02	0.90	0.12

Source Author's computation

electricity. It not only makes deprivation of lighting, it accumulates the deprivation of the access to the facilities of modern IT. The descriptive statistics are shown in Table 10.4 focus a wide disparity across the districts in respect of the indicators of multidimensional poverty. In average, 40% of the households in the districts of North East are multidimensionally poor which varies from 13 to 67%.

Average value of MPI of the districts is 0.46 which ranges from 0.12 to 0.90 across the districts. Tables 10.5a and 10.5b presents the multidimensional poverty head count ratios and values of MPI for the districts in northeast states. This study has explored the district of Kurung Kumey belonging to Arunachal Pradesh as the poorest district among the 86 districts of eight northeastern states. In this district two third of the population are multidimensionally poor. More than half of the population in this district are illiterate; 80% households do not have access to banking facility. It is saddening that three fourth of the households have no access to improved sanitation and 88.2% households use unsafe source of drinking water. In this district, 12.3% households reside at dilapidated house, 70.1% households have no electricity or solar power for lighting at night and only 3.7% households have access to LPG or improved fuel for cooking. It is relevant to note that among the ten most deprived districts eight are not located in Meghalaya. None of the districts in Mizoram, Tripura and Sikkim come in the ten most multidimensionally poor districts. On the other hand, Aizawl district of Mizoram is the least deprived among the districts. No one of the ten least multi dimensionally poor districts belongs to Meghalaya.

The distribution of multidimensional poverty has also been annotated across the states. In accordance with the value of MDI, 31 districts (36%) in northeast India suffer from high level of multidimensional poverty. The level of multidimensional poverty of 51 districts (59%) is at moderate level. Only 4.6% of the districts in northeast India have low level of multidimensional poverty. The distribution of the districts with different level of multidimensional poverty has been presented in Table 10.6.

The state of Mizoram has least multidimensional poverty among the states in northeast India. But only two out of eight districts in Mizoram have low level multidimensional poverty. One district in Mizoram, namely Lawngtlai, has high level of multidimensional poverty. Other five districts are moderate poor in accordance with our measure. The state of Tripura has low level of multidimensional poverty but 75% of the districts in this state are under the group of moderate multidimensionally poor districts. However, in Meghalaya, which is poorest among the states, multidimensional poverty levels of six of the seven districts are high. Although the state of Arunachal Pradesh is very poor, one half of the districts in Arunachal Pradesh are not very poor.

Table 10.5a MPI and worker population ratios of the states in northeast India

State	District	MHCR	MPI	Rank	TWPR
Districts with high level of multidimensional poverty					
Arunachal Pradesh	Kurung Kumey	66.61	0.900	1	50.666
Arunachal Pradesh	Anjaw	51.81	0.679	2	59.344
Arunachal Pradesh	East Kameng	53.16	0.671	3	49.497
Nagaland	Mon	59.30	0.662	4	70.339
Assam	Chirang	52.59	0.657	5	47.413
Arunachal Pradesh	Upper Subansiri	51.84	0.649	6	47.018
Meghalaya	West Khasi Hills	53.60	0.639	7	55.138
Assam	Kokrajhar	52.20	0.635	8	45.471
Meghalaya	Jaintia Hills	47.45	0.634	9	50.682
Nagaland	Kiphire	54.62	0.627	10	53.900
Mizoram	Lawngtlai	51.73	0.626	11	47.758
Nagaland	Tuensang	53.80	0.626	12	61.039
Manipur	Tamenglong	54.19	0.624	13	58.244
Meghalaya	West Garo Hills	49.30	0.613	14	48.173
Meghalaya	South Garo Hills	52.41	0.605	15	46.379
Nagaland	Longleng	54.88	0.590	16	73.882
Manipur	Senapati	48.49	0.575	17	56.184
Assam	Sonitpur	45.16	0.573	18	46.810
Assam	Udalguri	46.89	0.571	19	48.028
Assam	Dhubri	53.32	0.568	20	42.367
Assam	Karbi Anglong	46.42	0.567	21	47.654
Assam	Baksa	48.04	0.551	22	49.172
Arunachal Pradesh	Changlang	44.44	0.551	23	51.461
Arunachal Pradesh	Dibang Valley	41.90	0.543	24	51.373
Meghalaya	Ribhoi	44.34	0.539	25	51.691
Manipur	Chandel	46.66	0.533	26	60.032
Assam	Goalpara	43.94	0.524	27	43.343
Arunachal Pradesh	Lower Dibang Valley	49.91	0.523	28	48.460
Meghalaya	East Garo Hills	39.60	0.523	29	48.518
Arunachal Pradesh	Lohit	39.77	0.506	30	50.027
Assam	Karimganj	48.69	0.504	31	39.260
Districts with moderate level of multidimensional poverty					
Assam	Darrang	46.35	0.500	32	42.073
Manipur	Ukhrul	50.24	0.499	33	55.099
Assam	Dima Hasao	43.45	0.498	34	46.799
Assam	Lakhimpur	42.93	0.498	35	48.565
Assam	Dhemaji	44.69	0.490	36	54.444
Nagaland	Peren	46.07	0.487	37	76.926
Assam	Bongaigaon	40.92	0.482	38	41.099

(continued)

Table 10.5a (continued)

State	District	MHCR	MPI	Rank	TWPR
Arunachal Pradesh	Upper Siang	37.25	0.477	39	58.170
Assam	Cachar	43.52	0.476	40	41.090
Nagaland	Phek	42.66	0.469	41	59.173
Arunachal Pradesh	West Kameng	34.23	0.469	42	58.770

Source Government of India planning commission June, 2014 and author's computation based on Census data 2011

10.5 Conclusion with Policy Prescriptions

This study reveals that multidimensional poverty is unevenly distributed across the districts in northeast India. Most of the districts in Meghalaya which is poorest among the states are multidimensionally extreme poor. Moreover, we have observed that the districts situated at the international border are extreme poor. The least poor districts have hardly border with foreign country. The problems of illiteracy, sanitation, water facility and housing condition are prominent and there is wide variation across the states and districts.

In order to extend education and to drive illiteracy of the common people, the Government should plan to establish primary school at each habitation which has no access to primary and upper primary, schools. In implementation part the Government has to put attention regarding language, number of teachers in the existing and coming primary schools. The proper authority has to advice the banking institutions and NGOs to serve the people of unbanked regions putting emphasis on the most financially excluded zones like Tamenglong in Manipur Kiphire in Nagaland. In this connection, we can utilise the financial inclusion policy of the Government of India in an effective manner and financial exclusion rank wise. As a section of households are already shocked by the fraud chit funds like SARADA, a continuous advertisement and campaign from the part of the Government is necessary for making successful financial literacy and financial inclusion of the unbanked people in this district.

The state Governments have already prepared a plan to supply potable drinking water through piped water supply scheme to all rural areas. In this plan, the districts have planned to supply safe drinking water by tapping water from rivers, check dams and impounding reservoirs. The government has another plan to extend safe drinking water and toilet facility for each school in the districts. However, there is no any priority list. Thus, the plans and programmes may be implemented in an indiscriminate way which may increase the inequality across the districts/blocks. Therefore, consultation with the existing district-wise distribution of the access to unsafe drinking water is needed to make a priority list for implementing the project. The decentralised plan is suitable for development on priority basis.

Northeast India needs some active plan for universal sanitation programme. We draw attention of the authority to take necessary steps for ensuring access to

Table 10.5b MPI and Worker Population ratios of the States in northeast India

State	District	MHCR	MPI	Rank	TWPR
Nagaland	Wokha	43.16	0.456	43	53.632
Assam	Morigaon	42.17	0.452	44	44.247
Assam	Hailakandi	46.55	0.451	45	39.094
Arunachal Pradesh	West Siang	37.39	0.450	46	50.480
Assam	Barpeta	42.97	0.443	47	39.965
Manipur	Thoubal	40.99	0.440	48	54.013
Nagaland	Zunheboto	41.17	0.435	49	65.857
Arunachal Pradesh	East Siang	34.15	0.428	50	46.629
Arunachal Pradesh	Tirap	40.04	0.424	51	54.573
Assam	Kamrup	37.62	0.423	52	47.739
Mizoram	Mamit	39.78	0.422	53	55.509
Assam	Nagaon	39.30	0.415	54	41.458
Manipur	Bishnupur	36.56	0.413	55	53.343
Manipur	Churachandpur	37.05	0.411	56	51.819
Arunachal Pradesh	Lower Subansiri	34.24	0.405	57	41.538
Sikkim	North district	35.47	0.397	58	59.846
Arunachal Pradesh	Tawang	31.06	0.387	59	64.634
Sikkim	West district	35.23	0.380	60	58.269
Tripura	Dhalai	39.00	0.372	61	48.362
Nagaland	Kohima	31.03	0.368	62	49.557
Assam	Golaghat	31.03	0.367	63	51.489
Meghalaya	East Khasi Hills	35.75	0.367	64	47.576
Assam	Jorhat	32.41	0.367	65	51.528
Assam	Sivasagar	32.85	0.351	66	48.011
Sikkim	South district	30.07	0.342	67	57.017
Mizoram	Saiha	34.54	0.341	68	41.476
Tripura	North Tripura	36.76	0.338	69	41.811
Assam	Tinsukia	30.09	0.328	70	48.617
Mizoram	Lunglei	30.72	0.328	71	57.436
Manipur	Imphal East	27.47	0.325	72	49.182
Assam	Nalbari	32.27	0.325	73	39.571
Nagaland	Mokokchung	35.16	0.309	74	57.481
Assam	Dibrugarh	30.48	0.308	75	48.194
Tripura	South Tripura	31.76	0.281	76	48.013
Manipur	Imphal West	24.53	0.280	77	46.783
Sikkim	East district	22.39	0.270	78	54.647
Nagaland	Dimapur	22.25	0.261	79	46.156
Arunachal Pradesh	Papum Pare	19.21	0.253	80	43.442
Mizoram	Kolasib	24.94	0.236	81	52.037
Mizoram	Champhai	23.74	0.236	82	57.414

(continued)

Table 10.5b (continued)

State	District	MHCR	MPI	Rank	TWPR
Districts with low level of multidimensional poverty					
Tripura	West Tripura	23.35	0.200	83	45.487
Assam	Kamrup Metropolitan	14.52	0.159	84	43.501
Mizoram	Serchhip	18.52	0.135	85	58.228
Mizoram	Aizawl	13.18	0.123	86	50.190

Source Government of India planning commission June, 2014 and author's computation based on Census data 2011

Table 10.6 State-wise distribution of district level multidimensional poverty in northeast India

States	Total number districts	Number of districts with high level of multidimensional poverty (%)	Number of districts with moderate level of multidimensional poverty (%)	Number of districts with low level of multidimensional poverty (%)
Mizoram	8	1 (12.5)	5 (62.5)	2 (25)
Tripura	4	0	3 (75)	1 (25)
Sikkim	4	0	4 (100)	0
Manipur	9	3 (33.33)	6 (66.67)	0
Assam	27	9 (33.33)	17 (6.96)	1 (3.7)
Nagaland	11	4 (36.36)	7 (63.64)	0
Arunachal Pradesh	16	8 (50)	8 (50)	0
Meghalaya	7	6 (85.71)	1 (14.29)	0
Northeast India	86	31 (36.04)	51 (59.3)	4 (4.65)

Source Author's computation

improved sanitation facility for the all households in northeast India. For this purpose, the continuous campaign focusing the importance of sanitation for healthy life is more necessary than releasing fund for constructing sanitation at the household level. In this respect, we can use the audio visual media more extensively which have high popularity.

In order to reduce energy poverty, northeast states have to improve the infrastructure of electricity and LPG supply for the districts which are most deprived in this regard. After all, as there is wide disparity across the districts in northeast India in terms of deprivation, the fund for reducing multidimensional poverty should be allocated on equitable basis not on equality basis across the districts.

References

Alkire, S., & Santos, M. E. (2010). *Acute multidimensional poverty: A new index for developing countries*. United Nations Development Programme Human Development. Reports Research Paper, July, 2010, Working paper no. 38.

Alkire, S., Santos, M. E., & Seth, S. (2014). Multidimensional poverty index 2014: Brief methodological note and results. The Oxford Poverty and Human Development Initiative (OPHI). Oxford Department of International Development, University of Oxford. Contact details: ophi@qeh.ox.ac.uk.

Bagli, S. (2013). A study on measuring housing deprivation in India. *International Journal of Development Studies, 5*(1), 173–177.

Bagli, S. (2015a). Multidimensional poverty of SC and ST households: An empirical study in Bankura district. A paper presented in a National Seminar at NIRD. Available at www.nird.org.in.

Bagli, S. (2015b). Multidimensional poverty: An empirical study in Bankura District, West Bengal. *Journal of Rural Development, 34*(3), 242–327.

Bhattacharya, G., & Halder, S. (2014). Trend, differential and determinants of deprivation of reproductive and child health in the districts of West Bengal, India. *Journal of Health Management, 16*(1), 93–112.

Government of India. (2011). Population census report, 2011. Registrar General of India.

Mehta, K. A., & Shah, A. (2003). Chronic poverty in India: Incidence, causes and policies. *World Development, 31*(3), 491–511.

Planning Commission. (2014). Government of India, report of the expert group to review the methodology for measurement of poverty. Available at www.planningcommission.in.

United Nations Development Programme. (2010). *Human development report, 2010*. New York: Palgrave Macmillan.