



Journal of North East India Studies

ISSN: 2278-1455 (Print) 2277-6869 (Online) Journal homepage: <http://www.jneis.com>

Status of Development in Meghalaya: An Inter-District Analysis

Sangeeta Dasgupta

To cite this article: Sangeeta Dasgupta (2016): Status of Development in Meghalaya: An Inter-District Analysis, *Journal of North East India Studies*, 6(2): 51-69.

Published online: 1 December 2016.

Submit your article to this journal: editor.jneis@yahoo.com

Terms and conditions of use: This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, redistribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden. Views expressed are those of the author(s) and do not necessarily reflect the views of Association for North East India Studies.

Status of Development in Meghalaya: An Inter-District Analysis

Sangeeta Dasgupta

Poor development status of Meghalaya and the North Eastern region as a whole has been a significant concern to policy makers. The centralised system of planning followed in Meghalaya so far could not bring about the desired level of development in the state. Although the condition of the people of the state has improved over the years, their situation remains backward as compared to the rest of the country's population. Further, the state has already gone through seven five-year plan periods with various sectoral strategies adopted in each plan, but inequality in sectoral development in the different regions and districts of the state have been observed. A number of areas in Meghalaya are still lacking in many respects and there exists intra regional variations in terms of the level of development. Thus, micro-level studies for better understanding of the various factors affecting the development of the state are crucial. The present paper made an attempt to determine the comparative state of development and the magnitude of inter-district disparities of the then seven districts of Meghalaya. In order to address the existing socio-economic differential and related behavior in a development perspective, it is essential to determine the comparative state of development of the districts of Meghalaya.

Keywords: Development, Disparity, Socio-Economic Development Indices, Principal Component Analysis

The importance of planning as the effective instrument for carrying out the task of economic and social transformation was given emphasis in India from the early thirties. Formal economic planning was adopted in India soon after independence. During the last six decades of planning, the Indian economy has made progress in various sectors and the economic scenario of the country has changed considerably. But the achievements are mostly at the macro level. One of the glaring failures of Indian planning is the non-fulfillment of the objectives of balanced regional development.

In 2013, the Central Government had set up a panel for evolving a Composite Development Index of States headed by Dr. Raghuram Rajan, former Governor of

Dr. Sangeeta Dasgupta is a faculty at Department of Economics, Women's College, Upper New Colony, Laitumkhrah, Shillong - 793003. [Email: blossom_sdg@yahoo.com]

Reserve Bank of India. The panel suggested a new methodology in providing funds to the States based on the Multi Dimensional Index (MDI) of backwardness. The panel measured underdevelopment based on 10 parameters. The index could take values from zero to one; one being the most backward and zero the least backward. Based on the MDI scores, states were ranked and classed into three groups - Least Developed (0.6 and above), Less Developed (above 0.4 to below 0.6) and Relatively Developed (below 0.4). Of the 28 states, Meghalaya was ranked 8th from the bottom and was classed as among the "Least Developed" states. Incidentally, Neogi constructed the Composite Socio-Economic Index of the North Eastern States for 1995 and 2005, where Meghalaya deteriorated from first to second rank in that period (Neogi 2010: 303-310).

Quantifying Development in Meghalaya

Many areas in Meghalaya are still lacking in most respects and there exists both intra and inter regional variations in the level of development. A determination of the comparative state of development of the districts of Meghalaya is, therefore, essential for an understanding of where (the areas) development is required, and in what (the sectors) that area needs to be developed. To this end, we need to quantify the level of development, both spatially and sector-wise. This exercise attempts to accomplish this for the state of Meghalaya.

Selection of variables and methodology

A total of twenty six indicators have been included for estimation of socio-economic development. These indicators may not be comprehensive, but they represent different dimensions of development at the district level. Further, the selection of indicators was also affected by the availability of district level data for the state. These twenty six indicators were then divided into five sub-groups: indicators relating to economic development, health facilities, infrastructure development, educational facilities and communication/mass media. The sector-wise composite indices have been calculated by applying Principal Component Analysis (PCA) to the sub-groups. For carrying out the analysis, data from the following secondary sources were used - Census of India 2001 and 2011, Statistical Hand Book of Meghalaya 2010-11, District Level Statistics of Meghalaya 2010, Meghalaya Human Development Report 2008, etc.

The PCA is a data reduction technique. It helps to reduce the number of variables used in the analysis into fewer factors. The factor scores obtained using PCA gives the required weights for the calculation of composite indices. Loadings are correlation coefficients of each variable with the factor, so they range from -1 to +1 (factor loadings). Highest positive loading determines the higher level of significance of the factor in the explaining the concept to be measured and lower values of factor loading reflect lower significance. Further, the higher value of the indices of various sectors/facilities indicates greater level of development in that sector/facility.

The Socio-Economic Development Index has also been computed by taking the first principal component of the respective sub-groups as a set of new variables and subsequently applying Principal Component Analysis. In the construction of sector-

wise indices and Socio-Economic Development Indices, only the first component has been considered, as it explains the maximum amount of variation in the original set of variables.

The Twenty Six Indicators

1. Indicators relating to economic development

X_1 = Work participation rate

X_2 = Percentage of agricultural labours and cultivators to total workers

X_3 = Percentage of workers in other sectors to total workers

X_4 = Per Capita Income (In Rupees)

X_5 = Percentage of main workers to total workers

X_6 = Cropping intensity

2. Indicators relating to health facilities

X_7 = Hospitals per ten thousand population

X_8 = Doctors per ten thousand population

X_9 = Primary Health Centre (PHC) per ten thousand population

X_{10} = Sub-centre per ten thousand population

X_{11} = Hospital beds per ten thousand population

X_{12} = Percentage of households having access to tap water

3. Indicators relating to infrastructure development

X_{13} = Percentage of households electrified

X_{14} = Post offices per ten thousand population

X_{15} = Telephone exchange and public call offices per ten thousand population

X_{16} = Road Density per 100 sq. km.

X_{17} = Percentage of households availing banking service

X_{18} = Credit/deposit percentage.

4. Indicators relating to educational facilities

X_{19} = Literacy rate

X_{20} = Primary/junior basic and middle/senior basic schools per ten thousand population

X_{21} = High/higher secondary school per ten thousand population

X_{22} = College for general education per ten thousand population

X_{23} = Pupil-Teacher Ratio in primary and middle schools

5. Communication/Mass Media indicators

X_{24} = Percentage of households possessing radio/transistor

X_{25} =Percentage of households possessing television

X_{26} =Percentage of households possessing telephone

The findings have been abridged in three sections - the first section contains sector-wise indices as well as Socio-Economic Development Indices for all the then seven districts of Meghalaya for data pertaining mostly to 2001 Census. The same exercise has been repeated for data pertaining mostly to 2011 Census in the second section. A comparison of the Socio-Economic Development Index for 2001 and 2011 is presented in the third section to examine the standing of the districts over a decade of developmental activity.

Section-I: Sector-wise Indices and Socio-Economic Development Indices (2001)

(a) Construction of sector-wise indices for 2001: First PCA

The first principal component loading obtained for the different sectors is depicted in Table 1.

Table 1. First principal component loading for different sub-groups of indicators, 2001

Economic Development		Health Facilities		Infrastructure Development		Educational Facilities		Communication/ Mass Media	
Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings
X_1	-0.922	X_7	0.898	X_{13}	0.728	X_{19}	0.095	X_{24}	0.495
X_2	-0.179	X_8	0.959	X_{14}	-0.127	X_{20}	0.653		
X_3	0.789	X_9	-0.166	X_{15}	0.963	X_{21}	0.792	X_{25}	0.975
X_4	0.012	X_{10}	-0.187	X_{16}	0.918	X_{22}	0.886		
X_5	0.926	X_{11}	0.983	X_{17}	0.955	X_{23}	0.834	X_{26}	0.973
X_6	0.038	X_{12}	0.760	X_{18}	-0.675				

(b) Composite Indices Based on Indicators of Economic Development

Percentage of main workers and percentage of workers in other sectors showed high positive loadings, indicating that these factors have a greater influence on economic development (Table 1). The negative association, for example, of work participation rate and percentage of main workers indicates that although the percentage of main workers is increasing, work participation rate is declining in Meghalaya.

District-wise index scores based on first principal component are summarized in Table 2. A higher index value for a district indicates a higher level of development as

compared to other districts. East Khasi Hills scored the highest (2.094897), followed by West Garo Hills (0.768134). The third and fourth ranks in terms of the Economic Development Index were attained by Jaintia Hills and Ri- Bhoi districts respectively. Three adjacent districts namely, West Khasi Hills, East Garo Hills and South Garo Hills formed a cluster of low economic development with West Khasi Hills at the bottom of the list. What is interesting to note is that East Khasi Hills was more than twice developed that of second ranked West Garo Hills, while the last ranked district of West Khasi Hills was more than eight times less developed than the first ranked district. The most dominant factor for the highest score for East Khasi Hills was found to be the highest percentage of main workers and maximum generation of employment in other sectors. Remarkably, South Garo Hills had the highest Per Capita Income.

Table 2. District-wise indices based on economic development, 2001

Rank	District	Economic Development Index
1	East Khasi Hills	2.094897
2	West Garo Hills	0.768134
3	Jaintia Hills	0.545749
4	Ri-Bhoi	0.482559
5	East Garo Hills	0.262083
6	South Garo Hills	0.248030
7	West Khasi Hills	0.246524

(c) Composite Indices Based on Indicators of Health facilities

The loading structure shows highest loading for hospitals beds per thousand population, followed by availability of doctors per ten thousand population (Table 1). There is wide variation among the districts in terms of composite indices (Table 3). The highest index score of 7.890312 was obtained by East Khasi Hills, followed by Jaintia Hills (3.447841) and West Garo Hills (2.546122). Again, East Khasi Hills was two times more developed than second ranked Jaintia Hills in health facilities. East Khasi Hills district provided the maximum number of hospital beds per thousand population and doctors per ten thousand population. Further, the district also had maximum number of households (61.5%) having access to tap water among the seven districts of Meghalaya.

West Garo Hills and Ri-Bhoi were ranked third and fourth respectively in health facilities. Again the cluster of the same three districts, i.e. West Khasi Hills, South Garo Hills and East Garo Hills which were found to be backward in terms of economic development also lacked in terms of availability of health services. East Garo Hills was found to be most backward in terms of health facilities and was more than five times less developed than the first ranked district.

Table 3. District-wise indices based on health facilities, 2001

Rank	Districts	Health Index
1	East Khasi Hills	7.890312
2	Jaintia Hills	3.447841
3	West Garo Hills	2.546122
4	Ri-Bhoi	2.404975
5	West Khasi Hills	1.981214
6	South Garo Hills	1.566151
7	East Garo Hills	1.550146

(d) Composite Indices Based on Infrastructure Development

The factor loading structure in this category shows the highest loading for availability of telephone exchanges and public call offices per ten thousand population (0.963), followed by percentage of households availing banking services (0.955) (Table 1).

East Khasi Hills was at the top with a composite score of 7.720431. East Khasi Hills had the highest percentage of electrified households (73.67%), maximum road density per 100 square kilometer (61.03) and highest percentage of households availing banking service (33.16%) among all the seven districts. Jaintia Hills obtained the second rank with a score of 3.178937. Yet again, East Khasi Hills was two times more developed than second ranked district of Jaintia Hills in infrastructure development.

The infrastructure situation in Ri-Bhoi (third rank) and West Garo Hills (fourth rank) showed similar trends and were more than three times less than the first ranked district. West Khasi Hills (fifth rank), East Garo Hills (sixth rank) and South Garo Hills (seventh rank) obtained low scores in Infrastructure Development. West Khasi Hills and South Garo Hills had the lowest number of telephone exchange and public call offices per ten thousand population and number of households availing banking service. Although East Garo Hills was slightly better in terms of public call offices and banking service, the district lacked in terms of an important component of development, i.e. road density. South Garo Hills had the lowest percentage of electrified households (18.6%). Infrastructure development indices for the seven districts shows high disparity compared to other indices. The last ranked South Garo Hills district was more than ten times less developed than the top ranked East Khasi Hills district.

Table 4. District-wise indices based on infrastructure development, 2001

Rank	Districts Infrastructure	Development Index
1	East Khasi Hills	7.720431

2	Jaintia Hills	3.178937
3	Ri-Bhoi	2.675903
4	West Garo Hills	2.244868
5	West Khasi Hills	1.991863
6	East Garo Hills	1.439754
7	South Garo Hills	0.751943

(e) Composite Indices Based on Indicators of Educational facilities

The loading structure shows the highest loading for number of colleges (0.886), followed by pupil-teacher ratio in primary and middle schools (0.834) (Table 1).

East Khasi Hills attained the first rank with a composite index of 5.330711 in Educational facilities (Table 5). It had the highest literacy rate, and maximum number of higher secondary schools and colleges. The districts of Garo Hills fared better in the Education Index. South, West and East Garo Hills districts were ranked second, fourth and fifth respectively, with the Index gaps being less. Ri-Bhoi lacked in terms of educational facilities and attained the sixth rank.

Jaintia Hills was found to be least developed in terms of educational facilities (2.323366). The district had the second lowest literacy rate and least number of high/higher secondary schools per ten thousand population.

What is interesting to note is that index gaps between the first and the last ranked districts were less prominent in terms of educational facilities compared to other indices. East Khasi Hills was twice more developed than the last ranked district of Jaintia Hills (Table 5).

Table 5. District-wise indices based on educational facilities, 2001

Rank	Districts Education	Index
1	East Khasi Hills	5.330711
2	South Garo Hills	4.295332
3	West Khasi Hills	3.842029
4	West Garo Hills	3.569525
5	East Garo Hills	3.152171
6	Ri-Bhoi	2.874518
7	Jaintia Hills	2.323366

(f) Composite Indices based on Communication/Mass Media Indicators

The factor loading in this category shows that households having television (0.975) and telephone (0.973) were more important communication medium.

Table 6. District-wise indices based on communication/mass media indicators, 2001

Rank	Districts Communication	Media Index
1	East Khasi Hills	6.679150
2	West Garo Hills	2.246527
3	Ri-Bhoi	2.178526
4	Jaintia Hills	1.872946
5	East Garo Hills	1.590738
6	South Garo Hills	1.372055
7	West Khasi Hills	1.162282

The index scores reveal that East Khasi Hills had the largest communication infrastructure and maximum exposure to mass media (Table 6). The other districts were far below in terms of excess to communication media. While West Garo Hills ranked second, Ri-Bhoi, Jaintia Hills, East and South Garo Hills ranked third, fourth, fifth and sixth respectively, they were three to six times less developed in terms of communication index than East Khasi Hills.

West Khasi Hills was found to be most backward in terms of communication media and obtained the lowest composite score of 1.162282. The district had the least percentage of households having television (9.4%) and telephone facility (0.8%) in 2001.

(g) Composite Indices of overall development

Indices of socio-economic development have been compiled by taking first principal component scores of each sub-group and applying another PCA. The factor loading structure obtained at this stage is depicted in Table 7. High positive loading of respective categories of development reflects significant role played by each category for the overall development of the districts. Communication/mass media had highest loading of 0.993, while the least weight was assigned to education (0.731).

Table 7. Principal component loading of sub-groups of variables, 2001

Sectors	Factor Loadings
Communication	0.993
Economic development	0.990
Health facilities	0.980
Infrastructure development	0.964
Educational facilities	0.731

(h) Composite Socio-Economic Development Index

In order to find a comprehensive picture of development of each district, a composite Socio-Economic Development Index was constructed. The five sectoral development indices have been aggregated into one index of socio-economic development (Table 8). While East Khasi Hills was the most advanced in terms of different sectors of development (12.07522), South Garo Hills emerged as the least developed overall and in most categories of development (2.560077).

It is important to note is that West Garo Hills, being then the second most developed district in the state, is yet three times less developed than East Khasi Hills. The other two districts of Garo Hills were about five times less developed than the most developed district in the state. In the middle of the hierarchy were Jaintia Hills (third rank), Ri-Bhoi (fourth rank) and West Khasi Hills (fifth rank) districts. The over-all development of these districts was about three to four times less than East Khasi Hills.

Table 8. District-wise composite socio-economic indices, 2001 (Based on over-all development)

Rank	Districts	Socio-Economic Development Index
1	East Khasi Hills	12.075220
2	West Garo Hills	4.365381
3	Jaintia Hills	4.229650
4	Ri-Bhoi	3.867908
5	West Khasi Hills	2.882728
6	East Garo Hills	2.664091
7	South Garo Hills	2.560077

In order to compare the relative progress of the then seven districts of the state, the same exercise was repeated for data pertaining mostly to 2011 Census.

Section-II: Sector-wise Indices and Socio-Economic Development Indices (2011)

(a) Construction of sector-wise indices for 2011: First PCA

The factor loading obtained for the different sectors of development is depicted in Table 9.

(b) Composite Indices Based on Indicators of Economic Development

The factor loading obtained in this category showed highest positive loading for workers in other sectors and highest negative loading for agricultural labours and cultivators (Table 9). However, high positive loadings for percentage of main workers and strong negative loading for work participation rate were obtained in 2001. Over the past decade, the number of agricultural labours and cultivators declined, while the number of workers in other sector showed an increasing trend in Meghalaya.

Table 9. First principal component loading for different sub-groups of indicators, 2011

Economic Development		Health Facilities		Infrastructure Development		Educational Facilities		Communication/ Mass Media	
Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings	Variables	Factor Loadings
X ₁	-0.362	X ₇	0.577	X ₁₃	0.927	X ₁₉	0.962	X ₂₄	0.501
X ₂	-0.967	X ₈	0.795	X ₁₄	0.139	X ₂₀	0.001		
X ₃	0.968	X ₉	-0.781	X ₁₅	0.961	X ₂₁	0.830	X ₂₅	0.969
X ₄	0.854	X ₁₀	-0.838	X ₁₆	0.964	X ₂₂	0.381		
X ₅	0.744	X ₁₁	0.889	X ₁₇	0.971	X ₂₃	0.568	X ₂₆	0.847
X ₆	0.048	X ₁₂	0.895	X ₁₈	-0.659				

District-wise index scores based on first principal component are summarized in Table 10. While East Khasi Hills maintains the top rank with an index score of 2.947920, Jaintia Hills shifted from the third to second rank in 2011. The single dominant factor responsible for the upward movement is increase in the percentage of workers in other sectors from 22.18% (2001) to 42.52% (2011). Further, the district maintains the third highest Per Capita Income in the State.

The major upward shift from sixth to third rank was observed for South Garo Hills. The most significant factors responsible for the upward shift of the district are increase in the generation of employment in other sectors as well as in the agricultural sector. Per Capita Income in South Garo Hills is highest next to East Khasi

Hills. At present, East Khasi Hills is the richest district in terms of Per Capita Income.

In comparison to 2001, West Garo Hills, Ri-Bhoi and East Garo Hills have deteriorated from their respective positions. The work participation rate as well as percentage of main workers has decreased in these three districts. East Garo Hills moves to the bottom of the list in terms of economic development indicators with a composite score of 0.352447. West Khasi Hills which was the last rank in 2001, secured the sixth rank.

Comparison of work participation rate for 2001 and 2011 reveals a striking fact that except in East Khasi Hills district, work participation rate has declined in all the districts of Meghalaya. Employment generation in other sectors was identified as the most dominant factor for accelerating the economic development of the districts in 2001. The analysis of the factors responsible for improvement of the district in terms of economic development indicators pertaining to 2011, confirms that increase in employment generation in other sectors can accelerate the process of economic development of the districts.

Table 10. District-wise indices based on economic development 2011

Rank	Districts Economic	Development Index
1	East Khasi Hills	2.947920
2	Jaintia Hills	1.721744
3	South Garo Hills	1.524007
4	West Garo Hills	1.082317
5	Ri-Bhoi	0.922573
6	West Khasi Hills	0.380715
7	East Garo Hills	0.352447

(c) Composite Indices Based on Indicators of Health Facilities

The loading structure shows highest loading for percentage of households having access to tap water (0.895), followed by hospital beds per ten thousand population (0.889) (Table 9). Compared to 2001, the pattern of factor loading has changed.

The health indices of the districts of Meghalaya are presented in Table 11. While East Khasi Hill continues to maintain the top position, East Garo Hills obtains the lowest score of 0.180009. Although, East Garo Hills now provides hospital facility, the availability of number of PHCs and sub-centres per ten thousand population has decreased in the district. West Khasi Hills and Ri-Bhoi districts have moved up the ranking in terms of Health Index. Both the districts now have hospital facility which is the most significant factor for the upward shift.

The districts which dropped in ranking are Jaintia Hills (second to fifth rank) and West Garo Hills (third to fourth rank). The downward shift of Jaintia Hills is mainly because of the fall in the availability of PHCs and sub-centres per ten thousand population and only marginal improvement in the availability of hospital beds and access to tap water. West Garo Hills district lacks in terms of an important indicator, i.e. percentage of households having access to improved sources of drinking water. Only 17.1% of the households have access to tap water.

Table 11. District-wise indices based on health facilities 2011

Rank	Districts	Health Index
1	East Khasi Hills	4.535444
2	Ri-Bhoi	2.304589
3	West Khasi Hills	1.416197
4	West Garo Hills	1.360606
5	Jaintia Hills	0.971868
6	South Garo Hills	0.440766
7	East Garo Hills	0.180009

(d) Composite Indices Based on Infrastructure Development

The pattern of factor loadings in this category shows the highest loading for percentage of households availing banking services (0.971), followed by road density with factor loading of 0.964 (Table 9). The third highest factor loading was obtained for availability of telephone exchange and public call offices (0.961). Although, the pattern of loading has slightly changed compared to 2001, the indicators with the three highest loadings have remained the same.

Even though most of the districts have improved in terms of the selected indicators, but disparities in terms of infrastructure development indices still remains very high (Table 12). East Khasi Hills, Jaintia Hills, Ri-Bhoi and West Garo Hills retains the same ranks. But while East Khasi Hills attains the highest index value of 7.850220, the next best index value for Jaintia Hills is 4.118390, is almost half that of East Khasi Hills.

From being the most backward district in terms of infrastructure in 2001, South Garo Hills has shifted upward to fifth rank. The district has improved in terms of percentage of households electrified as well as number of telephone exchanges and public call offices. However, West Khasi Hills has dropped from fifth to seventh rank. The downward shift of the district is because the improvement in terms of infrastructure development indicators has been inadequate in comparison to other districts.

Table 12. District-wise indices based on infrastructure development, 2011

Rank	Districts	Infrastructure Development Index
1	East Khasi Hills	7.850220
2	Jaintia Hills	4.118390
3	Ri-Bhoi	3.348725
4	West Garo Hills	2.625043
5	South Garo Hills	1.863867
6	East Garo Hills	1.669528
7	West Khasi Hills	1.645978

(e) Composite Indices Based on Indicators of Educational Facilities

The factor loadings obtained for indicators of educational facilities show the highest loading for literacy rate (0.962), followed by number of high/higher secondary schools (0.830) (Table 9). Thus, the pattern of loading has changed compared to 2001.

District-wise education index is presented in Table 13. East Khasi Hills continues to be at the top of the ranking with a score of 3.689023 and Jaintia Hills at the bottom of the list with a score of 2.351125. East Khasi Hills has the highest literacy rate and highest number of high/higher secondary schools and colleges per ten thousand population. According to Census 2011, Jaintia Hills has the lowest literacy rate of 63.26% among the seven districts. The most significant upward shift from sixth to second rank was observed for Ri-Bhoi district. The district has improved in terms of literacy rate from 65.73% (Census 2001) to 77.22% (Census 2011). Further, the numbers of primary/middle schools and high/higher secondary schools have shown a significant increase in the district. The number of middle schools have increased almost three times compared to 2001. West Garo Hills and East Garo Hills have moved upwards from fourth to third position and fifth to fourth position respectively. Two districts which have deteriorated in terms of educational facilities are South Garo Hills and West Khasi Hills. While South Garo Hills dropped from second to sixth rank, West Khasi Hills dropped two places to fifth rank. In South Garo Hills, the increase in the number of primary and middle schools was least and the number of high/higher secondary schools increased marginally over the decade. Although, West Khasi Hills has the second highest number of primary schools, there has been marginal improvement in the number of high/higher secondary schools per ten thousand population. Further, the number of colleges per ten thousand population has remained the same in the district.

The educational facilities available in the districts have shown some improvement in terms of the selected indicators. In fact, all the districts have improved in terms of literacy rate. But a careful look reveals the inadequate availability as well as

access of the common people to such facilities. The number of higher educational institutions still remains low. Comparison of the education index for 2001 and 2011 of the seven districts shows that educational facilities in all the districts have not increased in proportion to the growth of population, as reflected by the fall in the composite index scores of the districts.

Table 13. District-wise indices based on educational facilities 2011

Rank	Districts	Education Index
1	East Khasi Hills	3.689023
2	Ri-Bhoi	2.765631
3	West Garo Hills	2.651104
4	East Garo Hills	2.649541
5	West Khasi Hills	2.638595
6	South Garo Hills	2.554330
7	Jaintia Hills	2.351125

(f) Composite Indices Based on Communication/Mass Media Indicators

The factor loadings obtained in this category shows variables like households having television and having telephone were more important communication medium than households having radios/transistors (Table 9). The highest loading was obtained by television (0.969), followed by telephone (0.847). The pattern of factor loadings has remained the same as obtained for 2001.

The communication/mass media indices for all the districts of Meghalaya are depicted in Table 14. There has been a significant improvement in access to communication media in all districts. In comparison to 2001, percentage of households owning televisions and telephones have shown remarkable increase. But the use of radio/transistor has declined because of availability of other improved medium of communication media like television and telephone (including cell phones). But the state still remains backward in terms of access to communication media, as the highest percentage of households having television is 49.7 (East Khasi Hills) and telephone is 58.2 (East Khasi Hills). According to the Census 2011, West Khasi Hills had only 19.7% of households having television and 50.2% of the total households possessing none of the three specified assets. The percentage of households using telephones is least in South Garo Hills, where only 25.8% of households are using this communication medium. Both West Garo Hills and East Garo Hills districts have dropped from their respective positions in 2001. While West Garo Hills shows downward shift from second to third rank, East Garo Hills has dropped from fifth to sixth rank. Ri-Bhoi and South Garo Hills moved up the hierarchy from third to second rank and

sixth to fifth rank respectively.

The analysis of the composite indices show that the gap in communication media between East Khasi Hills and the remaining district of Meghalaya has declined which is reflected by the composite scores of the districts. In 2011, the East Khasi Hills district obtained a score of 3.439493 and maintains the top position. The next best score is obtained by Ri-Bhoi district with a score of 2.663390. Thus, the gap has reduced significantly between the first and second ranked districts.

Table 14. District-wise indices based on communication/mass media indicators, 2011

Rank	Districts	Communication Media Index
1	East Khasi Hills	3.439493
2	Ri-Bhoi	2.663390
3	West Garo Hills	2.213743
4	Jaintia Hills	2.205201
5	South Garo Hills	2.047998
6	East Garo Hills	1.933661
7	West Khasi Hills	1.715651

(g) Composite Indices of overall development

In order to find a comprehensive picture of development, the procedure of aggregating the five sectoral development indices has been repeated to obtain one index of Socio-Economic Development for each district. The factor loadings obtained at this stage is depicted in Table 15.

Table 15. Principal component loading of sub-groups of variables, 2011

Sectors	Factor Loadings
Communication media	0.980
Infrastructure development	0.966
Educational facilities	0.902
Health facilities	0.888
Economic development	0.861

High positive loading of respective categories of development reflects significant role played by each category for the overall development of the districts. However, pattern of loading structure varies from the loadings of the sub-groups in 2001. Communication/mass media has highest loading of 0.980. Infrastructure development obtains the second highest loading of 0.966, followed by educational facilities (0.902) and health facilities (0.888). Least weight was assigned to economic development (0.861).

(h) Composite Socio-Economic Development Index

Composite scores of the overall socio-economic development of the districts are presented in Table 16. The socio-economic development indices vary from 9.189400 (East Khasi Hills) to 2.497798 (East Garo Hills).

Table 16. District-wise composite socio-economic indices, 2011 (based on overall development)

Rank	Districts	Socio-Economic Development Index
1	East Khasi Hills	9.189400
2	Ri-Bhoi	5.413746
3	Jaintia Hills	4.545722
4	West Garo Hills	3.972958
5	South Garo Hills	3.489284
6	West Khasi Hills	3.027511
7	East Garo Hills	2.497798

Section-III: Socio-Economic Development Index for 2001 and 2011: A Comparison

In order to analyse the relative progress or deterioration of the districts of Meghalaya over a ten-year period, the Composite Socio-Economic Indices for 2001 and 2011 are compared and presented in Table 17.

Table 17. Comparison of socio-economic development index for 2001 and 2011

Districts	Composite Socio-Economic index	Rank	Composite Socio-Economic index	Rank
	2001		2011	
East Khasi Hills	12.075220	1	9.189400	1
West Garo Hills	4.365381	2	3.972958	4
Jaintia Hills	4.229650	3	4.545722	3
Ri-Bhoi	3.867908	4	5.413746	2
West Khasi Hills	2.882728	5	3.027511	6
East Garo Hills	2.664091	6	2.497798	7
South Garo Hills	2.560077	7	3.489284	5

The analysis of the comparative state of development of the then seven districts of Meghalaya after ten years revealed that wide disparity still exists among the districts in terms of all the sector of development, though the disparities have narrowed down. East Khasi Hills still remains almost twice more developed in terms of Socio-Economic Development Index than the next most developed Ri-Bhoi district (Table 16). This is an improvement over 2001 where East Khasi Hills' Socio-Economic Development Index was three times more than the next most developed district of West Garo Hills.

The comparison of the ranks attained by the districts reveals that East Khasi Hills continued to maintain the first rank after ten years. West Garo Hills, which was ranked second in 2001, declined to the fourth position; this was due to deterioration in terms of health facilities, economic development and communication/media. Ri-Bhoi district has improved from fourth to second rank; the main factors for the upward shift are improvement in educational facilities and health facilities. Jaintia Hills district continues to maintain the third rank in terms of the Socio-Economic Development Index.

West Khasi Hills declined from fifth to sixth position. Although West Khasi Hills has improved in terms of economic index and health index, the district has further deteriorated in terms of infrastructural and educational facilities. East Garo Hills also declined from sixth to seventh position; it deteriorated in terms of economic development and communication and mass media facilities. South Garo Hills, however, improved its position from the last to the fifth position. This is attributed to improvement in economic development, infrastructural development, and better access to communication and mass media.

Conclusion

These findings have highlighted that there exist wide inter-district disparity in

Meghalaya in terms of almost all the sectors of development. Further, the imbalance in the development levels between East Khasi Hills and the other districts of the state is still prominent. It is also observed that the areas of development that need more attention are different from one district to the other. The one silver lining is that the regional disparities have narrowed down to a certain extent over the ten years.

This calls for the following steps in planning for the state: Sector-wise priorities will have to be identified for the state as a whole. Then among these priorities, further priorities will have to be spelled out for each district. For example, in 2011, East Garo Hills scored the least in health facilities with an index of 0.180009 and therefore, should be allotted the major chunk of state funds for health services.

References

- Abeyasekera, S. (2005): "Multivariate methods for index construction", Statistical Services Centre, The University of Reading, U.K. Household Surveys in Developing and Transition Countries: Design, Implementation and Analysis, Viewed on 5 May 2010 (<http://unstats.un.org/unsd/hhsurveys/finalpublication/ch18fin3.pdf>)
- Bandura, R. (2008), "A Survey of Composite Indices Measuring Country Performance: 2008 Update", A United Nations Development Programme/ ODS Working Paper, Viewed on 10 February 2013 (http://web.undp.org/developmentstudies/docs/indices_2008_bandura.pdf)
- Das, A. (1999), "Socio-Economic Development in India: A Regional Analysis", *Development and Society*, Vol. 28, No. 2, December 1999, pp. 313-345, Viewed on 20 May 2011 (<http://128.118.178.162/eps/lab/papers/0410/0410010.pdf>)
- Districts of India, District Level Datasets of Economics, Social, Industrial, Demographic, Education & other Variables of India, Viewed during 5-15 May 2013 (<http://www.districtsofindia.com>)
- Government of India, Census of India 2001, New Delhi.
- Government of India, Census of India 2011, New Delhi.
- Government of India, Report of the committee for evolving a composite development index of states, Ministry of finance, September 2013, Viewed on 5 March 2014 (http://www.finmin.nic.in>Report_CompDevState)
- Government of Meghalaya, District Level Statistics of Meghalaya 2002, Directorate of Economics and Statistics, Meghalaya.
- Government of Meghalaya, District Level Statistics of Meghalaya 2010, Directorate of Economics and Statistics, Meghalaya.
- Government of Meghalaya, Statistical Abstract 2009, 5th Edition, Directorate of Economics and Statistics, Meghalaya, Viewed on 6 July 2011 (<http://meghplanning.gov.in/statistics/Statistical-Abstract/Abstract-2009.pdf>)
- Government of Meghalaya, Planning Department, State Development Report Meghalaya 2008, Viewed on March 2013 (http://megplanning.gov.in/MSDR/infrastructural_development.pdf)
- Government of Meghalaya, Statistical Handbook 2000, 2005, 2007, 2008-09 and

- 2010-11, Directorate of Economics and Statistics, Meghalaya.
 Government of Meghalaya, Where do we stand in 2006: Meghalaya in the North East and India and the World, Directorate of Economics and Statistics, 2007.
 Government of Meghalaya, Planning Commission, Meghalaya Human Development Report 2008, Viewed on 6 April 2012
 (http://www.mdoner.gov.in/sites/default/files/silo4_content/REPORT%20STUDIES%20ON%20THE%20NORTH%20EASTERN%20REGION/report%20studies/State%20Human%20Development%20Reports%2013/Meghalaya%202008.pdf)
- Government of Meghalaya, Official website of Public Works Department, Viewed on 6 April 2012 (<http://shillong.nic.in/pwd/Default.htm>)
- Kendall, M.G. (1939), "The Geographical Distribution of Crop Productivity in England", *Journal of Royal Statistical Society*, Vol. 102, pp. 21-48.
- Kundu, A. (1975), "Construction of Indices for Regionalisation: An Enquiry into the Methods of Analysis", *Geographical Review*. Vol.37, No. 1, March 1975.
- Neogi, D. (2010), "Disparity in Socio-Economic Development and Its Implications on Communal Conflicts: A Study on India's North-Eastern Region", *International Journal of Human and Social Sciences* 5:5, 2010, pp.303-310.
- North East Resources Databank, Viewed on 28 April 2013 (<http://databank.nedfi.com>)
- Shrivastav, P.P. (2008), "Infrastructure Development in the North-Eastern Region: Focus on Human Resources", *ASCI Journal of Management* 37(2): pp.56-70, Viewed on 6 July 2009
 ([http://journal.asci.org.in/Vol.37\(20078\)/37_2_2008_SHRIVASTAV%20P%20P.pdf](http://journal.asci.org.in/Vol.37(20078)/37_2_2008_SHRIVASTAV%20P%20P.pdf))
- Singha, K. (2011), "Infrastructure and Regional Disparity A Case of North Eastern Region of India", *Journal of Social and Development Sciences* Vol. 2, No. 4, pp.162-180, Oct 2011 (ISSN 2221-1152) Institute for Social and Economic Change, Bangalore, Viewed on 22 August 2012 ([http://ifrnd.org/JSDS/Vol%202/2\(4\)%20Oct%202011/1.pdf](http://ifrnd.org/JSDS/Vol%202/2(4)%20Oct%202011/1.pdf))
- Vyas, S. and L. Kumaranayake (2006), "Constructing socio-economic status indices: How to use principal components analysis", Oxford University Press in association with The London School of Hygiene and Tropical Medicine, doi:10.1093/heapol/czl029, *Advance Access publication*, 9 October 2006, pp. 459-486, Viewed on 10 July 2010 (web.extension.ualberta.ca/extcms/index.php/download_file/-/.../1420)