

# An Investigation into the social sector development and human development linkage in Assam: A District level analysis

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## Abstract

**Background/ Objectives:** The most striking feature of development that Assam witnessed in recent years is the disproportionate growth. Some districts are advanced comparatively to the others leading to many problems such as ethnic conflicts, insurgency and identity politics with unbearable negative impacts. This inequality in the level of development is now considered as one of the biggest threat to the level of development of the state. Under this background, in this paper an attempt has been made to study the level of social sector and human development among the districts of Assam. Moreover, it is tried to study the linkage between social sector and human development in the state.

**Methods/ Statistical analysis:** The paper is based on the secondary data. The Principal Component Analysis (PCA) is used to construct social sector development index and Human Development Index is used to show the level of human development at district level for the state of Assam and consequently districts are ranked. Finally, to test the relationship between social sector development and human development, Spearman's rank correlation test is conducted.

**Findings:** The present study reveals that both social sector development and human development go hand in hand; and for all-round development priority should be given both on education and health sector in the state. The Social Sector Development Index and Human Development Index both shows that social sector development leads to human development. The districts having high social sector development have high level of human development. However, minor change in the place of ranking among the districts is also observed.

**Improvements/Application:** The government of Assam should give importance on social sector development to create human capital and also to employment generation for raising income so that ultimately goal of Human Development is achieved maximising people's welfare.

**Keywords:** Assam, Social Sector, Human Development, Districts, Principal Component Analysis, Human Development Index

## 1. Introduction

Situated in a land-lock region, Assam is a poor state both socially and economically. Unlike the advanced states of the country, Assam is a state which faces numerous problems as such high infant mortality, high maternal mortality, and low life expectancy at birth, high percentage of poverty, illiteracy and unemployment, low per capita income, chronic flood and erosion, agricultural backwardness, lack of industrialization, insurgency, ethnic conflicts, growing incidence of crimes and farmer's suicide. Assam is the land for a good number of communities with different dialects, cultures, religious beliefs and values. It is also one of the states falling under one of the mega bio-diversity hotspot. The state is also quite rich in natural resources. It is also known for its famous tea and oil industry. However, of late it is observed that development scenario of the districts of Assam are not similar. The most striking feature of development that Assam witnessed in recent years is the disproportionate growth. Some districts are advanced comparatively to the others leading to many problems such as ethnic conflicts, insurgency and identity politics with unbearable negative impacts. This inequality in the level of development is now considered as one of the biggest threat to the level of development of the state. Under this background, in this paper an attempt has been made to study the level of social sector and human development among the districts of Assam. Moreover, it is tried to study the linkage between social sector and human development in the state. Finally based on the findings suggestions are given in the conclusion for the development of the state.

### 1.1. About the Assam

Assam is situated in the North-East part of India with an area of 78,438 square kilometres. The boundaries of Assam lies between latitudes  $24^{\circ}8'$  N to  $28^{\circ}2'$  N and longitudes  $89^{\circ}42'$  E to  $96^{\circ}$  East [1]. The state of Assam comprises of twenty seven districts. Of which, two districts, viz., Karbi Anglong and Dima Hasao are hilly. The other districts are composed of plains, rivers, rivulets, streams and beels. The entire state is divided into three geographical blocks, viz., the Brahmaputra Valley; the Barak Valley; and the Karbi-Dima-Hasao Hills plateau. The total population of the state is 3,11,69,272 with density of population 397 per square kilometre and literacy rate 73.12 per cent [2]. Although the state is quite rich in natural resources such as petroleum crude, natural gas, limestone; Assam is still an industrially backward state with a few notable industries. The people of Assam are mostly depending on agriculture for their livelihood. Out of the total population, 85 per cent of the people are residing in the rural areas and about 75 per cent of the population is directly or indirectly engaged in agriculture for their livelihood [3]. Moreover, health indicators such as the life expectancy at birth, infant mortality rate (IMR) and maternal mortality rate (MMR) are worst among the states and the union territories of the country. The life expectancy at birth for Assam is 63.3 as against the all India level 67.5 during 2009-14 [4]. Moreover, the IMR of Assam (54) is highest in the country along with Madhya Pradesh as compared to India's 40. This is 6 times higher than the lowest IMR state Goa (9) [5]. Again, as against the all India average 167; the MMR of Assam is 300 as per the special SRS Bulletin on Maternal Mortality (2011-13) which is highest in the country [6]. On the other hand, per capita income of the state is Rs. 49480 during 2014-15 as compared to the all India average Rs 88,533 [7]; while as per the Reserve Bank of India statistics the poverty rate of Assam is 31.98 percent against the all India rate of 21.92 [8].

## 2. Data source and methodology of the study

The study is based on secondary source of information. The data sources are: Census of India, Annual Health Reports of Assam, Statistical Handbook of Assam, various government reports, and research papers [9 to 17].

The methodology used in this paper for constructing a composite index to study the level of socio-sector development in different districts of Assam by pooling several indicators of development is principal component analysis. The principal components analysis (PCA) is used herewith to extract from a set of  $p$  variables - a reduced set of  $m$  components which accounts for most of the variance in the  $p$  variables and also are uncorrelated to each other. Thus, the variables considered for constructing the composite index are: infant mortality rate, health centre per 100 square km., health centre per lakh population, hospital bed per lakh population, percentage habitation/village with safe drinking water, sex ratio, percentage of urban area, literacy rate, primary school per 100 square km., primary school per lakh population, upper primary school per lakh population, high school per lakh population, higher secondary/junior college per lakh population, retention rate at primary school level and incidence of crime against per lakh population. Health and education sector are basically considered here to assess the level of social sector development among the districts of Assam. The infant mortality rate is considered to reflect the degree the health attainment. On the other hand, health infrastructure such as, health centre per 100 square km., health centre per lakh population, hospital bed per lakh population, percentage habitation/village with safe drinking water are essential to have a better health attainment. Sex ratio is considered so that the gap among the males and females can be assessed. In fact, in an egalitarian society, the gap between male-female is either very less or nil. Attainment in education is studied with the help of literacy rate and retention rate at primary school level. On the other hand, educational infrastructure such as primary school per 100 square km., primary school per lakh population, upper primary school per lakh population, high school per lakh population, higher secondary/junior college per lakh population are considered because such infrastructure is always playing a key role in educational development. Crime rate per lakh population is considered because in a socially development country or state or district, the rate of crime is lower than the otherwise. Thus, altogether fifteen (15) variables are considered here to study the social sector development in different districts of Assam.

On the other to measure the level of human development, Human Development Index (HDI) is calculated for the districts of Assam following the approach as laid down by the United Nations Development Program (UNDP). However, since the data for internationally accepted indicators are not available at district level for the state and hence we have to take proxy variables to find out achievements with respect to three basic components of human development, viz., health, education and standard of living. The variables considered here are: Infant Mortality Rate, Adult Literacy Rate, Net Enrolment Ratio at Primary School Level and Per capita District Domestic Product. The sub-indices for the different dimensions are calculated using the following standard formula [9]:

$$\text{Dimension Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Maximum Value} - \text{Minimum Value}}$$

After finding the respective value for the three sub-indices, an aggregate of them, i.e., HDI is obtained in terms of their geometric mean as follows [18,19,20]:

$$\text{HDI} = \sqrt[3]{I_{\text{Life}} * I_{\text{Education}} * I_{\text{Income}}}$$

Finally, spearman's rank correlation test has been done to verify whether there is any linkage of social sector development with that of the human development.

### 3. Results and discussion

After selecting the variables, the next step is to put the gathered data in appropriate software. This is followed by the application of the principal component analysis to the normalized data and finding out of the PCA value. The objective of the paper is to rank the districts of Assam on the basis of the PCA values of social sector development and the Human Development Index (HDI) separately thereby the linkage between social sector development and the human development.

Table 1. Ranking of the Districts on the basis of the Social Sector Development

Sl. No.	District	PCA Value	Rank
1	Baksa	-1021.520540	18
2	Barpeta	-2148.314283	25
3	Bongaigaon	-1640.773399	22
4	Cachar	2538.837670	3
5	Chirang	-2105.715583	24
6	Darrang	-3310.656325	26
7	Dhemaji	-556.177871	16
8	Dhubri	-3377.810046	27
9	Dibrugarh	1042.938697	8
10	Dima-Hasao	804.053780	10
11	Goalpara	-994.315632	17
12	Golaghat	-1627.570655	21
13	Hailakandi	2705.569721	2
14	Jorhat	3192.257081	1
15	Kamrup Metro	1941.479771	6
16	Kamrup Rural	-1070.233627	19
17	Karbi-Anglong	-308.747852	14
18	Karimganj	2388.319223	4
19	Kokrajhar	-1517.801269	20
20	Lakhimpur	1153.152995	7
21	Morigaon	-391.887223	15
22	Nagaon	909.833811	9
23	Nalbari	-223.611642	13
24	Sivasagar	2286.801301	5
25	Sonitpur	13.073916	11
26	Tinsukia	-181.737188	12
27	Udalguri	-1754.588147	23

Source: Calculated by the author

The position of the districts of Assam is reflected in (Table 1) according to their social sector development. Thus, it is observed that Jorhat is the district which stood first in the ranking while Dhubri got the last position. Several features emerge from this ranking. The first feature is that the top ten districts of the state are from different parts of the state which signifies that social sector development is not concentrated in a few regions, but is spreading across the state. However, it is observed that the districts from Bodoland Territorial Administrative Council (BTAD) and districts having a good number of *Chars* (river islands) show poorly in the development process. Thus, these districts need immediate attention from the government so that harmonious development of the state is possible. Further, the problems of high growth rate of population, unemployment and poverty are now posed as a threat to prosperity of the both- the BTAD and the *chars*. This has been further aggravated by the low literacy rate (e.g.,

Dhubri, 58.30 percent) and high density of population (Dhubri, 896 per sq. km) [1]. With lack of skills due to illiteracy and excessive dependence on land due to high density of population, in fact, make the people of this part of the state furious and intolerant, leading to frequent disruption in the normal functioning of the productive activities. Ethnic conflicts are also not now uncommon in this part of land. Therefore, the state government should take appropriate measure in the BTAD and the char areas so that discontent, conflict like situation, intolerance, and insurgency may not spread up. But at the same time some of the districts like Darrang, Golaghat, Dhemaji, Kamrup etc. also need the attention. The districts which are dominated by the people of tea garden community also should draw immediate attention from the government because the socio-economic and moreover over all human development of the community is very poor. Thus, special programme must be taken to uplift this community both socially and economically.

*Table 2. Ranking of the Districts on the basis of the HDI*

District	Health Index	Education Index	Income Index	HDI	Rank
Baksa	0.444	0.765	0.211	0.415	25
Barpeta	0.59	0.743	0.186	0.434	19
Bongaigaon	0.543	0.788	0.403	0.557	8
Cachar	0.495	0.847	0.307	0.505	10
Chirang	0.466	0.745	0.227	0.429	21
Darrang	0.333	0.738	0.292	0.416	24
Dhemaji	0.648	0.815	0.215	0.484	15
Dhubri	0.343	0.706	0.105	0.294	27
Dibrugarh	0.514	0.831	0.494	0.595	3
Goalpara	0.495	0.765	0.25	0.456	18
Golaghat	0.467	0.846	0.344	0.514	9
Hailakandi	0.505	0.805	0.301	0.496	11
Jorhat	0.524	0.864	0.443	0.585	6
Kamrup- M	0.48	0.891	0.551	0.618	1
Kamrup	0.629	0.816	0.408	0.594	4
Karbi-Anglong	0.429	0.784	0.353	0.491	13
Karimganj	0.381	0.842	0.309	0.463	17
Kokrajhar	0.295	0.757	0.339	0.423	22
Lakhimpur	0.543	0.832	0.267	0.494	12
Marigaon	0.4	0.776	0.256	0.43	20
Nagaon	0.41	0.797	0.174	0.385	26
Nalbari	0.442	0.85	0.309	0.488	14
Dima-Hasao	0.486	0.836	0.516	0.594	5
Sivasagar	0.467	0.859	0.548	0.604	2
Sonitpur	0.419	0.77	0.233	0.422	23
Tinsukia	0.524	0.776	0.482	0.581	7
Udalguri	0.53	0.754	0.268	0.475	16
Assam	0.476	0.804	0.336	0.505	-

*Source: Calculated by the author*

On the other hand, after constructing the HDI for the districts of Assam, it is observed from the (Table2) that Kamrup metro has got the first rank; while Sivasagar and Dibrugarh are respectively in second and third position. Dhubri (0.294) is again placed in the last position. The districts whose HDI value is higher than the state (0.505) are: Kamrup metro (0.618), Sivasagar (0.602), Dibrugarh (0.595), Kamrup (0.594), Dima-Hasao (0.594), Jorhat (0.585), Tinsukia (0.581), Bongaigaon (0.557), Golaghat (0.514) and Cachar (0.505). The HDI values of the rest of the districts

are below the state average. Thus, it is observed from the analysis that the development of the districts across state as reflected by the HDI is not egalitarian. If we look at the HDI values of the districts, then it is pertinent that the gap in overall development is widespread. However, it is also seen that many districts whose rank is below 20 in social sector development are under top 10 in the HDI, e.g., Bongaigaon. It is also noted that most of the districts have minor changes in the rankings of both – Social sector development and the HDI.

Finally, as it is strongly argued that there is a close relationship between social sector development and the human development, here also it is found from the (Table 3) that there is close relationship between social sector development and the human development as the Spearman's rank correlation reveals the rankings of the both are significant at 1 percent level. Thus, it is important to give thrust on the development of social sector of the state for forward leap in the HDI.

*Table 3. Relationship between HDI and Social Sector Development Index Correlations*

		VAR00001	VAR00002
VAR00001	Pearson Correlation	1	.501(**)
	Sig. (2-tailed)		.008
	N	27	27
VAR00002	Pearson Correlation	.501(**)	1
	Sig. (2-tailed)	.008	
	N	27	27

\*\* Correlation is significant at the 0.01 level (2-tailed).

#### 4. Conclusion

Both social sector development and human development go hand in hand. Therefore, priority should be given on the development of education and health sector. Health and educational facilities must reach the doorstep of the poorest of the poor. Access to quality healthcare and educational facilities should not be restricted only to the upper middle class and the rich section of the society. Hence, it is need of the hour to readdress the utility of the public sector in both health and education so that an egalitarian society can be established, vicious circle of poverty can be wiped out from the state; maternal mortality and infant mortality rate (both are worst among the states of the country) can be reduced to the Millennium Development Goal level as soon as possible and also the reduction in population growth rate. Further, it is the time to develop skill among the people of the state so that excessive dependence on agriculture can be reduced. Skills should be imparted according to the market (from low to high) need so that employability of the people would increase and thereby reduction in unemployment. Chronic flood and the soil erosion problems are also to be addressed as they aggravated the problem of poverty in the state. Due to rampant corruption and poor governance make all the developmental efforts futile. In fact, prevalence of both extractive economic and political institutions in the state of Assam is in a process of making a new class - with the concentration of political and economic powers in a few hands. This is the reason behind why still one third of the population of the state is under poverty line and there is massive rise in inequality, emergence of different political groups, ethnic movements, insurgency and of late intolerance. Thus, this is the time to replace the extractive economic and political institutions with inclusive economic and political institutions so that not only the Assam but also the India will be on the right track of development. Therefore, good governance characterized by transparency, people friendly, inclusive economic and political institutions, legal laws, may foster economic expansion thereby reduction in poverty, unemployment and inequality and the consequences associated with these three- ultimately both social sector and human development in the state.

## 5. References

1. Directorate of Information & Public Relations. Assam: A Handbook 2015. 2<sup>nd</sup> edn. Janasanyog: Assam, 2015.
2. Directorate of Economics and Statistics. Statistical Handbook of Assam. Government of Assam: Guwahati, 2014.
3. Directorate of Economics and Statistics. Economic Survey of Assam 2013-14. Government of Assam: Guwahati, 2014.
4. [http://www.censusindia.gov.in/vital\\_statistics/Appendix\\_SRS\\_Based\\_Life\\_Table.html](http://www.censusindia.gov.in/vital_statistics/Appendix_SRS_Based_Life_Table.html). Date accessed: 15/10/2015
5. [http://www.censusindia.gov.in/vital\\_statistics/SRS\\_Bulletins/SRS%20Bulletin%20-Sepetember%202014.pdf](http://www.censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS%20Bulletin%20-Sepetember%202014.pdf). Date accessed: 15/10/2015.
6. [http://www.censusindia.gov.in/vital\\_statistics/SRS\\_Bulletins/MMR\\_Bulletin-2010-12.pdf](http://www.censusindia.gov.in/vital_statistics/SRS_Bulletins/MMR_Bulletin-2010-12.pdf). Date accessed: 15/10/2015.
7. [pib.nic.in/newsite/PrintRelease.aspx?relid=123563](http://pib.nic.in/newsite/PrintRelease.aspx?relid=123563). Date accessed: 11/10/2015
8. <http://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics>. Date accessed: 11/10/2015
9. Census of India. District Census Handbook, Assam. Census of India, 2011. Date accessed: 15/10/2015
10. Census of India. House listing & Housing Census, 2011.
11. Government of India. Annual Health Survey 2012 Fact Sheets: Assam. Vital Statistics Division, Office of the Registrar General & Census Commissioner, India: New Delhi, 2013.
12. Government of India. Bulletin on Rural Health Statistics in India 2011. Ministry of Health & Family Welfare, Government of India: New Delhi, 2011.
13. Government of India. Rural Health Care System in India, 2015. Downloaded from [data.gov.in](http://data.gov.in). Date accessed: 15/10/2015
14. International Institute for Population Sciences. District Level Household and Facility Survey (DLHS-3), 200708: India: Key Indicators: States and Districts, International Institute for Population Sciences: Mumbai.
15. IAMR, Planning Commission & GOI. India Human Development Report 2011. Oxford University Press: New Delhi, 2011.
16. Govt. of India (2011): Human Development Report of North East States, mdoner. Retrieved from [http://mdoner.gov.in/sites/default/files/silo4\\_content/REPORT%20STUDIES%20ON%20THE%20NORTH%20EAST%20ERN%20REGION/report%20studies/Main\\_File\\_New.pdf](http://mdoner.gov.in/sites/default/files/silo4_content/REPORT%20STUDIES%20ON%20THE%20NORTH%20EAST%20ERN%20REGION/report%20studies/Main_File_New.pdf). Date accessed: 15/10/2015
17. UNDP. Human Development Report 2010, 20<sup>th</sup> Anniversary Edition, The Real Wealth of Nations: Pathways to Human Development, Palgrave MacMillan: New York, 2010.
18. Buragohain, Pranjali Protim. Construction of a community specific Human Development Index with special reference to the Tai-Ahoms of Assam. *Asia Pacific Journal of Marketing & Management Review*. 2013; 2(10), 13-18.
19. Buragohain, Pranjali Protim. Human Development in Assam: A District Level Analysis. *Research Journal of MDKG, RJ-MDKG*. 2014, 3(2), 8-15.
20. OUP & Planning Commission. India Human Development Report 2011: New Delhi, 2011.

*The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)*

### **Cite this article as:**

Pranjali Protim Buragohain. An Investigation into the social sector development and human development linkage in Assam: A District level analysis. *Indian Journal of Economics and Development*. Vol 3 (10), October 2015.