

**Journal of Social and Development Sciences**

Vol. 2, No. 4, pp. 162-180, Oct 2011 (ISSN 2221-1152)

**Infrastructure and Regional Disparity A Case Of North Eastern Region of India**

Komol Singha

Institute for Social and Economic Change, Bangalore India

komolhijam2@yahoo.com

**Abstract:** The importance of physical infrastructure in economic development, trade, employment and in reducing disparity within the country/region has been acknowledged by many scholars. With the help of *Composite Development Index* of infrastructure, the present study explored that the volume of infrastructure is more important than the level of inter and intra-state disparity. India's North Eastern Region, identified as most backward region in the country, requires more physical infrastructure, especially the road and communication. Further noticed the relative variations of different indicators were same for almost all states. Those indicators having high coefficient of variation (CV) values are high for almost all the states and vice versa.

**Key Words:** *Infrastructure, Economic Growth, Regional Disparity*

**1. Introduction**

The importance of physical infrastructure in economic development, trade, employment and in reducing disparity within the country/region has been acknowledged by many scholars (Iqbal and Suleman 2010; Siddiqui and Hussain 2010; Sarkar 2009; Hangaragi 2008; Narendra and Aneja 2008; Tiwari 2008; Ghosh and De 2004; Llanto 2004; Zhang and Fan 2002; Lall 1999; Kundu *et al.* 1999). Availability of adequate infrastructure facilities, especially the physical infrastructure is the pre-condition for sustainable economic and social development (Satish 2006; Kurian 2000; WDR 1994; Bhatia 1999; Fiedorowicz and Rzepka 1977), and often, the very development of a region is disturbed by the low quality and limited accessibility of infrastructure (Klytchnikova and Lokshin (2011). Nevertheless, no enough attention has been paid to infrastructure development especially, the rural physical infrastructure in many poor countries till date (Rajeev 2008). It is also understood that the investment in infrastructure projects involve huge capital, long gestation periods, high incremental capital-output ratio, high risk and low rate of return on investment and non-rivalry in nature. All these factors make private sector entry difficult. As a result of which, infrastructure services, world over, are generally provided by the public sector (NBARD 2004; Dayley 1996). In the study of Rainey *et al.* (2003) found that the communities with well-managed and good quality public services are more likely to be successful in sustaining stable and growing economic bases. In other words, poor infrastructure leads not only to underutilise the region's economic resources but also fails to market the domestic produces at the fullest level in developing countries (Neogi 2010; Ghosh and De 2004).

In India too, economic development with regional equality has been a prime objective in country's economic policy since the beginning of planning period. Despite government's concerted efforts, inter-regional and intra-regional disparity has been widening at all levels with the growth of country's economy (Ghosh and De 2004; Mehta 2002; Choudhury 1992). For instance, some states may perform extremely well on all indicators but there may be districts within that states that are among the most deprived in the country. Or a state may have very high levels of attainment on economic development and health, and very low levels of attainment on education and gender parameters (Siddiqui and Hussain 2010; Mehta 2002). At present, we are witnessing mass agitations and militant activities in many parts of the country are an important effect of regional disparity (Kurian 2000).

Similarly, the *North Eastern Region* of India (NER hereafter), consisting of eight states is identified as least developed region in the country primarily due to its weak infrastructure (Bhattacharya, 2011; Neogi 2010; DoNER 2009; Choudhury and Bhuyan 2005), and blame of its weak infrastructure goes to the factors like,

insurgency movement; landlocked geographical location; weak political voices, etc. (Bhattacharya 2011; Choudhury and Bhuyan 2005). Whatsoever might be the reason, the quality and quantity of region's infrastructure (physical) is much behind the national level (DoNER 2009). In this context, Neogi (2010) proved that the region's deep rooted insurgency activities and communal conflicts are basically caused by the economic deprivation and disparity of infrastructure among the states.

**Objectives and Chapter Scheme:** Development of a region or state is a relative term, compares one with another. There is no limit of growth or development of a region, and we can only identify relative differences based on some parameters. WDR (1994) has proved that with the growth of infrastructure spatially country's economy also develops positively. Similarly, the government of India has also identified that the development of NER lies on the strength of the region's physical infrastructure (DoNER 2009). From this viewpoint, it is necessary to evaluate the nature and condition of physical infrastructure in NER and its importance for the region's sustainable development. Does inter-state and intra-state disparity of infrastructure really affect the sustainable development of the region is also requires to be discussed.

Having known the theoretical framework of the growth of infrastructure and economic development, the present study is the modest attempt to analyse inter-state and intra-state disparities of infrastructure. The specific objectives of the study are given below:

- To verify the inter and intra-state infrastructural disparities in NER;
- To understand the type of infrastructure lacking in the region;
- To portray the importance of infrastructure on region's economic activities;
- To recommend some viable suggestions for the region's sustainable development

For the convenient of the readers, the paper is divided into eight (8) sections. As the section I and II have already covered brief introduction and objectives of the study, section III covers data base and the methodological framework of the study. How does infrastructure index is constructed and what are the components are included are mentioned in this section. In section IV, brief literature of the study is covered, and it is followed by a brief profile of NER is given in section V. The core issue of the present study is discussed in section VI and it focuses more on the status of infrastructure and its disparity level in the region. In the same section, a comparison is also made between infrastructure and income. Whether the states having better infrastructure index perform well in Net State Domestic Product (NSDP) or not is included. Section VII gives a comprehensive finding in the light of previous analysis is given in this section. Finally, section VIII wraps up with concluding remark and few possible recommendations for sustainable development of NER.

## 2. Methodology

With the help of CMIE (Centre for Monitoring Indian Economy) methodology of District Infrastructure Index (DII), the *Ministry of Development of North Eastern Region* (DoNER), Government of India, has developed a composite NER District Development Index (DII) using 2001 census data to give ranking to all the 80 districts<sup>1</sup>. For the present study, with a slight modification from the methodology of the above organisation, a three stage development index called '*Composite Development Index*' (CDI) of the states of NER has been constructed on the basis of seven broad indicators of physical infrastructure. Further, these seven indicators have been decomposed into fourteen indicators (14 indicators of infrastructure) and have been assigned their weight age same value as CMIE assigned (refer to Annexure I). To enable us to construct infrastructure index, values of the indicators have been standardised and thereby eliminating the effect of the chosen units. It is evident that the sum of each value of  $X_i$  infrastructure would be equal to 100 and subsequently, the infrastructure index for NER would always be equal to 100 (refer to Table 2). The Composite Development Index (CDI) of infrastructure has been constructed in the following steps:

---

<sup>1</sup> There are 86 districts in the entire eight NER States now. However, six new districts, four in Assam and two in Arunachal Pradesh have been clubbed with the old districts from which those were carved out, for the purpose of DII.

$$DII_j = \sum (w_i x_{ij} / 100) \quad \dots\dots\dots (i)$$

Where,  $DII_j$  is the District Infrastructure Index for the  $j^{th}$  district,  $W_i$  is the weight age assigned to the  $i^{th}$  indicator and  $X_{ij}$  is the value of the  $i^{th}$  indicator of infrastructure for the  $j^{th}$  district.

$$SII_j = \sum DII_j \quad \dots\dots\dots (ii)$$

Where,  $SII_j$  refer to State Infrastructure Index (of  $J^{th}$  state)

$$CDI_j = \sum \left( \frac{SII_j}{N} \right) \quad \dots\dots\dots (iii)$$

Where,  $CDI_j$  refers to the Composite Development Index of the  $J^{th}$  state;  $N$  is the number of districts of  $J^{th}$  state. After obtaining  $CDI$  scores, the states (eight states of NER) have been categorised into three groups, namely *developed (CDI greater than 40)*, *moderately developed (CDI greater than 30, but less than 40)*, *least developed (CDI less than 30)* states according to their individual  $CDI$  scores. Secondly, using Reserve Bank of India (RBI) data on *Net State Domestic Product (NSDP)* of entire eight states from 2000-01 to 2004-05, *Compound Annual Growth Rates (CAGR)* of  $NSDP$  of the eight states have been calculated. The period is adopted for construction of  $CAGR$  purposely as the benefit of infrastructure involves long gestation period. These growth rates have also been categorised into three groups (same as  $CDI$ ) according to their values. The growth of a state's  $NSDP$  might be influenced by the factors other than infrastructure, and for the present study, an assumption is made that these factors are constant.

Besides  $CDI$ , Coefficient of Variation ( $CV$ ) has also been computed for understanding inter-state and intra-state disparity, and relative variations of different parameters. As  $CV$  is a unit free measurement, it helps us in comparing dispersion among various infrastructure indicators (14 indicators given in Table 1), and intra-state disparity can be measured. Before standardising, Annexure I and Table 1 portray seven categories of physical infrastructures in the region (Road, Electricity, Education, Health, Communication, Water and Banking) and observed data in Annexure I. On the other side, the effort has also been made to compare whether developed states in terms of higher  $CDI$  values do better in  $NSDP$  or not. This comparison is made by putting both variables ( $CDI$  and  $NSDP$ ) rank-wise in Table 4.

### 3. Literature Review

Balanced regional development is an integral part of India's planning. Most of the academic writings on the subject, especially in the post-independence, are found to be on inter and intra-regional disparity of infrastructure. Satish (2006); WDR (1994); Bhatia (1999) found that the rural infrastructure is the pre-requisite support for economic development, plays a key role in reaching the large mass of rural poor to the markets. Poor rural infrastructure also limits the ability of traders to travel to and communicate with remote farming areas, limiting market access from these areas and eliminating competition for their produce. Study of Rainey *et al.* (2003) emphasised more on the investments in transportation and communication infrastructure which allow firms to exchange products and information more rapidly and at lower costs.

In other parts of the world, Fox and Smith (1990) emphasised more on new ways of delivery services of existing infrastructure in America to reduce inequality, as they had little doubt of economic benefits for all communities from new infrastructure investment. In a similar manner, in Indonesia, Iqbal and Suleman (2010) found that sustainable socio-economic development and poverty reduction, also reducing disparity within the region, can be achieved only when adequate and efficient infrastructures are in place. Their empirical studies have shown positive correlation between infrastructure and economic growth in the country, e.g. 1 percent increase in infrastructure leads to 0.3 percent to Indonesia's GDP. However, the study of WDR (1994); Satish (2006) found that 1 per cent increase in the stock of infrastructure is associated with a same percent increase in GDP across all countries. The same idea was also advocated by Llanto (2004; 2002), in Philippine. In his findings, local and foreign companies in Philippine or business community in general, faced state of infrastructure as the second biggest hurdle, next to corruption in doing business in the country. According to Mahadevia (2007), in Chinese experience, despite the volume of infrastructure investment in the cities of China is much higher than some of the most developed cities in India, the administrative system and fiscal decentralisation have created high inter-city inequalities in levels of development. In Thailand, the study of Dayley (1996) found that the country experienced a steady increase in relative poverty, yet per

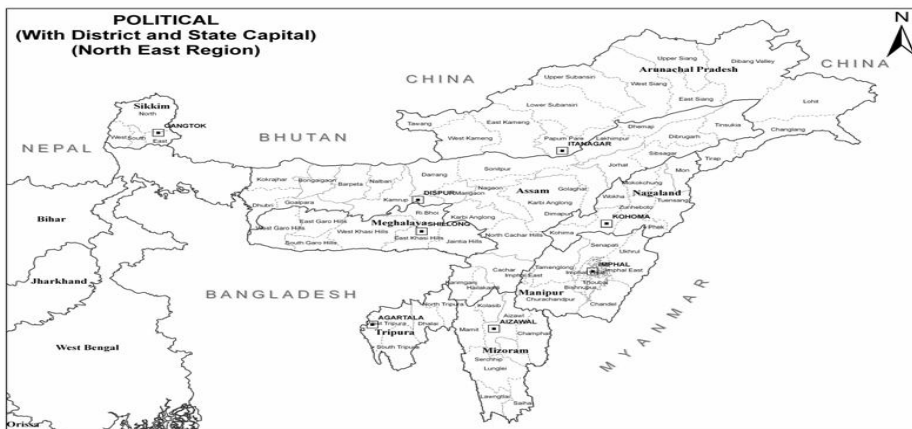
capita income and physical infrastructure grew at rates far higher than in most countries in the developing world. It is also argued that a symbiotic relationship exists between these two processes and that this relationship is caused by the aggregate affect of various structural and behavioural political- economic mechanisms.

In India, Kundu *et al.* (1999) found that the investments for infrastructures and basic services have not been spatially balanced during the past few decades. This institutional lacuna became a common phenomenon in the country. Besides, Rajeev (2008) lamented for not completing rural infrastructure projects under Rural Infrastructure Development Fund (RIDF) due to unnecessary administration delays. She also further opined that there is a strong positive correlation between rural poverty and deficiency of infrastructure. In the finding of Ghosh and De (2004; 1998) the inter-state disparities in physical, social and economic infrastructure facilities in India still have remained at an alarmingly high level, and this probably leads to growing regional income disparities in the country. In this context, Kurian (2000) suggested that the role of government to minimise inter-state disparity is very significant. If government does not intervene on time the inter-state disparities are likely to aggravate further in the country. Rural communities are also to be provided quality infrastructure for their economies to maintain and/or enhance their competitiveness. However, Singha (2009), Lall (1999) had argued that the rich in natural resources and physical infrastructure alone do not guarantee development of a society. Efficient and proper utilisation of these resources also matter in this regard.

As for NER, Bhattacharya (2011) found that the factors responsible for backwardness of this region are primarily due to the institutional failure in providing basic infrastructure, improper policy and politics of the country towards the NER. Similarly, Neogi (2010) also found that the regional and intra-regional disparity exist in NER and the relative variation (coefficient of variation) has been different for different parameters in the region. Besides, the development initiatives so far undertaken for the region has been grossly inadequate. In this context, Choudhury and Bhuyan (2005) blamed India's planning policy itself for creating disparity in NER. This planning strategy centres on rapid industrial development through investment in heavy industries, which does not have much significance in NER. Further, they opined that in the post reforms period, where the development expenditure of all the state governments in the region has decreased significantly, the non developmental expenditure has increased sharply.

**Profile of Ner:** India's North Eastern Region (NER) consists of eight states is a 'mixed bag' of several ethnic groups, covers an area of 262, 500 sq. km. (8% of India's land mass) and its population is 39.04 million (3.80% of the country). The region is connected with mainland India by a narrow chicken's neck corridor of 20 km. at Siliguri in West Bengal, and endowed with rich natural resources and placed in a strategic location for trade and commerce with the East and South East Asian countries. Out of six international boundaries shared with India, five of them (except Pakistan) with about 5000 km. touch NER namely, China, Nepal, Bhutan, Myanmar and Bangladesh (refer to Fig: 1).

**Fig: 1**Map of 8 States with their Districts



The bio-diversity of NER is considered as one of the 19 identified biodiversity “hot spots” of the world. Around three-fourth of geographical area of land mass of NER is covered by hills and mountains where mainly the tribal people of various races, especially the different mongoloid stock are found. The Indo-Aryan population is concentrated mainly in the Brahmaputra and Barak valley of Assam, and the plain areas of Tripura. On an average, the density of population is very low in the hill areas as compared to the plains or valleys. Hindu religious groups and Muslims dominate the plains or valleys, Christian religious groups followed by Buddhists dominate the hill areas. Some of the linguistic and dialectical groups of NER like Assamese, Bengali, Manipuri, Nagamese, Tripuri, Mizo, Khasi, Garo, Nepali, and some other smaller dialects can be mentioned. The biggest state of NER is Assam which is the largest tea producer in India, and it (Assam) is also one of the biggest suppliers of petroleum products and agricultural products like rice, jute, etc.

**Disparity of Infrastructure in Ner:** According to the latest UNDP report<sup>2</sup> the entire NER states have been ranked in the lowest category in terms of *Infrastructure Index* in the country. However, in terms of *Human Development Index*, the same report ranked almost all the states of the region at high (except Assam in lower middle category). Does the poor infrastructure make NER poor, or is it regional disparity that makes the region underdeveloped? Before analysing the study, Table 1 shows descriptive statistics of indicators. Among the indicators, the road communication is given highest importance and assigned highest weightage value of 26 in constructing infrastructure index (24+2= 26). It is followed by water and electricity with same weightage value of 15, and other indicators are also assigned weightage according to their importance in constructing development index. From the same Table 1, it is visible that the disparities among the districts of NER for many of the indicators (e.g. 206.62 maximum and 2.52 minimum of road length/100 km<sup>2</sup>). However, clear understanding of the data can be seen after standardising with simple statistics in the following sections.

**Table 1: Descriptive Statistics of 14 Indicators and their Weightage of 80 Districts in NER**

Sl. No. and Indicators	Weightage*	Mean	Std. Dev.	Min.	Max.
1 a. Road Length/100km <sup>2</sup>	24.00	51.84	39.68	2.53	206.62
b. Surfaced Road as % Total Road	2.00	47.13	23.01	6.61	93.60
2 % of Electrified Villages to Total Village	15.00	75.70	18.71	26.01	100.00
3 % of Household Having Tap Water	15.00	19.71	16.21	1.30	74.32
4 a. Schools/1000 population	6.00	2.25	1.26	0.64	6.38
b. School/100 km <sup>2</sup>	6.00	35.37	32.82	0.68	121.97
5 a. Post & Telegraph Office/10,000 Pop	3.50	2.18	1.45	0.09	7.17
b. Post & Telegraph Office/100 km <sup>2</sup>	3.50	3.01	2.82	0.02	9.78
c. Tele Exchange/10,000 Pop	2.50	0.52	0.44	0.07	1.97
d. Tele Exchange/100 km <sup>2</sup>	2.50	0.61	0.52	0.02	2.50
6 a. Hospital beds/10,000 Pop	8.00	10.86	7.98	1.05	40.81
b. Hospital bed/100 km <sup>2</sup>	7.00	15.86	25.80	0.64	142.12
7 a. Bank Branch/10,000 Pop	2.50	0.73	0.55	0.08	4.03
b. Banks/100 km <sup>2</sup>	2.50	1.17	1.33	0.02	7.07
Total (1-14)	100.00				

Source: Author’s calculation from Annexure I

\* Weight assigned by CMIE and adopted by DoNER (2009)

<sup>2</sup> As quoted by Twelfth Finance Commission (2005-10), Government of India (Chapter 4, Page 61)

To compare infrastructure development across the states, the State Infrastructure Index (SII) and Composite Development Index (CDI) are presented in Table 2 and in Figure 2. Looking at the CDI values, we can infer that Tripura (CDI value 59.99), though SII value is lower than Assam, Manipur and Arunachal Pradesh, the state (Tripura) is ranked best in overall infrastructure development index. Higher SII value does not necessarily mean that the particular state has better in overall development of infrastructure. Development index depends on the geographical spread, relative backwardness of other districts and number of districts in that particular state. To follow the sequence, according to CDI value, Sikkim (CDI value 47.14) and Manipur (CDI value 39.35) are in the second and third positions respectively. Nagaland (CDI value 33.74), Assam (CDI value 29.68) and Meghalaya (CDI value 29.32) registered fourth, fifth and sixth position respectively. At the bottom, Mizoram with CDI score of 27.15 and Arunachal Pradesh with CDI score of 22.58 registered seventh and eighth (last) position respectively in the region.

**Table 2: Composite Development Index of 8 States**

Sl. No.* States	1a	1b	2	3	4a	4b	5a	5b	5c	5d	6a	6b	7a	7b	SII	C DI	R a n k
Tripura	614	11 1.6		90.	5.6	14	9.6	27.	1.1	3.2	30.	95.	2.	8.			1
	.36	4	377	90	9	6.0	3	45	8	4	98	53	87	98			
	(14	(2.	.76	(1	(0.	3	(0.	(0.	(0.	(0.	(2.	(6.	(0.	(0.	23	59	
	7.4	23	(56.	3.6	34	(8.	34	96	03	08	48	69	07	22	9.9	.9	
Sikkim	5)	)	66)	4)	)	76)	)	)	)	)	)	)	)	)	5	9	
		24		23							10	15		10			2
		5.6		3.8	5.1		16.	18.	3.4	4.5	3.0	1.3	8.	.6			
	284	0	371	6	3	60.	59	81	8	5	1	7	09	5			
Manipur	.24	(4.	.26	(3	(0.	33	(0.	(0.	(0.	(0.	(8.	(1	(0.	(0.	18	47	
	(68.	91	(55.	5.0	31	(3.	58	66	09	11	24	0.6	20	27	8.5	.1	
	22)	)	69)	8)	)	62)	)	)	)	)	)	0)	)	)	7	4	
		71		21		41						30		12			3
Nagaland	582	7.9	758	0.6	16.	9.3	2.0	5.6	2.0	6.7	81.	0.8	3.	.0			
	.37	3	.70	2	88	3	6	4	9	9	15	1	35	9			
	(13	(1	(11	(3	(1.	(25	(0.	(0.	(0.	(0.	(6.	(2	(0.	(0.	35	39	
	9.7	4.3	3.8	1.5	01	.16	07	20	05	17	49	1.0	08	30	4.1	.3	
Assam	7)	6)	1)	9)	)	)	)	)	)	)	)	6)	)	)	2	5	
		30									11	15					4
	725	5.5	983	76.	11.	14	17.	24.	3.2	4.8	5.6	6.8	5.	8.			
	.01	1	.92	98	79	9.1	50	29	2	8	8	0	01	34			
Meghalaya	(17	(6.	(14	(1.	(0.	2	(0.	(0.	(0.	(0.	(9.	(1	(0.	(0.	37	33	
	4.0	11	7.5	55	71	(8.	61	85	08	12	25	0.9	13	21	1.1	.7	
	0)	)	9)	)	)	95)	)	)	)	)	)	8)	)	)	3	4	
	105	64	164	22		15		12				35	10	39			5
Mizoram	1.9	4.9	0.7	8.2	45.	67.	36.	7.1	5.2	19.	93.	9.3	.6	.5			
	6	4	0	4	27	65	15	0	4	21	99	1	8	5			
	(25	(1	(24	(3	(2.	(94	(1.	(4.	(0.	(0.	(7.	(2	(0.	(0.	68	29	
	2.4	2.9	6.1	4.2	72	.06	27	45	13	48	52	5.1	27	99	2.7	.6	
Arunachal Pradesh	7)	0)	1)	4)	)	)	)	)	)	)	)	5)	)	)	4	8	
		45		21		29					10	11					6
		7.3		1.2	31.	8.0	14.	15.	3.5	3.7	0.5	8.8	6.	7.			
	261	9	426	6	50	1	39	13	6	7	2	9	37	62			
West Bengal	.49	(9.	.39	(3	(1.	(17	(0.	(0.	(0.	(0.	(8.	(8.	(0.	(0.	20	29	
	(62.	15	(63.	1.6	89	.88	50	53	09	09	04	32	16	19	5.2	.3	
	76)	)	96)	9)	)	)	)	)	)	)	)	)	)	)	5	2	

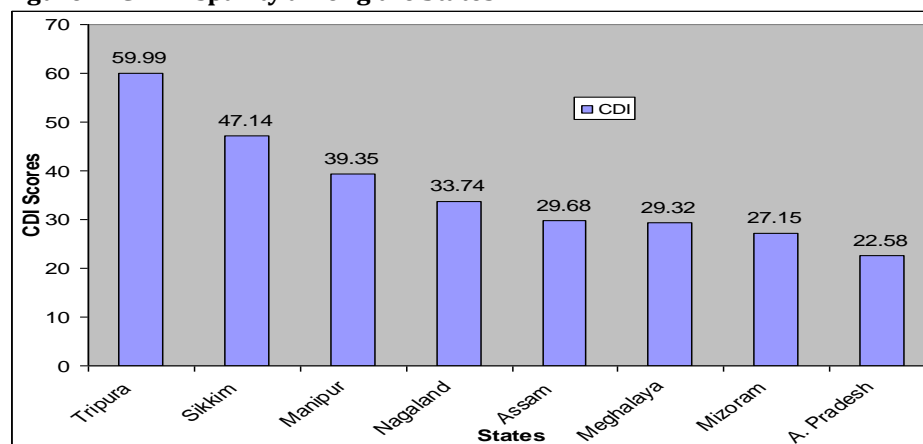
	43		15															7
	1.4	670	1.5	32.	13	39.	14.	9.3	3.8	70.	33.	8.	3.					
	269	6	.43	2	74	5.1	08	94	1	6	44	15	99	80				
Mizoram	.67	(8.	(10	(2	(1.	5	(1.	(0.	(0.	(0.	(5.	(2.	(0.	(0.	21	27		
	(64.	63	0.5	2.7	96	(8.	37	52	23	10	64	32	22	10	7.2	.1		
	72)	)	6)	3)	)	11)	)	)	)	)	)	)	)	)	1	5		
	85		37								27		13				8	
	5.8	826	3.5	30.			38.	7.2	13.	2.7	3.2	53.	.2	2.				
Arunachal Pradesh	.73	(1	(12	(5	(1.	20	(1.	(0.	(0.	(0.	(2	(3.	(0.	(0.	31	22		
	(85.	7.1	3.9	6.0	84	(3.	35	25	34	07	1.8	73	33	07	6.0	.5		
	86)	2)	7)	3)	)	25)	)	)	)	)	6)	)	)	)	6	8		
	10		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10	10	1					
NER	100	0	100	(1	0	0	0	0	0	0	0	0	00	0	10	10	(1	
	(24.	(2.	(15.	5.0	(6.	(6.	(3.	(3.	(2.	(2.	(8.	(7.	(2.	(2.	0	0	-	8)
	0)	0)	0)	)	0)	0)	5)	5)	5)	5)	0)	0)	5)	5)				
C.V. (%)	54.	53.	55.	47.	65.	14	65.	13	80.	88.	65.	72.	49	99			34	
	04	70	75	59	21	2.9	62	2.7	66	63	74	64	.4	.7			.0	
						4		5					1	7			6	
																	36	
Mean	124	9.4	113	29.	1.3	21.	0.7	1.0	0.1	0.1	8.6	11.	0.	0.			.1	
	.40	3	.54	57	5	22	6	5	3	5	9	10	18	29			2	
																	12	
Std.Dev.	67.	5.0	63.	14.	0.8	30.	0.5	1.4	0.1	0.1	5.7	8.0	0.	0.			.3	
	22	6	30	07	8	34	0	0	1	4	1	7	09	29			0	

Source: Author's calculation from the DoNER (2009)

\* For Sl. Nos., refer to Table 1 (Column 2). Note: Figures in parentheses are the weighted value

Overall inter-state disparity level in NER can be perceived by Coefficient of Variation (CV) value of 34.06, is lesser than the CVs of different indicators given in Table 2. Among the different indicators, in descending order, the availability of number of *schools* per 100 km<sup>2</sup>; *post & telegraph* facilities per 100 km<sup>2</sup>; number of banks per 100 km<sup>2</sup> and telephone exchange per 10,000 populations are highly dispersed among the NER states with their CV values of 142.94; 132.75; 99.77 and 80.63 respectively. The lowest dispersion was found in households access to *safe drinking water* (tap water connection with CV value 47.59) followed by availability of *branches of banks* per 10,000 populations with CV value 49.41, percentage of surfaced road of the total *road length* with CV value of 53.70 and road length per 100 km<sup>2</sup> with CV value of 54.04.

**Figure 2: CDI Disparity among the States**



In terms of intra-state disparity of different indicators, it can also be seen from the Table 3 and Fig. 3 with the help of CV values. It is noticed most of the states behave almost equally. Unlike Neogi (2010), in the present study, the relative variation of different states is found to be same for different indicators. Those indicators having high CV values are high to almost all the states and vice versa. Most of the states are having high variation (CV) for the area-based indicators like, school/100 km<sup>2</sup>, hospital bed/ km<sup>2</sup>, post office and telephone exchange/100 km<sup>2</sup>, and banks/100 km<sup>2</sup>, etc. and low variation (CV) for population-based indicators like, percentage of surfaced road, percentage of electrified village, school/1000 population, post and telephone exchange office/10,000 population, and hospital and bank/10,000 population, etc.

Among the states, Manipur and Sikkim are found to be high intra-state disparity than other six states of NER, with CV value of 49.45 and 36.12 respectively (higher than the overall CV level 34.06 of NER). For both states, the indicators like hospital beds per 100 km<sup>2</sup> and banks per 100 km<sup>2</sup> are having high disparity. For instances, CV value of hospital beds per 100 km<sup>2</sup> in Manipur was 149.66 and 119.48 for Sikkim, and CV value of bank branches per 100 km<sup>2</sup> in Manipur was 146.10 and 113.66 for Sikkim.

**Table 3: Intra-state Disparity (Coefficient of Variation) in 8 States**

State/C		V	1a	1b	2	3	4a	4b	5a	5b	5c	5d	6a	6b	7a	7b	SII
Assam	Me	36.	0.5	14.	3.4	0.0	2.1	0.0	0.2	0.0	0.0	0.0	0.6	1.6	0.0	0.0	59.
	an	86	6	17	1	9	9	8	4	1	2	2	7	2	6	99	
Tripura	De	13.	0.0	0.6	1.4	0.0	0.5	0.0	0.1	0.0	0.0	0.0	0.1	1.1	0.0	0.0	16.
	v.	79	1	3	0	3	4	2	1	0	1	0	9	0	4	98	
West Bengal	(% C.V)	37.	2.2	4.4	41.	36.	24.	25.	44.	28.	36.	16.	70.	17.	71.	28.	
	)	40.	1	3	07	38	83	68	76	29	66	26	97	46	53	31	
Assam	Me	17.	1.2	13.	8.7	0.0	0.9	0.1	0.1	0.0	0.0	2.0	2.6	0.0	0.0	47.	
	an	05	3	92	7	8	0	5	6	2	3	6	5	5	7	14	
Sikkim	De	12.	0.0	0.9	3.3	0.0	0.5	0.0	0.1	0.0	0.0	1.0	3.1	0.0	0.0	17.	
	v.	80	0	3	2	2	8	5	2	0	2	2	7	4	8	03	
Sikkim	(% C.V)	75.	0.0	6.6	37.	26.	64.	36.	71.	15.	75.	49.	119	70.	113	36.	
	)	05	0	7	86	82	25	60	50	73	13	44	.48	61	.66	12	
Assam	Me	15.	1.6	12.	3.5	0.1	2.8	0.0	0.0	0.0	0.0	0.7	2.3	0.0	0.0	39.	
	an	53	0	65	1	1	0	1	2	1	2	2	4	1	3	35	
Manipur	De	12.	0.2	1.0	2.1	0.0	2.7	0.0	0.0	0.0	0.0	0.3	3.5	0.0	0.0	19.	
	v.	54	1	2	9	3	8	0	3	0	2	8	0	0	5	46	
Manipur	(% C.V)	80.	12.	8.0	62.	22.	99.	58.	134.	39.	113.	52.	149.	39.	146.	49.	
	)	78	88	3	30	84	29	43	.09	34	.24	60	.66	89	.10	45	
Nagaland	Me	15.	0.5	13.	1.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8	1.0	0.0	0.0	33.	
	an	82	6	42	5	6	1	6	8	1	1	4	0	1	2	74	
Nagaland	Std	7.8	0.3	1.3	0.6	0.0	0.4	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.0	10.	
	.	2	7	4	0	2	2	2	6	0	1	7	0	1	2	32	



	De															
	v.															
	C.V															
	(%)	49.	66.	9.9	57.	29.	51.	36.	77.	53.	97.	44.	80.	64.	127	30.
	)	44	00	8	35	66	79	22	77	58	66	37	16	35	.99	59
	Me	10.	0.5	10.	1.4	0.1	4.0	0.0	0.1	0.0	0.0	0.3	1.0	0.0	0.0	29.
Assam	an	98	6	70	9	2	9	6	9	1	2	3	9	1	4	68
	Std															
	De	3.3	0.2	3.0	1.3	0.0	1.5	0.0	0.0	0.0	0.0	0.3	1.7	0.0	0.0	6.9
Assam	v.	3	1	2	4	5	9	2	9	0	1	5	7	0	2	8
	C.V															
	(%)	30.	37.	28.	89.	44.	38.	44.	45.	39.	50.	106	162	32.	48.	23.
Assam	)	37	65	19	94	30	86	11	50	03	10	.89	.12	91	47	52
	Me	8.9	1.3	9.1	4.5	0.2	2.5	0.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	29.
	an	7	1	4	3	7	5	7	8	1	1	5	9	2	3	32
Meghal	Std															
	De	3.3	0.1	1.8	2.3	0.0	0.8	0.0	0.0	0.0	0.0	0.3	1.2	0.0	0.0	8.5
	v.	1	7	6	8	7	7	2	5	1	1	4	1	1	3	4
Meghal	C.V															
	(%)	36.	13.	20.	52.	27.	34.	23.	60.	42.	65.	29.	101	34.	100	29.
	)	92	02	40	66	54	10	16	92	82	39	96	.39	47	.63	12
Mizoram	Me	8.0	1.0	12.	2.8	0.2	1.0	0.1	0.0	0.0	0.0	0.7	0.2	0.0	0.0	27.
	an	9	8	57	4	5	1	7	7	3	1	0	9	3	1	15
	Std															
Mizoram	De	3.5	0.4	2.2	2.2	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	7.0
	v.	1	1	0	1	5	9	5	2	1	1	5	6	1	1	8
	C.V															
Mizoram	(%)	43.	38.	17.	77.	21.	48.	27.	31.	51.	61.	36.	91.	34.	61.	26.
	)	33	15	47	87	33	12	32	53	55	76	00	07	53	46	07
	Me	6.1	1.2	8.8	4.0	0.1	0.2	0.1	0.0	0.0	0.0	1.5	0.2	0.0	0.0	22.
Arunachal	an	3	2	6	0	3	3	0	2	2	0	6	7	2	0	58
	Std															
	De	4.9	0.2	2.3	1.1	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	7.0
Arunachal	v.	0	5	9	7	3	6	2	1	1	0	2	4	1	1	0
	C.V															
	(%)	79.	20.	26.	29.	22.	67.	21.	77.	35.	94.	26.	89.	39.	109	31.
Arunachal	)	86	13	94	13	82	35	14	49	94	97	87	55	85	.65	01

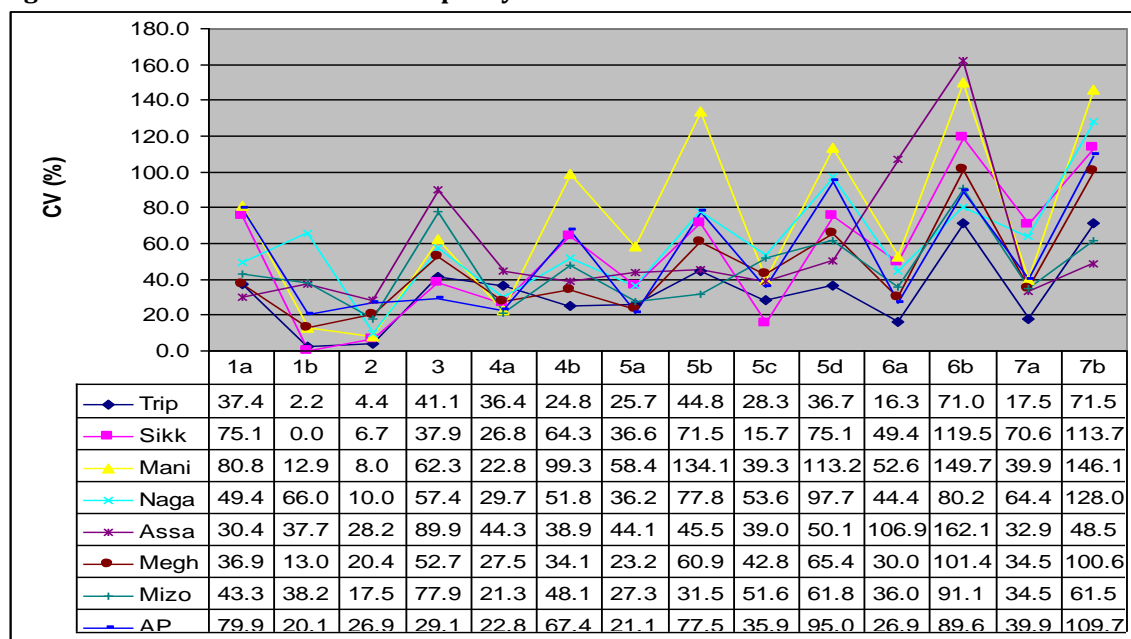
Source: Author's calculation from the DoNER (2009).

\* For Sl. Nos. of indicators, refer to Table 1 and Annexure I.

To get a clear picture of inter-district disparities of infrastructure within the states (80 districts) of NER, a District Development Index (DII) is presented in Annexure II and their respective ranks are also given against the districts. In terms of ranks of the districts, two districts of Tripura namely, West *Tripura* and North

Tripura occupy first and second positions respectively in overall infrastructure development index in NER. It is followed by two districts of Manipur namely, *Imphal West* (rank 3) and *Imphal East* (rank 5), and one district of Sikkim namely *South Sikkim* (rank 4). It is also seen that almost all the low developed districts are from the state of Arunachal Pradesh and Assam.

**Fig: 3: Indicator-wise Intra-state Disparity Level**



To verify whether the infrastructural developed states perform better in growth of state income or not is given in Table 4 and shows comparative pictures of the states. We can recall the Annexure III which portrays compound annual growth rate of NSDP of eight states, and they are ranked orderly according to their CAGR value. If we club Table 2 (showing CDI rank) and Annexure III (showing NSDP rank) together in a combo Table 4, a new picture emerges which portrays a comparison between infrastructure index and income growth of the states.

**Table: 4 Comparison of States' Infrastructure (CDI) with NSDP**

Categories of States	Infrastructure using CDI Value	CAGR of NSDP (%) (2000-01 to 2004-05)
Developed	Tripura (59.33) Sikkim (47.14)	Tripura (8.11) Sikkim (7.83)
Moderately Developed	Manipur (39.35) Nagaland (33.74)	Nagaland (7.55) Arunachal Pradesh (7.28)
Least Developed	Assam (29.68) Meghalaya (29.32) Mizoram (27.15)    Arunachal Pradesh (22.58)	Manipur (6.10) Mizoram (5.99) Meghalaya (5.47) Assam (4.86)

Source: Author's categorisation from table 2 for CDI and Annexure III for NSDP

Note: Figures in the parentheses are CDI value and CAGR (%) of NSDP respectively.

From the Table 4, we can arrive at the conclusion that the states, Tripura and Sikkim registered 1<sup>st</sup> and 2<sup>nd</sup> ranks respectively as their performances in terms of infrastructure index (CDI) as well as NSDP growth (CAGR) are in top two orders. Based on this matrix (Table 4), they are categorised as developed states in NER.

In the moderately developed category, Nagaland and Manipur are included according to their CDI scores. For the state of Manipur, the NSDP growth rate is slightly slipped off from the same category due to some special problems<sup>3</sup> encountered by the state during the study period (it is not captured in data).

In the least developed category, Assam, Meghalaya, Mizoram and Arunachal Pradesh are clubbed together according to their CDI scores in order of 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> position respectively. Excepting the state of Arunachal Pradesh which performs well in terms of NSDP<sup>4</sup>, other three states perform poorly in terms of NSDP same as they are poor in CDI.

#### 4. Results

Infrastructure, the engine of growth involves huge investment and requires long gestation period, is acknowledged by all since the period of neo-classical economists. For the present study, based on the objectives and analysis made above, we can briefly summarise the findings in the following manner: First, infrastructure has positive relation with the growth of states' income (NSDP) in NER. States having better infrastructure index (developed and moderately developed) performed well in income generation too (developed and moderately developed in NSDP growth rate). Excepting Arunachal Pradesh, other seven states performed positively at the same line with NSDP.

Second, moderate inter-state disparity was found with CV value of 34.06 (refer to Table 2 and Figure 2). Those indicators helping to inter-state disparity are schools/100 sq. km (4b); post and telegraph office/100 sq. km (5b); and banks/100 sq. km (7b), etc. However, the intra-state disparity was found to be negligible. Excepting Manipur with CV value 49.45, other seven states were having low CV than the inter-state disparity level (CV of 34.06), and the indicators helping to intra-state disparity (though it is negligible) are mainly, telephone exchange/100 sq. km (5d); hospital beds/100 sq. km (6b); and banks/100 sq. km (7b).

Third, whatsoever the level of inter and intra-state disparities of infrastructure do not have much influence on economic growth (NSDP). It is evident from the state of Manipur that the intra-state disparity CV value was 49.45, highest in the region but the state performed well in NSDP. Similarly, Sikkim became second highest in terms of intra-state disparity with CV level of SII, performs extremely well in overall infrastructure as well as economic development in the state.

Fourth, the relative variations of different indicators are found to be same for almost all the states. Those indicators having high CV values are high for almost all the states and those indicators having low CV are low for almost all the states. For instances, the indicator like, hospital beds per 100 sq. km (6b) is having high CV for all the states and the percentage of electrified village to total villages (2) is having low CV for all the states. It is also witnessed from the Figure 3 that two sub-indicators of same kind- the availability of banking service to people (7a) and bank branches per 100 km<sup>2</sup> (7b) are in different directions. The situation is same for the availability of schools per 1000 population (4a) and number of school per 100 km<sup>2</sup> (4b). The reason behind these conflicting results is basically due to the unevenly human settlement in the region, thinly populated compared to all India level<sup>5</sup>, and concentration of population in certain pockets in the region (cities and towns). The availability of school and banking services generally depends on the demand for those services from the people, where there is concentration of settlements. These variations do not have much difference in the region.

---

<sup>3</sup> Manipur is considered as most disturbed state in NER now due to the issue of Arm Forces Special Power Act (AFSPA); inter community clash and insurgency problem. These issues are intensified after 2000.

<sup>4</sup> The government of India has been initiating number of special programmes for development of Arunachal Pradesh after 2000, as the state is identified as least developed in terms of infrastructure in India.

<sup>5</sup> For instances, density of population in all India level is 324 people/sq. km. Whereas, 13 people/ sq. km. in Arunachal Pradesh and 42 people/sq. km in Mizoram according to 2001 census.

Fifth, road communication is one of the most important infrastructures in the region, as the states are connected by one (almost all the states) National Highway (NH) with rest of the world through Assam. Though it is not captured properly in the text, excepting Sikkim, all the six states are passing through Assam by road, and the Assam, through the chicken's neck corridor in Siliguri district of West Bengal (refer to Figure 1 and Section V). Very often, in many occasions<sup>6</sup>, the states are disconnected from the rest of the world due to lack of alternative roads. The condition of NHs in NER is very pathetic condition, and the average mileage on these roads is 20-25 km per hour<sup>7</sup>.

Besides difficulties of air ways in NER<sup>8</sup>, the railway network which is considered as most convenient and cheapest mode of transportation is confined in Assam with 2516 km. Sikkim and Meghalaya have not been connected by rail route. Though the states like, Mizoram (2 km. length), Manipur (1 km. length) and Arunachal Pradesh (1 km. length) have been connected by railway route with narrow gauge line at the edge of the states, extended from Assam, it is not fully operational till date. Similarly, though Tripura is connected by narrow gauge line with 45 km, the condition has not improved at all. For Nagaland, though the state is connected by broad gauge rail line at the edge of the state of Dimapur Town (½ km away from Assam border), for the majority of the people of the state, reaching Dimapur is not that much easy as one flies from Delhi to New York.

## 5. Conclusion and Recommendation

Having discussed the findings briefly in five points above, we can conclude that the role of basic physical infrastructure is very significant in NER. Despite heterogeneity in socio-economic structures of the states within the region, the need for and the type of infrastructure deficiencies in the states are more or less same. The very issue of inter and intra-state disparity of infrastructure do not have impact on the overall development of the region. Unlike the recommendation of Lall (1999) to give more emphasis on the investment of income and employment, the region requires more investment on basic physical infrastructures, like road communication, health, power and basic industries, for sustainable development. Employment and income generation will follow spontaneously if the basic infrastructures are made sufficiently.

Rich economic resources of the region cannot be exploited due to lack of proper infrastructure. It would not be wrong to say that the region's mass agitations and other forms of arm conflicts are the result long neglected attitude towards the region by India government. It is very hard to find any national project completed on time with expected quality in the region. For instance, in Assam, Lumding to Silchar narrow gauge railway line (350 km) conversion to broad gauge was initiated 15 years ago, but uncertain for completion of the project till date.

---

<sup>6</sup> Manipur was disconnected from the rest of the world for two months in 2001 due to NH 39 blockade by tribal underground organization. Recently, Sikkim was hit by earthquake on 18<sup>th</sup> September 2011. Had there been an alternative route (other than NH 31) to reach relief materials and rescue operation to the state many lives would have been saved.

<sup>7</sup> Retrieved from *E-Pao* at: [http://www.e-pao.net/epSubPageExtractor.asp?src=travel.Manipur\\_Travel\\_Log.Highways\\_of\\_NE\\_in\\_Pathetic\\_Condition](http://www.e-pao.net/epSubPageExtractor.asp?src=travel.Manipur_Travel_Log.Highways_of_NE_in_Pathetic_Condition) contributed by R. B. Thohe Pou: "National Highway of NEI Pathetic Condition" published on 2<sup>nd</sup> February 2010.

<sup>8</sup> In NER, air way is practically in operative in 4 states. They are Manipur (Imphal); Tripura (Agartala), Mizoram (Aizwal) and Assam (Guwahati). However, Sikkim, Meghalaya and Arunachal Pradesh have not been connected by air. For Nagaland, it is almost same with non-existent as the airport is at the edge of the state.

As for the policy recommendation in priority basis, it is argued that the infrastructure is considered as public good in the country and lumpy in nature with long gestation period, Central government should directly handle in the investment of infrastructure in NER, starting with road network in a big push manner, not in a piece meal manner. Strict monitoring and quality control of the infrastructure is also very important. Otherwise, repairing works might be needed before construction gets over.

Second, alternative National Highways or rail road are to be constructed to connect the state capitals of the region. As we have discussed, excepting Sikkim, other six states (Manipur, Mizoram, Nagaland, Tripura, Arunachal Pradesh and Meghalaya) are connected with rest of the world through Assam in a unidirectional manner. These states are not connected each other properly, though they are positioned in a circular manner (refer to Fig. 1). This physical disconnection among the sister states creates mistrust and distance among the different communities in the region.

Third, power sector/infrastructure is to be made available sufficiently in the region. Though the region (NER) is ranked as high percentage of electrified, the regularity and the voltage supplied are questionable. For instance, almost all the small and medium industries in Manipur have been shut down due to irregularity of power supply. Whatsoever the region, besides low voltage, on and average, hardly four to six hours of power supply is made available in Imphal city for the last one decade.

## References

- Bhatia, M. S. (1999). Rural Infrastructure and Growth in Agriculture. *Economic and Political Weekly*, 34(13), A43-A48.
- Bhattacharya, R. (2011). Development disparities in North East India. New Delhi: Cambridge University Press India Pvt. Ltd.
- Choudhury, S. & Bhuyan, R. (2005). Development Disparity and North-east Region. *Dialogue*, 7(2). [Accessed on July 28, 2011 and available at: [http://www.asthabharati.org/Dia\\_Oct%2005/Sas%20&%20Rat.htm](http://www.asthabharati.org/Dia_Oct%2005/Sas%20&%20Rat.htm)]
- DoNER (2009). North Easter Region- Vision 2020. Ministry of Development of North Eastern Region, Government of India.
- Dayley, R. (1996). Infrastructure Adjustment: The Political Economy of Infrastructure Development and Marginalization in Thailand. *An Interdisciplinary Journal of Southeast Asian Studies*, 10(1), 77-112.
- Fox, W. F. & Smith, R. T. (1990). Public Infrastructure Policy and Economic Development, *Economic Review*, Federal Reserve Bank of Kansas City (March/April), 49-59.
- Fiedorowicz, K. & Gene, R. (1977). Planning of the Economic Infrastructure. *Eastern European Economics*, 16(1), 48-73.
- Ghosh, B. & De, P. (2004). How do different Categories of Infrastructure Affect Development? Evidence from Indian States. *Economic and Political Weekly*, 39(42), 4645-57.
- Ghosh, B. & De, P. (2004). Role of Infrastructure in Regional Development: A Study over the Plan Period. *Economic and Political Weekly*, 33(47/48), 3039-43+45-48.
- Hangaragi, S. S. (2008). The Dimensions of Inter-Taluka Disparities in the Levels of Development of Old Bijapur District of Karnataka State. *Indian Journal of Regional Science*, 40(2), 41-53.
- Iqbal, Z. & Suleman, A. (2010). Indonesia: Critical Constraints to Infrastructure Development. Economic Research and Policy Department. Islamic Development bank.
- Klytchnikova, I. & Michael L. (2011). Measuring Welfare Gains from Better Quality Infrastructure. *Journal of Infrastructure Development*, 1(2), 87-109.
- Kundu, A., Bagchi, S. & Kundu, D. (1999). *Regional Distribution of Infrastructure and Basic Amenities in Urban India: Issues Concerning Empowerment of Local Bodies*. *Economic and Political Weekly*, 34(28), 1893-1906.
- Kurian, N. J. (2000). Widening Regional Disparities in India: Some Indicators. *Economic and Political Weekly*, 35(7), 538-50.
- Lall, S. V. (1999). The Role of Public Infrastructure Investments in Regional Development- Experience of Indian States. *Economic and Political Weekly*, 34(12), 717-25.

- Llanto, G. M. (2004). Bottleneck to Growth: Inadequate Infrastructure. Policy notes No. 2004-02 (March), Makati city, Philippine Institute for Development Studies.
- Llanto, G. M. (2002). Infrastructure Development: Experience and Policy Options for the future, Makati city, Philippine Institute for Development Studies.
- Mahadevia, D. (2007). Urban Infrastructure Financing and Delivery in China. *Economic and Political Weekly*, 42(11), 964-72.
- Mehta, A. K. (2002). Multidimensional Poverty in India: District Level Estimates. Paper presented at IIPA, New Delhi on 15th and 16th May.
- NABARD (2004). Infrastructure for Agriculture and Rural Development- An Impact Assessment of Investments in Rural Roads and Bridges under RIDF. Mumbai, NABARD.
- Narendra K. B. & Ranjan, A. (2008). Regional Variations of Socio-Economic Development in Haryana: A District Level Analysis. *Indian Journal of Regional Science*, 40(2), 26-40.
- 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), 303-10.
- Rajeev, M. (2008). A Critical Analysis of the RIDF. *Economic and Political Weekly*, 43(7), 27-31.
- Roychoudhury, U. D. (1992). Inter-State and Intra-State Variations in Economic Development and Standard of Living. *Economic and Political Weekly*, 27(49/50), 2651-55.
- Reserve Bank of India (2009). Handbook of Statistics on Indian Economy 2010-11. Accessed 26<sup>th</sup> September 2011, available at: <http://www.rbi.org.in/home.aspx>
- Sarkar, S. (2009). Disparities in Infrastructure Development: An Inter-District Analysis of West Bengal State. *The IUP Journal of Infrastructure*, 7(3/4), 56-78.
- Satish, P. (2006). Rural Infrastructure and Growth: An Overview. Keynote paper presented during the 66<sup>th</sup> Annual Conference of the Indian Society of Agricultural Economics, at ICAR Research Complex for the NER Region, Umiam (Barapani), Meghalaya on November 8-10, 2006
- Singha, K. (2009). Globalization and Bhutanese Economy. *South Asian Journal*, 26, 18-34, (October 1).
- Siddiqui, F. A. & Hussain, N. (2010). Analysis of Micro Level Socio-economic Disparities in Malda District- West Bengal. *Asia-Pacific Journal of Social Sciences*, 2(1), 39-61.
- Tiwari, A. K. (2008). Economic Infrastructure and Agricultural Development in Himachal Pradesh: A District Level Analysis. *Social Change*, 38(2), 245-262.
- WDR (1994). Infrastructure for Development. World Bank, Oxford University Press.
- Zhang, X. & Shenggen, F. (2002). Infrastructure, Openness, and Regional Inequality in India. Washington, DC. International Food Policy Research Institute (IFPRI).

#### Annexure I Statistics of Infrastructure Indicators

State	Districts	1a	1b	2	3	4a	4b	5a	5b	5c	5d	6a	6b	7a	7b
1. Tripura	West	206.	28.	95.2	36.	0.9	48.9	1.7	9.0	0.2	1.0	9.4	48.5	0.8	4.5
	Tripura	62	09	7	15	6	8	7	9	1	7	8	8	9	4
	North	191.	27.	98.8	21.	1.1	33.4	3.2	9.3	0.2	0.7	6.6	19.2	0.6	1.8
	Tripura	21	79	0	99	5	0	2	3	5	4	3	5	3	2
	South	136.	28.	94.9	16.	1.4	36.1	2.5	6.2	0.4	1.0	7.0	17.6	0.7	1.8
	Tripura	24	62	5	24	4	5	0	8	0	1	4	6	3	3
	Dhalai	80.2	27.	88.7	16.	2.1	27.5	2.1	2.7	0.3	0.4	7.8	10.0	0.6	0.7
	District	9	14	4	52	4	0	4	5	2	2	3	4	2	9
	South	137.	61.	93.7	67.	1.3	22.8	2.8	5.0	0.6	1.2	16.	29.3	4.0	7.0
2. Sikkim	Sikkim	38	40	9	61	0	0	9	7	8	0	73	3	3	7
	West	81.8	61.	92.5	74.	1.3	14.4	3.8	4.3	0.9	1.0	13.	15.2	1.3	1.5
	Sikkim	8	40	6	32	1	3	9	0	7	8	79	3	8	2
	East	55.3	61.	100.	66.	0.8	21.4	3.4	8.8	0.8	2.1	40.	103.	0.7	1.8
Sikkim	1	40	00	24	4	7	7	2	6	8	81	73	3	7	

	North	61.	84.9	25.	1.6	6.3	0.6	0.9	0.0	31.	1.9	0.1			
	Sikkim	9.67	40	1	69	8	1.63	4	2	7	9	68	3.08	5	9
	Thoubal	143.	92.	84.4	10.	1.3	97.2	0.1	0.7	0.1	1.3	3.9	27.6	0.2	1.9
	Imphal	97	16	7	84	7	8	1	8	9	6	0	3	7	5
	West	120.	85.	84.3	44.	1.4	121.	0.3	2.7	0.2	2.5	16.	142.	0.7	6.1
	Imphal	60	40	3	63	2	97	2	0	9	0	60	12	2	7
	East	120.	93.	95.5	25.	1.5	86.7	0.1	0.7	0.2	1.1	16.	92.4	0.2	1.5
	Bishnupur	60	60	9	32	6	4	3	1	0	3	60	4	8	5
		84.6	88.	87.7	17.	1.5	65.3	0.1	0.8	0.2	1.2	5.3	22.5	0.3	1.6
		8	81	6	75	5	2	9	1	9	1	8	8	8	1
	Senapati	24.7	77.	77.9	50.	1.9	16.6	0.3	0.2	0.3	0.3	5.0		0.4	0.3
		3	65	2	70	1	0	2	8	5	1	4	4.37	2	7
		24.4	70.	91.4	20.	2.3		0.2	0.0	0.0	0.0	9.5		0.2	0.0
	Ukhrul	7	56	1	53	3	7.22	1	7	7	2	2	2.95	8	9
	Tamenglong	22.7	68.	81.8	12.	2.4		0.0	0.0	0.1	0.0	9.8		0.3	0.0
		7	21	7	24	8	6.29	9	2	8	5	7	2.51	6	9
	Churachandpur	21.2	70.	73.0	16.	1.9		0.1	0.0	0.1	0.0	7.9		0.2	0.1
		3	01	8	84	1	9.52	8	9	8	9	9	3.98	2	1
		19.3	71.	82.2	11.	2.3		0.5	0.1	0.3	0.1	6.2		0.4	0.1
	Chandel	2	53	7	77	5	8.39	1	8	4	2	5	2.23	2	5
		137.	30.	100.	6.9	1.1	25.4	2.3	5.0	0.6	1.3	20.	44.3	0.9	1.9
	Kohima	84	57	00	8	9	6	4	0	3	4	81	8	0	2
		99.4	8.8	93.5	4.0	1.4	18.4	1.2	1.5	0.3	0.4	11.	14.1	0.4	0.5
	Zunheboto	8	6	8	4	9	1	3	1	9	8	49	8	5	6
		81.9	57.	91.6	16.	0.8	26.9	1.7	5.7	0.3	1.1	6.8	22.6	0.9	3.2
	Dimapur	0	72	7	70	1	7	2	2	6	9	1	5	7	4
	Mokokchung	79.2	51.	100.	12.	1.0	14.3	2.4	3.4	0.4	0.5	13.	19.4	0.5	0.8
		8	44	00	09	2	0	2	1	0	6	82	4	7	0
		70.6	17.	74.2	4.2	0.8		1.3	1.3	0.2	0.2	7.3		0.5	0.4
	Wokha	4	50	2	2	6	8.48	7	5	5	5	2	7.25	0	9
		60.0	18.	87.2	5.5	0.8	12.0	1.1	1.6	0.1	0.2	5.7		0.1	0.2
	Mon	4	90	7	6	3	4	6	8	9	8	0	8.29	5	2
		49.1	12.	100.	7.6	1.2		2.2	1.6	0.3	0.2	15.	11.4	0.6	0.4
	Phek	0	72	00	5	0	8.79	9	8	4	5	58	0	1	4
		44.2	15.	92.7	5.9	1.0		1.4	1.2	0.2	0.2	10.		0.2	0.2
	Tuensang	9	05	3	4	5	8.88	4	2	7	3	48	8.88	7	3
		39.3	6.6	82.8	5.9	0.6		0.5	0.7	0.0	0.1	6.7		0.0	0.1
	Longleng	2	1	6	4	4	8.81	8	9	8	1	4	9.27	8	1
		33.8	48.	81.4	4.6	1.7		1.7	0.7	0.2	0.1	9.9		0.3	0.1
	Peren	3	00	0	4	3	7.92	3	9	2	0	6	4.55	2	5
		29.2	38.	80.1	3.2	0.9		1.2	1.1	0.0	0.0	6.9		0.1	0.1
	Kiphire	9	14	9	2	7	9.06	2	4	9	9	7	6.51	9	8
		70.0	24.	90.3	6.3	1.5	64.8	0.6	2.8	0.1	0.5	2.3	10.1	0.3	1.4
	Darrang	1	66	1	3	0	4	6	4	3	7	4	1	3	1
		67.3	39.	95.4	21.	2.3	91.3	2.4	9.7	0.2	1.0	2.9	11.5	0.5	2.1
	Sibsagar	5	45	4	18	2	8	8	8	8	9	3	4	3	0
		65.8	15.	75.0	1.7	1.6	81.0	1.2	6.3	0.2	1.1	2.2	11.4	0.3	1.7
	Morigaon	9	85	0	8	2	4	8	8	3	6	9	8	5	4
		63.2	15.	95.8	2.7	2.1	107.	1.8	9.3	0.1	0.8	4.4	22.6	0.4	2.0
	Nalbari	3	77	9	5	2	98	3	0	6	0	6	8	1	8
		62.0	20.	76.7	21.	2.3	81.5	2.1	7.6	0.3	1.1	4.7	16.5	0.6	2.2
	Jorhat	8	68	9	99	3	2	9	8	3	6	2	6	5	8
	Nagaon	57.2	26.	84.5	6.7	1.3	77.4	1.2	7.0	0.2	1.6	2.2	13.1	0.3	2.1

	6	95	1	5	3	5	1	7	8	4	6	9	7	6
	56.0	32.	84.4	14.	1.4	82.5	1.2	6.9	0.2	1.3	22.	129.	0.7	4.4
Kamrup	9	50	9	41	2	8	0	7	3	1	39	99	6	2
	49.7	29.	43.1	1.7	1.7	77.3	1.3	5.8	0.1	0.6	3.1	14.2	0.4	1.8
Goalpara	3	44	3	9	2	0	0	7	3	0	6	5	0	1
	47.3	22.	62.8	12.	1.6	93.6	1.4	8.2	0.2	1.3	1.5		0.4	2.4
Karimganj	2	31	7	06	8	4	9	9	4	3	9	8.84	4	3
Bongaigaon	46.0	35.	91.4	4.5	1.6	70.5	0.7	3.2	0.1	0.4	1.7		0.4	1.7
	0	45	9	5	8	4	7	5	0	2	2	7.25	2	7
	45.9	34.	57.3	13.	1.6	44.1	1.5	4.2	0.3	1.0	4.3	11.7	0.5	1.3
Golaghat	7	47	9	85	3	2	9	8	8	3	3	1	1	7
	45.9	30.	86.3	9.2	1.5	54.7	1.8	6.4	0.3	1.1	1.6		0.6	2.1
Dibrugarh	3	26	2	2	6	8	5	8	2	2	2	5.68	0	0
	43.7	25.	57.8	3.2	2.7	105.	2.0	7.9	0.1	0.7	3.2	12.8	0.5	2.0
Lakhimpur	4	50	6	3	0	31	2	1	8	0	8	2	3	6
	40.7	25.	73.7	1.5	1.7	89.1	0.7	4.0	0.1	0.6	2.0	10.4	0.3	1.8
Barpeta	4	95	2	0	6	2	9	1	3	5	6	8	6	2
	40.4	11.	60.6	9.0	1.1	37.4	1.2	4.0	0.1	0.5	3.0		0.4	1.5
Sonitpur	2	52	4	6	8	2	8	6	8	8	0	9.47	8	0
Karbi	40.1	24.	35.6	8.7	2.4	19.1	1.6	1.2	0.2	0.1	5.5		0.6	0.5
Anglong	1	52	9	2	6	6	4	7	2	7	8	4.35	4	0
	37.7	6.9	26.0	1.3	2.4	43.2	1.4	2.5	0.1	0.2	3.6		0.3	0.5
Dhemaji	8	5	1	0	5	2	7	9	4	5	4	6.43	0	3
	33.4	23.	75.6	1.4	1.3	80.4	0.9	5.4	0.1	0.7	2.5	15.0	0.2	1.3
Dhubri	9	37	2	7	7	1	2	0	2	1	8	8	3	6
	30.6	35.	40.4	36.	5.3	20.7	3.8	1.4	0.3	0.1	9.4		0.8	0.3
N.C. Hills	9	67	7	83	9	4	8	9	7	4	6	3.64	5	3
	29.4	45.	76.7	18.	2.5	104.	2.0	8.2	0.2	1.0	2.8	11.6	0.3	1.4
Hailakandi	6	27	4	21	6	60	1	1	6	6	4	1	5	3
	28.1	46.	71.9	9.9	1.2	36.7	1.2	3.7	0.2	0.8	2.1		0.5	1.7
Tinsukia	5	58	0	7	1	3	3	2	7	2	2	6.44	9	9
	27.3	46.	90.3	2.0	1.7	43.8	1.1	2.8	0.1	0.4	4.5	11.7	0.2	0.6
Kokrajhar	6	28	6	9	1	4	2	5	7	2	7	0	6	8
	23.1	25.	88.0	19.	1.5	59.9	1.9	7.4	0.3	1.4	1.0		0.4	1.8
Cachar	6	54	6	20	7	3	4	0	9	8	5	4.01	9	8
East Khasi Hills	63.4	72.	71.8	62.	2.9	68.3	2.0	4.7	0.5	1.2	23.	55.5	1.5	3.5
	1	68	5	60	2	7	4	9	1	1	71	7	0	1
Jaintia Hills	43.2	56.	74.7	16.	3.5	28.1	2.6	2.0	0.8	0.6	13.	10.7	1.1	0.8
	6	41	3	54	9	5	7	9	0	3	71	4	0	6
	38.8	64.	74.4	35.	4.1	33.3	2.2	1.8	0.7	0.6	14.	11.3	0.9	0.8
Rhi-Bhoi	1	58	0	83	1	8	8	5	8	3	00	6	9	0
West Garo Hills	38.7	60.	53.8	17.	3.9	54.4	1.9	2.7	0.3	0.4	10.	14.2	0.7	1.0
	3	66	5	42	0	5	9	7	5	8	22	7	3	2
South Garo Hills	28.5	66.	44.2	28.	6.3	34.8	1.3	0.7	0.2	0.1	12.		0.5	0.3
	9	40	0	92	8	3	9	6	0	1	87	7.03	9	2
West Khasi Hills	26.3	56.	54.0	28.	5.8	32.8	2.5	1.4	0.4	0.2	12.		0.7	0.4
	3	95	0	69	3	8	0	1	4	5	84	7.24	4	2
East Garo Hills	22.3	79.	53.3	21.	4.7	45.9	1.5	1.4	0.4	0.4	13.	12.6	0.7	0.6
	6	71	6	26	7	5	2	6	8	6	17	8	2	9
	61.2	43.	89.9	46.	3.7	34.4	3.5	3.1	0.6	0.5	14.	12.8	1.1	1.0
Aizawl	1	89	1	99	9	8	0	9	1	6	12	6	4	3
	42.9	38.	89.4	6.6	3.6	12.5	6.2	2.1	0.7	0.2	5.5		0.9	0.3
Champhai	8	52	1	7	8	3	7	4	4	5	4	1.88	2	1

7. Mizoram 6. Meghalaya



		38.0	73.	84.3	23.	3.7	18.0	3.4	1.6	1.9	0.9	9.1		1.5	0.7
	Kolasib	6	61	8	74	9	9	9	6	7	4	0	4.34	2	2
		37.6	29.	100.	22.	3.9	14.9	5.0	1.9	1.6	0.6	9.2		1.6	0.6
	Serchhip	5	52	00	89	4	2	1	0	7	3	8	3.52	7	3
		27.3	76.	77.9	5.8	4.1	18.0	3.7	1.6	1.8	0.7	11.		0.8	0.3
	Saiha	1	49	4	9	4	8	7	4	0	9	63	5.08	2	6
		26.6	30.	91.4	4.5	2.8		7.1	1.4	0.8	0.1	7.9		1.4	0.3
	Mamit	8	11	6	7	0	5.82	7	9	0	7	6	1.65	3	0
		21.4	63.	86.2	29.	4.8	14.7	5.2	1.5	1.3	0.4	8.7		0.9	0.2
	Lunglei	7	71	5	49	7	3	5	9	1	0	4	2.65	5	9
		14.3	75.	51.0	11.	5.7	16.5	4.6	1.3	0.4	0.1	4.0		0.5	0.1
	Lawngtlai	1	61	8	28	3	0	2	3	1	2	7	1.17	4	6
		68.0	82.	66.9	27.	2.4		3.3	0.6	1.5	0.2	13.		1.2	0.2
	Tawang	0	79	8	79	4	4.37	4	0	4	8	87	2.49	8	3
	Lower	63.8	54.	56.9	28.	2.1		3.0	1.2	1.4	0.6	18.		1.0	0.4
	Subansiri	8	96	7	25	9	9.26	5	9	4	1	30	7.74	8	6
		47.7	65.	75.0	21.	1.7		3.1	1.3	0.6	0.2	18.		0.6	0.2
	Tirap	3	24	0	83	9	7.62	9	5	0	5	64	7.92	0	5
	Papumpar	28.4	73.	74.9	46.	1.7		1.8	0.7	1.3	0.5	29.	12.5	1.8	0.8
	e	4	00	3	24	3	7.34	0	7	1	6	67	9	9	0
		28.4	64.	80.5	18.	1.6		2.3	0.6	0.7	0.1	10.		0.5	0.1
	Changlang	4	95	3	39	5	4.44	1	2	2	9	76	2.90	6	5
		22.2	52.	54.7	34.	2.6		2.6	0.3	1.0	0.1	22.		1.0	0.1
	West Siang	9	98	2	01	5	3.60	9	7	6	4	81	3.10	6	4
		21.9	58.	82.5	24.	1.9		3.3	0.6	1.1	0.2	25.		1.1	0.2
	East Siang	3	50	6	63	5	3.63	2	2	4	1	29	4.72	4	1
	East	15.4	51.	39.0	18.	3.0		2.2	0.3	0.5	0.0	24.		0.5	0.0
	Kameng	9	73	0	43	6	4.23	7	1	2	7	48	3.39	2	7
	Upper	15.3	42.	40.8	24.	2.8		2.3	0.1	0.7	0.0	20.		0.7	0.0
	Subansiri	3	70	1	79	4	2.23	5	8	2	6	60	1.62	2	6
	Upper	13.3	57.	61.2	19.	2.4		2.7	0.1	1.2	0.0	23.		1.2	0.0
	Siang	2	45	2	87	3	1.31	0	5	0	6	38	1.26	0	6
	West	12.0	64.	58.9	30.	2.2		2.9	0.3	1.2	0.1	19.		1.0	0.1
	kameng	3	48	5	20	3	2.24	5	0	1	2	17	1.93	7	1
		10.6	73.	43.1	17.	1.5		3.0	0.3	0.7	0.0	17.		0.6	0.0
	Lohit	3	46	9	91	7	1.97	0	8	0	9	77	2.24	3	8
	Dibang		73.	58.8	32.	1.5		3.8	0.1	1.0	0.0	14.		0.8	0.0
	Valley	7.69	72	7	91	4	0.68	1	7	4	5	38	0.64	7	4
	Kurung		39.	32.7	28.	2.6		1.8	0.0	0.4	0.0	14.		0.4	0.0
	Kumey	2.53	86	5	25	6	1.28	8	9	7	2	11	0.68	7	2

Source: DoNER (2009)

Notes: The full forms of indicators from 1a to 7b (14 indicators) are: Road length/100 sq km; Surfaced road (% of total road); Village electrified (%); % of Households tap water connected; School/1000 Pop; School/100 sq km; Post & Telegraph office/10,000 Pop; Post & Telegraph office/100 sq km; Telephone Exchange/10,000 Pop; Telephone Exchange/100 sq km; Hospital beds/10,000 Pop; Hospital beds/100 sq km; Bank/10,000 Pop; Banks/100 sq km. respectively.

**Annexure II Rank of the Districts in NER with their DII Scores**

District	DII Score	Rank	District	DII Score	Rank
1. Tripura			Barpeta	29.80	38
West Tripura	77.57	1	Lakhimpur	28.11	42
North Tripura	69.04	2	Cachar	26.85	45
South Tripura	54.41	8	Dhubri	26.55	47
Dhalai District	38.93	20	Golaghat	26.47	48
2. Sikkim			Goalpara	25.55	51
South Sikkim	63.85	4	Kokrajhar	25.23	53
East Sikkim	51.87	9	Sonitpur	23.97	56
West Sikkim	49.44	10	Tinsukia	23.40	61
North Sikkim	23.41	60	N.C. Hills	21.81	68
3. Manipur			Karbi Anglong	18.68	73
Imphal West	69.02	3	Dhemaji	16.92	75
Imphal East	62.16	5	6. Meghalaya		
Thoubal	58.98	6	East Khasi Hills	47.31	11
Bishnupur	44.07	12	Rhi-Bhoi	31.53	28
Senapati	28.66	41	Jaintia Hills	29.21	40
Ukhrul	25.64	50	West Garo Hills	26.75	46
Tamenglong	22.46	65	West Khasi Hills	23.90	57
Churachandpur	21.61	69	East Garo Hills	23.30	62
Chandel	21.52	70	South Garo Hills	23.26	63
4. Nagaland			7. Mizoram		
Kohima	56.49	7	Aizawl	40.75	17
Zunheboto	41.94	14	Serchhip	30.54	32
Dimapur	41.27	16	Kolasib	29.48	39
M. Chung	40.52	18	Champhai	27.39	44
Phek	31.01	29	Lunglei	26.16	49
Wokha	30.86	30	Saiha	23.56	59
Mon	30.64	31	Mamit	23.05	64
Tuensang	27.91	43	Lawngtlai	16.28	77
Longleng	24.70	54	8. Arunachal Pradesh		
Peren	23.79	58	Tawang	34.10	24
Kiphire	22.02	67	Lower Subansiri	32.15	26
5. Assam			Papumpare	30.46	33
Kamrup	43.72	13	Tirap	30.10	35
Sibsagar	41.76	15	East Siang	25.41	52
Nalbari	39.32	19	Changlang	24.53	55
Jorhat	36.96	21	West Siang	22.30	66
Darrang	36.93	22	West kameng	19.66	71
Nagaon	34.40	23	Upper Siang	18.86	72
Morigaon	33.89	25	Dibang Valley	18.6	74
Bongaigaon	31.96	27	Upper Subansiri	16.57	76
Dibrugarh	30.37	34	East Kameng	16.12	78
Hailakandi	30.08	36	Lohit	15.13	79
Karimganj	29.99	37	Kurung Kumey	12.06	80

Source: Author's calculation from DoNER (2009)

**Annexure III Net State Domestic Product at Factor Cost Constant Prices at 1999-2000 (Rupee in Crores)**

<b>State</b>	<b>2000-01</b>	<b>2001-02</b>	<b>2002-03</b>	<b>2003-04</b>	<b>2004-05</b>	<b>CAGR</b>	<b>Rank</b>
Tripura	4778	5433	5796	6136	6639	8.11	1
Sikkim	814	881	947	1022	1102	7.83	2
Nagaland	3052	3402	3741	3912	4100	7.57	3
Arunachal Pradesh	1607	1864	1775	1968	2222	7.28	4
Manipur	2765	2937	2921	3240	3540	6.10	5
Mizoram	1463	1555	1705	1760	1839	5.99	6
Meghalaya	3422	3651	3759	3993	4270	5.47	7
Assam	32821	33668	35708	37905	39207	4.86	8

Source: RBI (2009)