ECONOMIC INFRASTRUCTURE IN NORTH-EAST INDIA: AN ANALYSIS

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Abstract: The lack of adequate infrastructure is often cited as one of the main impediments in the development of North-East India. The aim of this paper is to assess the development that has taken place in the provision of key economic infrastructure in the region from 1981 to 2001, and to compare the availability of such infrastructure in the region with that of the country during the same period. The study, which is based on secondary data collected from various sources, shows that while there has been a general improvement in the provision of economic infrastructure facilities in the region, the achievements made so far are well below the national average. Hence, much needs to be done to bring the infrastructure in the region at par with the country's position.

The term infrastructure is of recent origin and does not have a rigid definition of its own. Ever since its use in development economics in early 1950s, its scope has got expanded, as many unknown facets of development/underdevelopment have unfolded in the course of time. It has been used interchangeably with social overhead capital (SOC). Among the early development economists, Lewis (1955) talked of public utilities, ports, water supplies and electricity; and Higgins (1959) of transport, public utilities, schools and hospitals in promoting economic development. However, it was Hirschman (1958) who has given a very wide meaning to SOC or infrastructure. His concept of SOC includes education, public health, law and order, transportation, communication, power, water supply, irrigation and drainage. He has mentioned four attributes of SOC, (i) the services are basic and facilitate economic activity; (ii) the services are usually public goods because of economic externalities; (iii) the services cannot be imported; (iv) investments in it tend to be invisible or lumpy. The World Development Report of the World Bank, 1994, has explicitly defined economic infrastructure to consist of the following provisions: (a) Public utilities: Power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas (b) Public works: Roads, major dams, canal works for irrigation and drainage (c) Other transport sector: Urban and inter-urban roadways, urban transport, ports and waterways, and airports.

From the forgoing discussion, it can be deduced that in a broad sense, infrastructure consists of all types of physical and social capitals (i) that are basic to economic activity (ii) generate external economies, (iii) lumpy in nature and provided ahead of demand or in response to excess of directly productive activities (DPA), (iv) does not, by and large, vary with the magnitude of production unless the scale of production changes or the technology of production is altered.

The relationship between infrastructure and economic development has been highlighted by Rosentein-Rodan (1943), Lewis (1955), Myrdal (1957), Mellor (1976), V K R V Rao (1980), Munnell (1990), and the World Bank (1994). Lewis, Rodan and Myrdal have outlined the importance of economic infrastructure in pulling people from the rural areas to the urban areas and in the process promoting economic development by way of more of industrialization and increase in the productivity of labour in agriculture. However, it was Hirschman who very forcefully brings out the relationship between economic and social infrastructure and economic development. To quote him, 'enlarged availability of electric power and of transportation facilities are essential pre-conditions for economic development practically everywhere', and 'investment in social overhead capital is advocated not because of its direct effect on final output, but because it permits, and in fact invites, direct productive activities to come in'. In this context, the World Development Report (1994) says, 'infrastructure can deliver major benefits in economic growth, poverty alleviation, and environmental sustainability but only when it provides services that respond to effective demand and does so efficiently.' It further says, 'infrastructure represents, if not the engine, then the wheels of economic activity.' It very explicitly, maintains that rural infrastructure leads to agricultural expansion by increasing yields, farmers' access to markets, and availability of institutional finance. The adequate quantity and quality of infrastructure are key factors in influencing the ability of the countries to compete in global trade, and can be instrumental in the eradication of poverty. The infrastructure projects in the developing countries have both the forward and backward linkages. Implementation of these projects creates the demand for labour and heavy capital goods on the one hand, and their completion on the other hand leads to opening up of numerous opportunities for economic activities, thus generating income and employment.

In India, recent studies on the relationship between infrastructure and growth have been undertaken by Binswanger et al. (1989), Elhance and Lakshmanan (1988), Sahoo and Saxena (1999), and Sahoo (2000). These studies highlight the positive impact of infrastructure on economic growth. Despite the importance given to the development of infrastructure in India, a cursory look of the infrastructure variables across the states clearly shows that there are regions and states in the country where the pace of infrastructure development has been very slow. Ghosh et al. (1998) analyze the physical infrastructure development of Indian states between 1970s and mid 1990s and show that the northeast region is the most backward in terms of infrastructure development. A comparison of the relative index of infrastructure development of the Indian states compiled by the Centre for Monitoring Indian Economy (2000) shows that, except for Assam, the index of infrastructure development for the other seven states in the region are lower than the all India position. The same conclusion on the lack of

infrastructural development of the northeastern states is also reached by Goswami et al (2005).

The important role of infrastructure in the development of the northeast region was recognized by the Government of India (GoI) in the early stages of the economic development of the region (GoI, 1981), and is being emphasized today. The high-level commission report of the Prime Minister (GoI, 1997) identifies four deficits that confront the northeast and constrain its development; one of which is the infrastructural deficit[1]. Given these concerns and the importance that is being attached to the development of infrastructure in the region, this paper attempts to measure the availability and growth of economic infrastructure[2] in the seven states (excluding Sikkim). For the purpose of our study we have selected some key economic infrastructures that are important to the region and for which the data are available. The infrastructures included are road, power, irrigation, finance, and communication that are directly connected to the productive/economic activities of the people of the region. An effort is also undertaken to exhibit the change in the relative position in the availability of economic infrastructure in the states vis-a-vis the all India position; with the purpose to show if the gap in the availability of these infrastructure is widening up/increasing or narrowing down/ decreasing with respect to the all India situation.

The paper is organized in the following sections. Section I gives a brief introduction of the region. Section II gives a detailed account of the availability and growth of economic infrastructural facilities in the states of northeast India (hereafter, northeast region [NER]) since the early eighties. Section III presents the relative position in the development of selected economic infrastructures for NER as well as individual states vis-a-vis the all India position. Last section marks the conclusion.

I
North-East Region (NER)

The NER to many has always been an enigma with very few understanding the geo-political reality of the region[3]. The term 'northeast India' includes the eight sister states of Arunachal, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and a recent entrant, Sikkim. This landmass of 2.62 lakh sq. km covers 7.9 per cent of the total area of the country. The total population of 39 lakh (2001 census) accounts for 3.8 per cent of the country's total population. About 70 per cent of the region is hilly, and the topography varies within each state. Mountains and hills cover most of Arunachal Pradesh, Mizoram, Nagaland, Meghalaya, Sikkim and about half of Tripura, one-fifth of Assam and nine-tenth of Manipur. The economy of the region reflects its backwardness with 56 per cent of workers engaged in agriculture as per census 2001. The region is industrially very backward with the contribution of this sector being less than three per cent in all the states, except for Assam and Manipur where it is 12 per cent and eight per

cent respectively. The poverty level in the region is among the highest in the country with the percentage of population below poverty line in the states ranging from 29 to 36 per cent[4], compared to the all India average of 26 per cent.

II
Availability and Growth of Economic Infrastructure in NER

Transportation: Development of an efficient transport network comprising of roads, railways and waterways is a prerequisite for any development activity in any state. In NER, except for Assam, road network is the only important form of transportation that connects the states with the rest of the country, and also areas within the state. The importance of developing an efficient road network is essential for linking the villages to the markets in the state and outside. Table 1 below shows the development of the road infrastructure in NER. To measure the development of road infrastructure in the region, we have used indicators such as the percentage of surfaced road and road density per square km. The availability of road infrastructure in the northeast is generally poor compared to the other Indian states. Road density per 100 sq km ranged from 134 in Tripura to 22 in Arunachal Pradesh in 2001. The variation in road density per lakh population ranged from 1,662 km in Arunachal Pradesh to 327 km in Assam in the same period.

Table I
Road Infrastructure in North-East Region

State	1982				2001			
	Total length (Km)	Percen -tage of surfaced roads	Road density per 100 sq km.	Road density per lakh population	Total length (Km)	Percen -tage of surfaced roads	Road density per 100 sq km.	Road density per lakh population
Arunachal Pradesh	12,753	16.20	15.26	2031	18,362	31.04	21.93	1.662
Assam	59,579	13.70	75.87	299	87,173	14.79	111.14	327
Manipur	5,321	37.10	23.80	371	11,434	33.79	51.21	479
Meghalaya	5,211	53.00	23.17	392	9,497	69.14	42.34	412
Mizoram	2,508	45.40	11.89	514	4,970	58.09	23.58	558
Nagaland	6,287	14.00	38.04	813	21,021	30.69	126.8	1,057
Tripura	7,973	16.20	76.10	387	14,031	31.29	133.81	440
NER States	99,632	18.30	39.06	375	1,66,48	25.68	65.27	433
All India	15,45,891	47.30	47.02	226	24,42,6	57.91	74.31	238

Sources: Authors' calculation based on data from (I) NEC (1982), & (II) Basic Road Statistics of India for 2001 (provisional), epartment of Road Transport and Highway, Government of India (http://www. morth.nic.in/motorstat/brs_table2.htm).

In spite of the fact that only some northeastern states have negligible network of railway lines and have to rely on roads for freight and passenger transportation; the road density in these states is among the lowest in the country. While the availability of road per square kilometer has increased in the last two decades (1981 to 2001), the northeast average of 65 kms of road per square kilometer in 2001 is still lower to the all India average of 74 kms. Also, about three-fourth of the road network in the region is still un-surfaced compared to the country's average of 58 per cent in 2001. With about 80 per cent of the population residing in the villages in the region, national highways have become a priority for developing the rural areas. This would help connect the villages to one another, and to the nearest district roads and state roads. Over a period of time, the number of unconnected villages has decreased in the NER states as seen in Table 2. However, in Assam, Meghalaya, Manipur and Tripura a significant per cent of the habitats are still unconnected by roads.

Table 2
Unconnected Villages in North-East Region

State	Percentage of unconnected villages 1971	1991	Percentage of unconnected habitations 2001
Arunachal Pradesh	NA	NA	NA
Assam	80.45	74.07	40.21
Manipur	86.70	77.31	47.80
Meghalaya	92.71	83.66	51.99
Mizoram	NA	NA	NA
Nagaland	90.83	86.60	9.63
Tripura	91.24	46.55	38.91
All India	74.87	63.02	39.32

Source: Thorat and Sirohi (2004).

In the hill states of NER, the Railway network is not well developed. An indicator of the development of rail infrastructure is the railway route density, which is very low in the northeast for all states except for Assam where it is 32.08 per 1000 sq. km. of area. Almost 98 per cent of the railway route length is in Assam. In the state of Meghalaya railway transportation is yet to be established, while in Arunachal Pradesh, Manipur and Mizoram the railway route length is less than two km.

Power: Power is a prime mover of economic development. The availability of cheap, abundant and regular power supply is an essential condition for development and an important determinant of quality of life. There is a direct relationship in the growth of consumption of power and that of the economy. In

terms of hydropower, the NER has the potential of about 58,971 MW i.e., almost 40 per cent of the country's total hydro potential. However, only 4,029 MW i.e., seven per cent of this capacity has been tapped. Additionally, the region also has abundant resource of coal, oil and gas for thermal power generation. The state wise installed capacity in power generation in the NER is given in Table 3. It shows that the installed capacity in hydropower generation of the region is only three per cent of the all India capacity, which given the potential of the region can be increased manifold. Also, given in the table, is the gap in the peak demand and availability of power in the NER which shows almost all the states in the region are facing deficit, with even a state like Meghalaya, a power surplus state till recently, facing power shortage in recent years.

Table 3
Installed Capacity and Gap in Peak Demand and Availability of Power in North-East Region

States	Installed capacity in power generation including allocated shares in joint/central power utilities as on December 2005				Surplus/deficit in peak demand for power (MW) as on August 2006 (per cent)
	Hydro	Thermal	Others*	Total	
Arunachal Pradesh	1165	36.88	33.88	187.26	NA
Assam	333	797.69	2.23	1,132.92	-72
Manipur	82.5	71.41	5.45	159.36	-3
Meghalaya	240.52	28.05	30.71	299.28	-107
Mizoram	38	67.86	14.96	120.82	0
Nagaland	78.5	21	20.47	119.97	-2
Tripura	78	144.35	17.11	239.46	-19
NER	1,095.02	1,223.24	124.81	2,443.07	
All India	32,135.05	82,064.44	6,158.32	1,23,667.8	-12.2

Sources: (I) GoI(2006) & (II) NER Data Bank
(http://www.databank.nedfi.com/mod.php? mod= userpage&menu=101900&page_id=751)
Note: * Renewable energy sources.

In spite of such a huge potential, the per capita consumption of power in the northeastern states is among the lowest in the country. Among the northeastern states, per capita consumption of power in Meghalaya was the highest in 1999-00 at 160.3 KwH, although this figure is less than half compared to the all India average of 354.75 KwH. Table 4 below gives the per capita power consumption in the states along with the changes in power consumption in the region over the period between 1980-81 and 1999-00.

Table 4
Per Capita Consumption of Electricity in North-East Region (in KwH)

States	1981-82	1989-90	1999-00
Arunachal Pradesh	7.9	56.6	68.6
Assam	33.5	92.7	95.5
Manipur	7.9	79.5	69.5
Meghalaya	31.0	106.4	160.3
Mizoram	5.6	65.0	120.7
Nagaland	34.2	58.6	84.7
Tripura	14.5	45.0	95.5
All India	120.5	236.0	354.8

Source: Planning Commission (2002).

In order to capture the development of power infrastructure in the NER states, we also look at the percentage of villages electrified. In 1980, almost all the states had a very low percentage of villages electrified (Table 5). However, in the last two decades, states like Mizoram, Nagaland, Manipur and Tripura have been able to provide electricity to more than 90 per cent of their villages. In case of Meghalaya, a surplus power state till recently, not much progress seems to have been made in this area as half of the inhabited villages still do not have access to electricity.

Table 5
Villages Electrified in North-East Region

State	Percentage of inhabited villages electrified		Percentage of rural households having electricity (2001)
	1980	2000	
Arunachal Pradesh	9.9	60. 5	44.53
Assam	20.4	77.1	16.54
Manipur	16.5	91.7	52.53
Meghalaya	13.5	47.1	30.26
Mizoram	11.8	99.0	44.14
Nagaland	36.0	98.4	56.88
Tripura	17.0	94.7	31.75
NER	18.5	73.5	--
All India	44.6	86.3	43.52

Source: Authors' calculation based on data from NEC (1982 & 2002).

It is important to note that in many of the states in the region that have achieved very high percentage of village electrification; a vast majority of the households do not have access to electricity. For, example, in Meghalaya while the number of villages that have been electrified has increased, we find that as

many as 70 per cent of the rural households do not have access to electricity. This is due to the fact that a village is declared as electrified if power reaches the village even though few of the houses may have connections.

There has also not been much development in the setting up of infrastructure facilities for tapping of non-conventional energy sources in the region. Of the total installed capacity of 1,656.2 MW of non-conventional energy power projects in India, the share of the northeastern states at 33.8 MW is only two per cent of the country's total installed capacity (Thorat and Sirohi, 2004).

Communication: In the present knowledge economy, information plays a very important role. However, the extent to which communication, more specifically telecommunication, can promote economic growth depends on the availability and the quality of the infrastructure facility related to this sector. According to data reported by Centre for Monitoring Indian Economy (CMIE 2004), as of March 2002, the number of cellular and fixed line subscribers in the northeast was 7,43,532, which is about 1.7 per cent of the total number of cellular and fixed line subscribers at all India level. However, there has been a phenomenal growth in the cellular subscribers in the NER since this service was introduced in the late nineties. Between 1999-2000 to 2002-03, the number of cellular subscribers has increased by almost nine times from 6,545 to 56,023. The data on the present status of telecommunication facilities in the region is shown in Table 6. Here, the northeastern states are grouped into three categories[5] comprising of Assam Telecom Circle, Northeast-I Telecom Circle (covering Meghalaya, Mizoram and Tripura) and Northeast-II Telecom Circle (covering Arunachal Pradesh, Manipur and Nagaland). It shows that there is considerable gap in the availability of telecom facilities measured in terms of number of telephones available per 100 persons in both urban and rural areas of NER compared to the all India position. As of December 2004, the tele-density of NER at 3.07 was about half of the all India average of 8.59. Within NER, the tele-density of individual states is given in Column 7 of table 6, which shows that except for Mizoram and Arunachal Pradesh, the availability of telecom facilities in the other five states is below the all India position.

Table 6
Number of Telephones per 100 Persons in North-East Region

States	Telecom circle	As on December 2004				
		Basic (DELs & WLL Fixed) and mobiles phones (CMPs & WLL Mobile) of public and private operators				Tele- density (excludes mobile phones (CMPs& WLL) of private rators
		No of telephones	Tele-density			
			Urban	Rural	All	
Assam	Assam	7,60,222	16.49	0.60	2.71	2.44
Meghalaya						3.73
Mizoram	Northeast-I	2,71,348	13.82	1.15	4.06	7.13
Tripura						2.95
Arunachal Pradesh						6.22
Manipur	Northeast-II	1,90,591	11.42	1.15	3.32	2.41
Nagaland						2.98
NER		12,22,161	NA	Na	3.07	2.80
All India		9,28,92,089	25.90	1.69	8.59	4.34

Source: Authors' calculation based on GoI (2005).

Notes: (i) DELs: Direct Exchange Lines, (ii) WLL: Wireless Local Loops, (iii) CMPs: Cellular Mobile Phones.

The availability of telecom facility measured in terms of villages having direct telephone facility in the NER shows that since 1999 the position in NER has improved (Table 7). In 1999, only 50 per cent of the villages had Village Public Telephones (VPTs), which increased to 75 per cent in 2004. However, in spite of the improvement, the percentage of villages with VPTs in 2004 is still below the all India average of 84 per cent. Within NER, the village telecom connectivity for Assam in 2004 is better than the all India position. However, the percentage of village telecom connectivity is much lower in comparison to the all India position in case of the other six states which are mostly hilly.

Table 7
Number of Villages with Direct Access to Telephone Facility in North-East Region

States	Telecom circle	Percentage of villages covered with VPTs	
		1999 (October)	2004 (December)
Assam	Assam	64	86
Meghalaya		31	61
Mizoram	Northeast-I		
Tripura			
Arunachal Pradesh		25	50
Manipur	Northeast-II		
Nagaland			
NER		50	75
All India		56*	84

Sources: (I) GoI (2005), & (II) Basic Statistics of NEC (2002).

Note: *As of March 1999.

The change in the availability of telecom facility since the eighties is not being studied as adequate data on the state of telecommunication of northeastern states in the 1980s is not available. Therefore, we have used the traditional indicator such as the availability of post office facility to look at the temporal variation in communication infrastructure in the region. Table 8 reflects the growth in the postal sector in NER. We measure the accessibility and spread of postal service in the region by considering the population and area under one post office. The growth of post office has not been able to keep pace with the growth of population, as a result of which the number of persons served by one post office has increased in Meghalaya, Nagaland and Tripura from 1981 to 2001. On the other hand, in the rest of the states in the region the situation has improved with the population served per post office decreasing in the same period.

Table 8
Postal Infrastructure in North-East Region

State	Population under one post office		Area under one post office (Sq. km /post office)	
	1981	2000	1981	2000
Arunachal Pradesh	3292	2856	435.2	278.07
Assam	5972	5696	31.97	20.04
Manipur	2924	2648	46.0	32.27
Meghalaya	3196	3613	53.8	45.99
Mizoram	1968	1724	84.01	52.74
Nagaland	3638	3788	77.59	51.24
Tripura	3416	3847	17.43	14.6
All India	4906	5462	23.62	21.26

Source: Planning Commission (2002).

Irrigation: With a large proportion of the rural population still dependent on agriculture, the provision of irrigation facility has always been a priority for the Government for raising agricultural productivity. The state of the irrigation facility is therefore an important indicator of the development of infrastructure in rural areas. Except for Manipur and Nagaland, the irrigation facility in the other NER states measured in term of irrigated area to sown area is well below the national average. The development of irrigation facility in all the NER states as shown by percentage of net irrigated area to net sown area has worsened between 1982 and 1997. As on 1997, only about 21 per cent of the net sown areas in NER states had access to irrigation, while the area under irrigation facility has actually decreased in the last 15 years (Table 9). However, during the same period there has been an improvement in this facility at the all India level.

Table 9
Net and Gross Irrigated Area and Irrigated Holdings in North-East Region

State	Percentage of net irrigated area to net sown area (1981-82)	Percentage of net irrigated area to net sown area (1997)	Percentage of holdings receiving irrigation (1991)
Arunachal Pradesh	21.4	19.5	NA
Assam	21.2	20. 7	6.34
Manipur	46.4	46.4	45.77
Meghalaya	25.9	21.7	37.43
Mizoram	12.3	7.3*	NA
Nagaland	40.5	29.0	18.31
Tripura	11.8	12.6	11.32
NER states	22.5	21.1	-
All India	28.0	37.7	46.52

Source: Based on data from (I) NEC (1987), & (II) Thorat and Sirohi (2004).

Banking: The existence of a well-developed banking infrastructure is essential for the growth of all sectors of the economy. Accessibility to finance is key to the growth of any economic activity, especially in the NER where savings and thrift culture has not traditionally been strong. In 2002, 2.8 per cent of the total scheduled commercial bank branches in the whole country were located in the NER, with the region contributing 1.6 per cent of the total amount of deposits mobilized in the country. In the same year, the total credit sanctioned in NER was only 0.8 per cent of the total credit sanctioned by scheduled commercial banks (SCBs) in the whole country. Within the NER, the distribution of bank branches, deposit and credit among the seven states of the region is shown in Table 10. In 2002, nearly 65 per cent of the bank branches were located in Assam -the largest state in the region with about two-third of the total population of the region. The state also accounts for the bulk (73.5 %) of the credit sanctioned in the region, followed by Tripura (8.3 %) and Meghalaya (7.2 %).

In order to trace the development of the banking sector, we examine changes in some of the important banking indicators in the region in comparison to similar changes at the national level. As seen in Table 10, in 1981, about 2.2 per cent of the scheduled commercial bank branches in India were located in the NER. The availability of credit has been low with the per capita credit in NER in 1981 being only Rs 87, which is about 20 per cent of the all India per capita of Rs 429. Since then there has been a rapid progress in the development of the banking sector in all the states in NER. The number of bank branches increased by more than 2.3 times in the period between 1981 and 2002. The increase in the number of bank branches in the region has also been accompanied with a substantial growth in deposit mobilized and credit sanctioned, resulting in an improvement in

the per capita deposit and the per capita credit (Table 10). However, despite this remarkable progress, a considerable gap still exists in the development of banking services in NER, when compared to the achievement at the all India level. For example, in 2002, the availability of credit measured in terms of the total credit sanctioned in the NER to the population of the region showed a per capita credit at Rs 1,318, which was about 21 per cent of the all India average of Rs 6,377 (Table 10).

Another important indicator of the banking development is the growth in Self Help Groups or SHGs credit linked to banks. Table 10 also shows the development of the SHG–Bank linkage programme[6] in the NER from 2001 to 2006. The programme had a very slow start and in the end of March 2001, the cumulative number of SHGs credit linked (i.e., SHGs that have borrowed from banks) in the entire region was only 472, which was less than 0.2 per cent of the cumulative number of SHGs credit linked in the entire country. Within the NER, in 2001, Assam and Meghalaya accounted for majority share of the SHGs credit linked (about 58.5 and 33.8 per cent, respectively). Till 2001, there were no SHGs credit linked under this programme in the states of Arunachal Pradesh, Nagaland and Mizoram.

Table 10
Distribution of Banking Services in India and North-East Region

Sates	Share of NER states in NER total (percentage)						Deposit		CD ratio		Per capita credit (in rupees) Per		SHGs credit linked in NER	
	Bank office		Bank office		Credit sanc-tioned	Credit sanc-tioned								
	1981	2002	1981	2002	1981	2002	1981	2002	1981	2002	1981	2002	2001	2006
Arunachal Pradesh	2.6	3.6	0.8	2.4	2.2	4.1	14	16	30	1087	208	6893	0.0	0.6
Assam	66.0	65.4	75.1	73.5	71.3	62.9	42	32	88	1372	210	4320	58.5	92.0
Manipur	4.7	4.1	3.4	3.4	3.5	3.5	38	26	55	773	143	2926	6.6	2.4
Meghalaya	7.6	9.4	5.1	7.2	9.6	10.7	21	18	88	1545	421	8420	33.8	1.2
Mizoram	1.4	4.1	1.0	2.6	1.9	2.7	20	26	46	1463	227	5550	0.0	1.6
Nagaland	5.1	3.7	3.7	2.7	4.1	5.7	36	13	110	677	308.8	5276	0.0	0.7
Tripura	12.6	9.6	11.0	8.3	7.3	10.4	60	22	124	1551	208	7202	1.1	3.3
NER	2.2	2.8	0.8	0.8	1.3	1.6	40	27	87	1318	220	4848	0.2	2.7
India	100.0	100.0	100.0	100.0	100.0	100.0	67	58	429	6377	642	10922	100.0	100.0

Source: Authors' calculation based on (i) RBI (1987, 2003), (II) NEC (1987), & (iii) NABARD (2002 & 2006)

Notes (i) As against census of 2001 (ii) The figures for NER shows the region's percentage share to the all India total (iii) SHGs credit linked under the SHG-Bank linkage programme is shown as percentage share of cumulative total number of SHGs. For NER states, the SHG figures are as percentage of NER total.

During 2001 to 2006, there has been a significant improvement in the number of SHGs credit linked under the SHG-Bank Linkage programme. The number of SHGs credit linked has increased form 472 to 61,390, at an annual growth rate of about 165 per cent. There has also been a change in the coverage of the SHG-Bank Linkage programme within the NER states, with a significant increase in the number of SHGs credit linked under this programme in Assam. In 2006, Assam accounted for about 92 per cent of the cumulative number of SHGs provided with bank loan in the region.

An important indicator of the development of banking infrastructure is the growth of the bank office vis a vis the population, measured by population served per bank office of scheduled commercial banks. During the period 1981 to 2002, the number of bank office in the region has increased, bringing down the average population (per thousand) served per bank office for the region as a whole from 32 to 20. For the country, this figure for the corresponding period has also decreased from 19 to 15. Figures for individual states in the NER show, the average population served per bank branch has decreased for all the states, except for Nagaland, where the average population per thousand per bank office has increased from 18 in 1981 to 28 in 2002. Table 11 shows the change in the availability of this infrastructure.

Table 11
Banking Infrastructure in North-East Region

State	Average population served (in '000) per bank office		Area served per scheduled bank branch (sq. km)
	1981	2002*	2002
Arunachal Pradesh	29	16	1214
Assam	36	21	63
Manipur	36	27	283
Meghalaya	21	13	124
Mizoram	41	11	264
Nagaland	18	28	234
Tripura	20	17	57
NER states	32	20	133
India	19	15	48

Source: RBI (1987 & 2003).

Note: *As against 2001 population

In case of Meghalaya and Mizoram, while the average population per bank office is below the national average, the geographical area per bank office in these states and also in all the states in the NER is much larger than the all India average indicating a much lower penetration of banking infrastructure compared to the national average.

III
Relative Growth in Economic Infrastructure in NER during the Last Two Decades

In order to measure the progress of economic infrastructural facilities in the NER states in comparison with the all India position, we have prepared a relative index of economic infrastructure taking a few selected variables. This index exhibits the change in the relative position of the NER states vis-a-vis all India. It shows if the gap in the availability of these infrastructures is widening/increasing or narrowing/decreasing with respect to the all India position.

For capturing the relative changes we have used the following formula:

$\frac{X_n}{X_i} \times 100$ Where X_n stands for indicator value of infrastructure indicator of NER states and X_i stands for indicator value of India

The indicators taken for this exercise represent different economic infrastructure dimensions such as transportation represented by percentage of surfaced road, power sector represented by villages electrified, agriculture sector represented by percentage of net irrigated area to net cultivated area, and finally banking infrastructure represented by population served per branch office. Table 12 depicts the changes in the availability of the above mentioned economic infrastructures in NER vis-à-vis all India.

Table 12
Changes in Availability of Selected Infrastructure in North-East Region vis-a-vis India

Infrastructural indicators	Indicator value			Indicator value		
	Year	NER	India	Year	NER	India
Percentage of surfaced roads	1982	18	47	1997	26	58
% of Villages electrified	1980	19	45	2001	74	86
Percentage of net irrigated area to net cultivated area	1981	23	28	1997	21	38
Average population (in'000) per bank office	1981	32	19	2002	21	15

Table 12 shows that during the last two decades, road, power and the banking infrastructures in the NER have improved. Percentage of surfaced road in NER, over the last 20 years, has increased by eight percentage points, whereas for all India it has increased by 11 percentage points. During this period of time, in respect of percentage of village electrified, for NER, it has gone up by 55 percentage points, whereas for the country as a whole it has increased by 41

percentage points. In the case of the development of banking facility, the average population (per thousand) served per bank office in the NER has improved from 32 in 1981 to 21 in 2002. However, in case of irrigation facility, there has been deterioration in the availability of this infrastructure in NER, with the percentage of net irrigated area to net cultivated area decreasing by two percentage points between 1981 to 1997.

Table 13 gives a detailed and better picture of the relative development of the above four infrastructural variables in the NER vis-à-vis the all India position during the period 1980 to early 2000. Transformed values for the NER show that the road, power and banking infrastructures have improved and the gap in the availability of these essential facilities vis-a-vis the availability of the same at the all India level has narrowed down, particularly in the case of the percentage of villages electrified. On the other hand, transformed values for the NER, in respect of irrigation, has deteriorated when compared to the all India situation, with the index showing a widening of the gap in the availability of this infrastructure.

Table 13
Relative Infrastructure Index for in North-East Region states

Relative Infrastructure index (transformed Values-India 100)

Infrastructural indicators	Percentage of surfaced roads		Percentage of villages electrified		Percentage of net irrigated area to net cultivated area		Average population (in '000) per bank office	
	1980s	2000s	1980s	2000s	1980s	2000s	1980s	2000s
Arunachal Pradesh	34	53	22	71	75	53	153	100
Assam	30	26	44	90	75	55	189	140
Manipur	79	59	38	107	164	121	189	200
Meghalaya	113	119	31	55	93	58	111	87
Mizoram	96	100	27	115	43	18	216	73
Nagaland	30	53	80	114	146	76	95	187
Tripura	34	53	38	111	43	32	105	113
NER	38	45	42	86	82	55	168	140

Notes: For the first three variables, an increase in the value of the index in periods under consideration shows that the gap in the availability of the infrastructure in the NER and individual NER states compared to the all India average has narrowed down. If the value of the index is 100 (more than 100) it indicates the availability of this infrastructure is at par (better than) with the all India average. In the case of banking, higher index value indicates a widening in the gap in the availability of the banking infrastructure in the NER vis-a-vis the all India position.

For the individual states, we find that in Mizoram, the development of road infrastructure has not only improved but has come up at par with the all India average. However, in Assam and Manipur there is deterioration in road

infrastructure with the gap in the availability of percentage of surfaced roads at the two periods of time widening when compared to the all India position. In case of Meghalaya, the situation with regard to road infrastructure has been better than the all India average, in both the periods of time. For the other states, the road infrastructure has improved and the gap in the availability of this infrastructure vi-a-vis the all India average has narrowed down. In Manipur, Nagaland, Mizoram and Tripura, the development of power infrastructure for the period under study shows that the gap in the availability of this infrastructure has not only narrowed down, but has also surpassed that of the country's average. For the rest of the states, the gap in the availability of this infrastructure has decreased vis-a-vis the national position. The gap in the availability of irrigation facility in all the NER states compared to the all India position has widened during the two periods under study. In case of banking, the gap in the availability of banking infrastructure presents a mixed result, with Meghalaya and Mizoram showing that the gap in the availability of this infrastructure has not only narrowed down, but has also surpassed that of the country's average. However, in Nagaland, Manipur and Tripura the gap in the availability of this infrastructure has widened in respect to the all India position during the period between 1981 to early 2000.

Conclusion

This paper evaluates the position of the NER in the field of economic infrastructure vis-a-vis the country. The study covers the period from the early 1980s to the beginning of 2000. Our analysis presents a mixed picture. So far as roads, power and banking infrastructures are concerned, the region has achieved progress and the gap in their availability vis-a-vis the country's position has narrowed down. However, the absolute position in respect of the availability of these infrastructures measured in terms of different indicators in the NER is still below the all India position. In case of irrigation, the situation has worsened with the gap in its availability vis-a-vis the country widening during the period under study. A few other indicators reviewed, such as the percentage of villages and habitats connected by roads, rural household electrified, railway route density, geographical area per bank branch, SHGs credit linked, etc show a poor status in the availability of these infrastructures in the region. Further, within the NER, there exists considerable inter states variations in the availability of these infrastructural facilities. Since infrastructure development is inextricably related to economic progress, much needs to be done in terms of provision of economic infrastructure in the NER so that it comes at least at par with the all India position.

End Notes

[1]Other deficits being a basic needs deficit, a resource deficit, and, most important, a two-way deficit of understanding with the rest of the country which compounds the others.

[2]Our analysis does not include social infrastructure such as health and education due to non availability of reliable temporal as well as spatial data.

[3]As noted by eminent journalist and northeast expert B. G. Verghese in his article "Unfinished Business in the Northeast: Pointers towards Restructuring, Reform, and Reconciliation Resurgence". For full article see www.freeindiamedia.com

[4]Except for Mizoram where the proportion of population below poverty line is at 19.5 per cent as per Planning Commission estimates for 1999-00.

[5]As per classification provided in the Annual Reports, 2004-05, of Department of Telecommunication, Ministry of Communication and Information Technology, GoI.

[6]The SHG Bank Linkages Programme pilot project which started in 1991 on a pilot project basis and later launched at the national level in 1996, has today emerged as the largest microfinance programme in the world. As of March 2006, a cumulative amount of Rs 113.98 billion have been disbursed by banks to as many as 22,38,565 SHGs.

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