

Chapter 6

Infrastructure

In the policy analyses for increasing the pace of growth in the north-east, it has long been recognised that infrastructure is a fundamental pre-requisite for growth. In fact, the vision for the state is necessarily predicated on the creation of an infrastructural base, which is so far absent in the economy.

Infrastructure development in the state of Meghalaya includes a variety of projects that facilitate connectivity and communications, such as transport networks in the form of good state roads, inter-district roads, and village roads; airports, and inland waterways; and speedy and reliable communication networks and information systems. It also covers power generation and transmission capacity, basic necessities (such as adequate water supply both for drinking as well as for irrigation, environmental sanitation in the form of drainage, sewerage, and waste disposal, and housing), social infrastructure (largely linked to improving the supply of education and health services), and market related infrastructure (storage, cold chains and warehouses, and *haats*) to help the development of markets for agricultural goods. One may even include trade related facilities such as customs and check posts to promote the expansion of cross-border trade.

The importance of infrastructure in economic development has been well documented. Good transport networks especially are a key facilitating factor for the expansion of markets, which in turn provide scope for the division of labour and specialisation. Combined with the availability of good quality power and telecommunication connectivity, the effect on people's livelihoods is manifold. Apart from delivering essential services that are necessary to improve people's lives and their livelihoods, these elements of infrastructure underpin the transition to a more modern agricultural sector, the emergence of trade and industry, and the creation of employment opportunities in areas such as horticulture, tourism, and information technology.

6.1 STATE OF INFRASTRUCTURE

Nowhere is the importance of good infrastructure more apparent than in a hill state such as Meghalaya. The geographical terrain hampers communication and connectivity, and producers and residents rely on good transport and telecommunication networks to ease these constraints. With the current condition of existing infrastructure in the state, it is unlikely that any area of the economy can be effectively expanded or improved if the basic infrastructure and supporting amenities are not first vastly enhanced and improved.

We attempt to examine the supply of infrastructure over time by looking at the share of various sub-sectors (electricity, gas, water supply, construction, transport, storage, and

communication, etc.) in the gross state domestic product (GSDP) or the net state domestic products (NSDP). Infrastructure appears to play an important role in Meghalaya as its share in NSDP ranged from 11 per cent to 20 per cent (Table 6.1) between 1993–94 and 2006–07, and this share has been rising steadily over time (except for a sharp decline from 1993 to 1995).

Table 6.1: Share of Infrastructure in GDP: Meghalaya and India, at constant base 1993–94
(Per cent)

Year	Meghalaya	India
1993	19.28	12.86
1994	12.64	12.22
1995	10.41	12.26
1996	11.14	12.57
1997	11.41	12.81
1998	13.35	13.38
1999	13.23	13.84
2000	13.09	14.33
2001	14.60	15.26
2002	14.93	15.62
2003	16.77	16.93
2004	17.15	17.47
2005	16.96	18.31
2006	17.03	18.82

Source: Central Statistical Organisation (CSO) website, as on 26 November 1999 for old series and 23 February 2006 for new series.

Note: 1. Owing to differences in methodology of compilation, data for different states/union territories are not strictly comparable.

2. Figures are calculated.

Interestingly, the share of infrastructure in Meghalaya mirrors the share of infrastructure in the country's NSDP, which ranges from 12 to 19 per cent. However, a simplistic comparison of proportional spending is misleading, as connectivity in a hill region is altogether different from connectivity in the plains. More importantly, while India as a country had inherited vast infrastructure from the colonial power, the north-east region remained relatively underdeveloped in this area for decades after Independence. Thus, railways, which were introduced into the plains of Assam by the early twentieth century, did not extend to the hill areas such as Meghalaya. The state has no air connectivity, and its topography presents little scope to promote inland waterways. The growth rate of infrastructure in Meghalaya (10.11 per cent) has been higher than that of the country (9.23 per cent) for the period 1993–94 to 2006–07 (at 1993–94 constant base); however, it clearly needs to grow at an even faster rate.

6.1.1 The Infrastructure Index for the North-east

A good starting point for analysis is the recently created Infrastructure Index for the north-eastern states (*Table 6.2*). It gives a current picture of Meghalaya's standing vis-à-vis the other north-eastern states on many of the basic services such as transport, health, education, and communications.²² *Table 6.2* gives the position of the districts in Meghalaya in a ranking of 80 districts²³ in the eight north-eastern states according to their infrastructure status.

Table 6.2: Infrastructure Index for Meghalaya by District

District	NE Rank	State Rank	Score
East Khasi Hills	5	1	248.68
Ri-Bhoi	20	2	147.87
Jaintia Hills	28	3	129.61
West Khasi Hills	36	4	122.17
West Garo Hills	37	5	122.16
South Garo Hills	42	6	117.10
East Garo Hills	43	7	116.80

Source: District Infrastructure Index for the North Eastern Region, Table 6, Ministry of DONER, September 2009, <http://mdoner.gov.in/index2.asp?sid=265>

The overall ranking of all the districts shows that the smaller states like Sikkim and Tripura have performed better than the larger states, and that typically within a state, the district where the state capital is located generally has better infrastructure. This is borne out by the top ranking received by East Khasi Hills in Meghalaya. While almost all the districts in Meghalaya rank in the top half of the scale (mostly between 1 and 40), showing that they are not the worst performing areas in the region, the spread in scores across all the districts in Meghalaya indicates stark regional disparities in development which is a serious cause for concern.

On the actual supply of services (*see Annexure Tables 6.A2 to 6.A6*), the state performs poorly on village electrification (*Table 6.A2*), where all its districts rank in the second half of the spectrum (from 51 to 70). Meghalaya districts' ranking on different basic amenities shows vast disparities across the state in provisioning, especially in electrical and tap water connections (*Table 6.A2*), health infrastructure (*Table 6.A5*), schools per 100 sq. km (*Table 6.A3*), telephone exchanges per 100 sq. km (*Table 6.A4*), and bank branches by area and population (*Table 6.A6*).

²² The indicators and methodology used to arrive at the ranking and scores for the districts is based on the methodology used by CMIE to prepare its infrastructure index for the country, and are detailed in the MDONER publication. This study used seven broad indicators: transport facilities (road density and road quality), electricity, water supply, education, health facilities, communication infrastructure, and banking facilities.

²³ The total number of districts in the north-east is 86, but several of these are new and for data reasons, continue to be clubbed with the old districts from which they have been carved out.

6.2 TRANSPORT

Transport infrastructure is of great importance for the region to strengthen its integration with the rest of the country and its neighbours, as well as to transport goods more effectively within and out of the region. It is a vital input into the proposed shift from subsistence agriculture to cash crop based farming, as well as for the planned development of industry and the service sector. Most of the area of the region is hilly and undulating with low population densities, accompanied by low per area production of goods. In such terrain rail, air, and inland waterways are not cost effective ways to provide connectivity, so roads are the dominant infrastructure for connectivity and transportation.

6.2.1 Road Network

While road construction has been increasing in the state, road density by geographic area is still less than half the country's average (*Table 6.3*).

Table 6.3: Road Density by Area and Population: Meghalaya and India

(Length in km)

	1990–91		2004–05	
	Per 100 sq. km	Per lakh people	Per 100 sq. km	Per lakh people
Meghalaya	25.4	320.4	35.12	340.0
India	76.8	256.1	76.84*	246.0

Source: Meghalaya State Development Report

* For 1999

It would also be useful to look at the classification of roads as this has implications for funding of road development schemes. Most previous studies have by and large looked at development of either state roads or national highways.²⁴

As far back as 1997, the Shukla Commission Report (1997)²⁵ had recommended that road construction be given high priority in the state's development plan. The Commission had suggested that the Dudhnoi-Damra-Nangalbibra-Baghmara-Gasuapara-Dalu road in Meghalaya (196 km) be constructed to connect NH37 and NH51. This road would pass through limestone and coal deposits and is the route for coal exports to Bangladesh. The other state highways, major district roads, and other district roads proposed were to be integrated through a regional master plan for roads. This initiative had resulted in the emergence of NH62 connecting Damra to Dalu.

²⁴ See, for example, the Shukla Commission Report (1997) for an excellent compilation of planned development of road network as per requests from state governments.

²⁵ Transforming the Northeast: High-level Commission Report, Planning Commission, Government of India, 1997

The state's lifeline is National Highway 40 — an all-weather road connecting Shillong with Guwahati, through which it is connected to major cities and states in the rest of the country. Other national highways in Meghalaya are NH44 from Nongstoin-Shillong to the Assam border (277 km), NH51 from the Assam border-Bajengdoda-Tura-Dalu (127 km), and the NH62 from Damra-Dambu-Baghmara-Dalu (190 km).

However, ***village and district roads in rural areas should constitute the dominant category of transport networks as these roads are particularly important for facilitating intra-state movement of people and commodities.***²⁶ The low level of inter-state trading of foodgrains and other commodities in the region indicates the need to focus on developing these roads within the broad category of state roads. A major issue in road infrastructure, especially in the hill states, is one of maintenance: with low internal resources and small state plan sizes (especially in the hill areas), expansion of the road network will mean that maintenance expenditure will take up a larger share of states' resources. As a result, internal roads are already falling into disrepair in most places.

Another major issue that has been flagged in various reports is the poor rural road connectivity in the state. In Meghalaya, almost half (47.02 per cent) of the villages are still not connected by all-weather roads, with wide variations across the districts, from a high of 61 per cent in the South Garo Hills to 26 per cent in the Jaintia Hills.²⁷ The dismal state of village and district connectivity indicates the neglect of this aspect of infrastructure by the state government, and the urgent need to prioritise initiatives in the state development plans for the construction of village and district level roads.

The disproportionate road availability across districts has directly impacted the availability of public and private transport facilities across the state (see *Table 6.A9* in Annexure). The public sector is hardly present in any district except for East Khasi Hills in all categories except for jeeps.

In the absence of rail and air links, roads are the only conduit for transporting people and goods in the state of Meghalaya. However, the poor condition of the existing roads, and lack of road connectivity have greatly restricted mobility, hampered the delivery of services, and prevented the emergence and growth of markets. As we have discussed in the chapter on rural development, the lack of markets has forced the various districts into self-sufficiency, preventing them from taking advantage of specialisation to increase productivity despite the wide variations in relative productivities across products.

²⁶ This point was also stressed in a meeting between the study team and officials in Meghalaya, who pointed out that central work on roads was very slow. The officials also pointed to the need for road connectivity between the Garo, Jaintia, and Khasi hills under the National Highways programme; a Shillong bypass has also become crucial, as traffic has begun choking the capital of Meghalaya.

²⁷ State Development Report, *Table 6.10*: Number of Unconnected Habitations in Meghalaya, 2008

Box 6.1: Some Recent Initiatives

The Chief Minister recently asked the Union Minister for Road Transport and Highways to take up the following issues on priority basis:

NH40 Shillong-Guwahati Road four-laning will require land acquisition by the state. This needs to be implemented expeditiously in view of the traffic intensity on the road, and as it is the main road link connecting Meghalaya to Mizoram, Tripura, and the Barak valley of Assam and Manipur.

Shillong-Nongstoin-Rongjeng-Tura Road (length 256 km) under the SARDP-NE has been projected in four different stretches. The road plays an important role as it connects the Garo Hills region with Shillong. The road was given to the state Public Works Department (PWD) for implementation in a move to involve local contractors and builders so as to help develop their capacity.

NH44 from Shillong to Tripura via Badarpur (Assam) is a continuity of NH40 connecting Guwahati. This vital road connects the Barak Valley (Assam), Manipur, Tripura, and Mizoram. The four-laning of this road needs to be taken up on priority basis.

NH37 which passes via Agiya in Assam needs to be extended up to Tura, West Garo Hills via Tikrikilla and Phulbari as an extension of NH37. The Garo Hills region is frequently subjected to economic blockades due to bandhs and road blocks by various organisations demanding autonomy in Assam. This road can act as an alternative route, and it is critical that the extension is approved expeditiously.

Under the ADB funded North Eastern State Roads Investment Program, Tranche I (Garobadha-Dalu Road: 93.4 km), Tranche II (Mawgap-Umpung Road: 76.2 km), and Tranche III (Mawsynrut-Hahim Road: 36.8 km) have been in the pipeline since 2004. The state government has taken the necessary steps for implementation.

The stretch between Umpung to Baghmara via Maheskhola (170 km) will connect the NH62. This road has immense socio-political and economic importance as the area is rich in minerals and agro-horticultural products, apart from being connected with the land customs station.

6.2.2 Rail Transport

Meghalaya has no railway links, but a rail link connecting Meghalaya with Guwahati would provide an important alternative to roads for the large scale movement of goods and people into and outside the state.

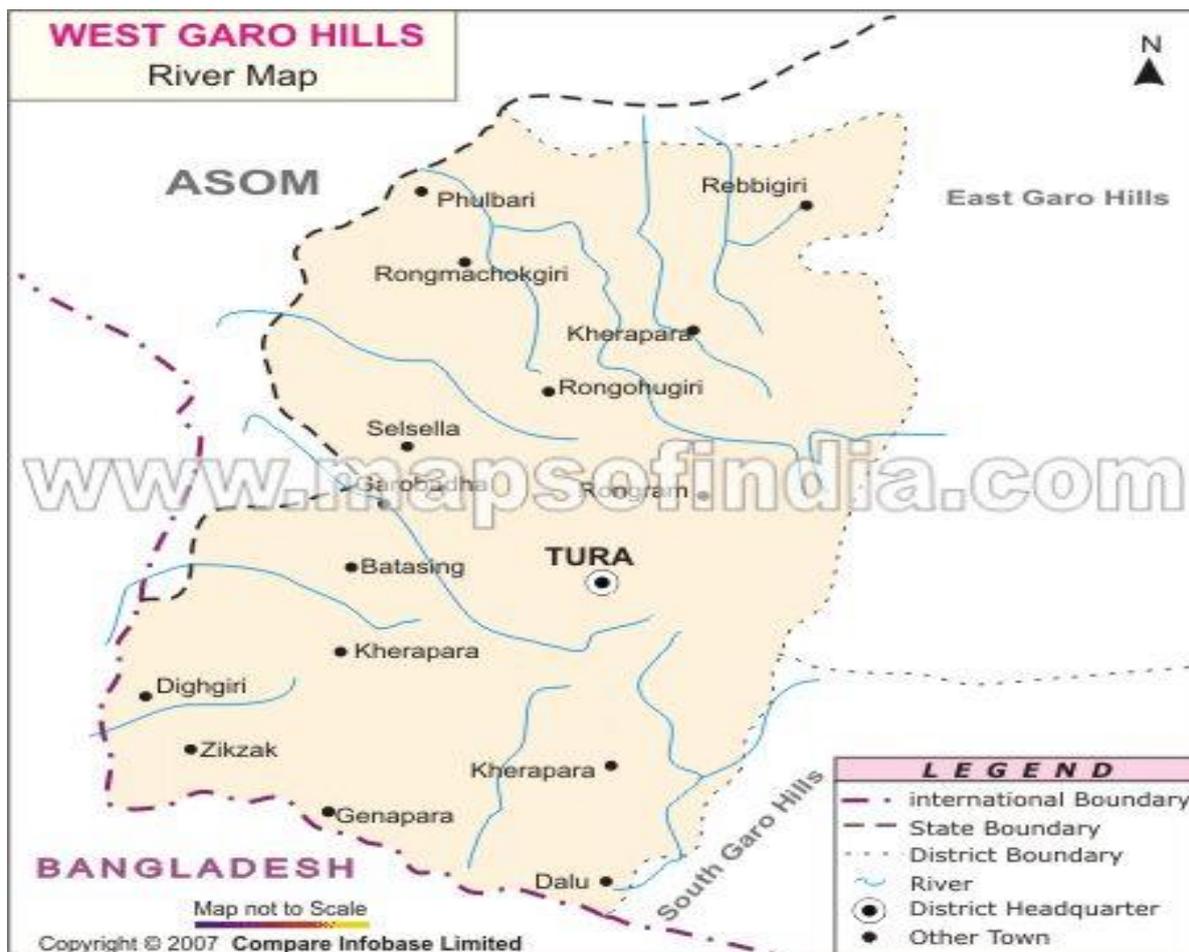
The Ministry of Railways had sanctioned rupees one crore in 2007–08 for construction of the Azra-Byrnihat railway line, which would be ultimately linked to Shillong as part of the centre's ambitious drive to link all state capitals in the north-east with a railhead. The 30 km rail line was declared a national project and included in the budget. The

anticipated cost of the project was estimated at Rs 200 crore, but it would increase manifold if extended up to Shillong.

The Ministry of Railways had also sanctioned a Dudhnoi-Depa railway line as far back as 1992–93. The 15.5 km Dudhnoi-Depa line was supposed to be completed at a cost of Rs 22.33 crore, but non-availability of land has forced the Ministry to shift the railway line from Dudhnoi to Mendhipathar, to pass through the West Garo Hills, East Khasi Hills, and Jaintia Hills districts. The Dudhnoi-Mendipathar link was supposed to be completed by March 2013 and the Sutnga-Silchar and Tetlia-Byrnihat sections are supposed to be completed by 2014–2015. The Ministry had taken up a final location survey for this alignment. The ambitious project was expected to start from Jogighopa in Asom (see Annexure 6.2).

6.2.3 Waterways

There is little scope for waterways in this landlocked hilly region. However, there is some water connectivity with the river Brahmaputra. The connection with the district headquarter at Dhubri (Assam) is through a road-cum-river route via Phulbari (see map). The Inland Water Transport Department sometimes operates a ferry service between Dhubri and Phulbari, a distance of 20 km. The introduction of riverine transport through Simsang River in Garo Hills has also been suggested to cut down transportation costs.



6.2.4 Airways

Given the scarcity of flat land, Meghalaya has limited scope for air transport. It currently has two airports, one at Umroi, 40 km from Shillong, and a partially operational one at Baljek. However, the Umroi airport has neither cargo handling facilities nor excise and customs clearance facilities, and is merely for the transport of people. The state's closest air link to the rest of the country is through Guwahati airport, and there is also a helicopter service between Guwahati, Tura, and Shillong. The central government is helping with land acquisition and the building of facilities to expand the Umroi airport. The setting up of a cold chain comprising storage and warehousing facilities at the airport would help in transportation of horticultural and floricultural produce from the state.

6.3 POWER SUPPLY

The reliable supply of quality power is an important component of economic progress and wellbeing. Despite the state's vast hydro-power potential and the low level of industrial activity, it is still deficient in power supply. While hydro-generation began in the early twentieth century, it has stagnated over the past 20 years. Today, in several districts, only half the villages are connected with power supply (*Table 6.A2 in Annexure*).

Table 6.4: Power: Demand and Supply in NER, March 2005

(MU net)

State/Region	Requirement (MU)	Availability (MU)	Surplus/Deficit (+/-)	
			(MU)	(%)
Meghalaya	117	98	-19	-16.2
NER	585	538	-47	-41.0
India	53,192	49,259	-3,933	-7.4

Source: indiastat.com

Energy consumption by end consumers has been increasing over the years in Meghalaya. While the state was self-sufficient in power till around 2003–04, (*Table 6.4*) it has experienced a deficit amounting to 16.2 per cent since then, which is far higher than the national average of 7.4 per cent. During the Eleventh Plan, the generation capacity in the state was 185 MW as against the peak demand of almost 800 MW.

The state has an impressively high proportion of power from hydel sources (90 per cent), which is far higher than the national level of 26.9 per cent (*Table 6.A8 in the Annexure*). Unlike other states in the north-east region, all the power capacity has been installed by the state and central government (65 per cent and 35 per cent, respectively) with no inputs from the private sector (*Annexure Table 6.A9*).

Despite its vast coal reserves and hydro-potential, the state continues to be deficient in power supply, at a very low level of economic activity. The development vision for the state is based on the expansion of opportunities in various service and industry sectors, IT, tourism, and horticulture, as well as the enhancement of peoples' capabilities through their

increased access to good health services and educational and skill enhancing opportunities. Each of these initiatives will require a vast expansion in the availability of power, which will depend on the government pushing through an ambitious agenda to increase generation and improve transmission capacity.

Keeping these in view, a number of initiatives have been put in motion during the Twelfth Plan period, not only to achieve self-sufficiency but also to generate surplus power in the state. The Ministry of Power has approved agreements to be signed between the Meghalaya government and the state-run North Eastern Electric Power Corporation Limited (NEEPCO) to execute two mega power projects in the state, namely the 500 MW thermal power project in Garo Hills, and the 85 MW Mawphu Stage II hydel project.

Other important initiatives for enhancing the generation capacity of the state are as follows:

- The 126 MW Kynshi and Umngot hydroelectric project is supposed to be commissioned during the Twelfth Plan.
- From Palatana (Tripura Gas Project), an additional 80 MW will be available to Meghalaya.
- Additional power will be available from the Bongaigoan Thermal Power Project
- The state government has taken up a number of micro-hydropower and mini hydropower projects in PPP mode, and some of them are likely to be commissioned during the Twelfth plan period, which would also augment power supply in the state.
- The projects taken up in the north-east by the central power undertakings, such as NTPC and NHPC, are likely to augment supply of power in the region as well as the state.
- In addition to all these, the Rural Energy Mission has initiated decentralised energy solutions.
- World Bank assisted investment on transmission infrastructure is likely to improve the transmission system.

All these initiatives are likely to transform the state into a power surplus state in 2014. This would have significant implications for the rapid industrialisation in the state.

6.4 TELECOMMUNICATIONS

Electronic connectivity through telecommunications can play a very important role in a hill state like Meghalaya, where physical connectivity in the form of roads is limited by the topographic layout of the state. Electronic connectivity through telecommunications, with satellite, high-bandwidth fibre-optic cables, and wireless connecting all areas of the state with each other and other parts of the country, is essential for integration and functioning in

a modern economy. Quite apart from providing the much needed linkages between the more remote rural areas (which often have no roads or other linkages) with each other and with towns, a good telecommunications network can help expand the supply of facilities like speciality health services, training, and education to areas without these facilities. A recent study by the Indian Council for Research on International Economic Relations²⁸ shows that “access to telecommunications is an important catalyst to realising productivity and efficiency improvements and thereby making it possible for the benefits of economic growth to be shared... Citizens with access to telecommunications can tap into the benefits of broad economic and social growth much more easily than those who are unconnected.”

Further, by helping to propel the state onto the IT growth path (like several other states in the country), good telecommunications networks can expand employment opportunities and economic growth by laying the foundation for an IT and ITES industry in a state with limited avenues for employment. Many earlier studies have pointed to the need to promote the IT sectors. As the IT industry moves from the metros of the country to outlying areas, Meghalaya might be considered the next most likely destination, given its high rates of literacy, large pool of educated people, and dust-free environment.

In 2001, only 6 per cent of the households in the state had a telephone, against a country average of 9.1 per cent (Census). Meghalaya’s teledensity (number of telephone lines per 100 people) was 3.73 in 2004. In 2010, India’s teledensity was 56.83 per cent; unfortunately separate teledensity data is not available for Meghalaya, but for the entire north-east it is 46.53 per cent.²⁹ Thus, telecommunications infrastructure in the state lags behind the rest of the country. Here again, there is a fair amount of district-wise disparity in the availability of telephone services: the East Khasi Hills accounts for the lion’s share of public call offices (67 per cent) and telephone connections (64 per cent), while the South Garo Hills has the lowest share (*Table 6.5*).

Table 6.5: District-wise Telecom Services in Meghalaya, 2006
(Per cent)

Districts	Telephone Exchanges	Public Call Offices	Telephone Connections
Jaintia Hills	22.09	12.27	9.58
East Khasi Hills	27.91	67.55	64.20
West Khasi Hills	10.47	0.86	2.87
Ri-Bhoi	13.95	6.67	6.06
East Garo Hills	8.14	1.75	2.48
West Garo Hills	15.12	10.05	14.11
South Garo Hills	2.33	0.86	0.71

Source: Statistical Abstract Meghalaya 2006

²⁸ http://www.icrier.org/pdf/public_policy19jan09.pdf

²⁹ <http://www.trai.gov.in/WriteReadData/trai/upload/Reports/52/5octoblerindicatorreporton13oct.pdf>

Despite the rapid growth in Internet users in Meghalaya, the state continues to lag far behind the country in its Internet density. The constraints to increasing telecommunications connectivity in the state have been well documented in the state's Human Development Report (HDR), and broadly rest on issues related to building infrastructure given the state's terrain, high rainfall and landslides, and the overall environment of insecurity.

6.5 AGRO-MARKETING INFRASTRUCTURE: WAREHOUSING AND COLD STORAGE FACILITIES

The absence of good quality storage facilities for agricultural produce leads to loss of output through spoilage, and attacks by pests and other organisms. The damage from such infestations leads to a reduction in market value and loss for producers. The availability of good infrastructure, storage facilities, and cold chain systems would greatly improve farming gains and incomes.

Warehousing and transportation form the backbone of the supply chain of all activity. Adequate storage capacity and the strategic location of warehouses enable the efficient functioning of supply and distribution networks and provide strategic competitive advantages to producers. Proper material handling, storage conditions, and timely movement of goods are necessary as improper handling and prolonged storage can deteriorate the quality of the stored product, especially perishable goods, biological drugs, and food stuffs.

6.6 LAND CUSTOMS CHECK POSTS

Well integrated customs check posts are crucial for the development of border trade, especially in Meghalaya, which has an almost 450 km long border along its southern and western boundary with Bangladesh. Given its proximity, Bangladesh continues to be a major destination for produce from the state, and the vision for the state's development is an expansion in ties to promote greater trade and cooperation between Meghalaya and its southern neighbour.

At present the state has eight functioning land customs stations (LCSs) — at Borsora (West Khasi Hills), Dawki (Jaintia Hills), Gasuapara and Baghmara (South Garo Hills), Shella Bazar and Bholaganj (East Khasi Hills), and Dalu and Mahendraganj (West Garo Hills) — exporting goods to Bangladesh. Two non-functional LCSs exist at Balat and Ryngku in the East Khasi Hills. There is a proposal to open three more at Kuliang (Jaintia Hills), Maheshkhola (South Garo Hills), and Lew Thymmai (East Khasi Hills).

However, these LCSs (and their counterparts across the border) largely suffer from inadequate and outdated infrastructure, including facilities related to weighing of produce, testing and certification of agricultural and horticultural produce, other facilities such as

banking, telecommunications, and electricity, as well as good road linkages with the main markets of the state.

In order to redress the situation, the central government has decided in the Eleventh Plan to set up 13 integrated check posts (ICPs) at identified entry points on the international land border of the country, one of which will be in Meghalaya at Dawki. A Land Port Authority of India (LPAI) will be established and charged with the responsibility of construction, management and maintenance of the ICPs. The LPAI has been envisaged as a statutory body which will function as a body corporate under the administrative control of the Department of Border Management, Ministry of Home Affairs. However, the LPAI has not yet been ratified by the Parliament. For the ICP at Dawki, land inspection of the site was made by the Director (Border Management) on 22 January 22 2010.

6.7 BASIC SERVICES INFRASTRUCTURE

A good picture of the overall supply of basic amenities in the districts of Meghalaya vis-à-vis other parts of the north-east region can be derived from the Infrastructure Index for the north-east, discussed in section 6.1.1 above. When it comes to the actual supply of individual services, the state performs especially poorly on village electrification, where all the districts rank in the second half of the spectrum (from 51 to 70) (*Table 6.A2* in the *Annexure*). The ranking of Meghalaya's districts on different basic amenities mirrors this gap, especially in electrical and tap water connections (*Annexure table 6.A2*), health infrastructure (*Table 6.A5*), schools per 100 sq. km (*Table 6.A3*), telephone exchanges per 100 sq. km (*Table 6.A4*), and bank branches by area and population (*Table 6.A6*): there is a marked difference between provisions in the East Khasi Hills and the other districts.

Access to basic services in the rural areas — which, for the purposes of this chapter, include social infrastructure such as education, health, environmental sanitation, housing, rural roads, telephony, and so on — had been low (*Table 6.6*) for two main reasons.

One is a problem which Meghalaya shares with other hilly states: the scattered nature of habitations in the remote and rural areas, which *'calls for a new model of development and delivery of services. Of the total of 5,782 villages in Meghalaya, 2,762 villages, comprising 48 per cent of the total, have a population of less than 200. These small sized villages are scattered throughout the State. As such, the cost of providing physical and social infrastructure like roads, electricity, health care, primary education, potable drinking water, etc. is very high as compared to other states in the country.'*³⁰

Added to this is the lacuna in local level planning, and in the monitoring and delivery of services to rural inhabitants — largely the result of the absence of local level institutions mandated to carry out this work. The Sixth Schedule of the Constitution is in operation in the entire state, but the functions of promoting grassroots development through local level

³⁰ From *Meghalaya Human Development Report*

planning, and ensuring that people have the basic amenities they are entitled to, even through central schemes such as the *Sarva Shiksha Abhiyan*, National Rural Health Mission, and so on, seem to have slipped through the cracks.

Table 6.6: Profile of the Villages: Rural Amenities in Villages

(Per cent)

	East Khasi Hills	West Garo Hills	Ri-Bhoi	South Garo Hills	Jaintia Hills	West Khasi Hills	East Garo Hills
HDI Rank	1	2	3	4	5	6	7
Inhabited villages (number)	920	1469	543	595	467	924	864
Safe drinking water	88.15	89.45	83.79	61.01	88.87	77.81	84.14
Electricity	74.13	36.49	66.11	19.66	62.31	35.28	33.22
Education							
• Primary schools	82.39	76.11	84.16	69.92	82.01	94.91	82.87
• Middle schools	20.22	19.47	18.23	11.93	26.55	20.02	15.51
• Secondary/Higher secondary schools	7.07	6.60	4.24	3.70	10.06	6.39	4.63
• Colleges	0.11	0.14	0.18	0.00	0.64	0.11	0.00
Health							
• Medical facilities	5.87	10.07	6.81	3.70	14.99	7.58	10.53
• Primary health centres	3.15	1.97	2.58	1.01	4.28	2.27	1.74
• Primary health sub-centres	0.43	3.00	2.95	1.18	3.64	3.14	5.09
Post, telegraph, and telephone facilities	12.72	6.54	7.55	4.03	18.63	9.52	4.40
Bus services	52.17	24.23	39.23	18.66	63.17	27.49	20.95
Roads							
• Paved approach roads	50.54	28.93	46.96	25.71	44.33	30.95	30.21
• Mud approach roads	61.20	82.85	79.56	66.05	86.72	56.28	67.25

Source: Census of India 2001

6.8 THE WAY AHEAD FOR INFRASTRUCTURE: RECOMMENDATIONS

A vision for Meghalaya has to be underpinned by major improvements in the state's infrastructure. Any attempt to integrate Meghalaya with the rest of the north-east region and the country will be meaningless till inter- and intra-state connectivity is ensured, particularly through road and rail links. Even more importantly, the development of infrastructure in Meghalaya must be viewed from the standpoint of the region as a whole, rather than as a component of the individual state's plans.

Role of the Centre

Much of the infrastructure development in Meghalaya would have to be done by the central government, rather than by the state government. Developments in the power sector bear this out. In the case of roads, the hilly terrain of most of the state makes infrastructure development particularly expensive. Here, too, the centre must play a leading

role, as maintenance expenditure would swallow up the small budgets of the hill states, especially as the road network expands. There is some evidence that state roads are already falling into disrepair.

Involvement of the Private Sector

With insurgency receding in the state, a vision for its development should attempt to involve the private sector, with the state playing a leading role. The PPP model should work well in the setting up of power projects and telecommunication networks.

6.8.1 Sectoral Suggestions

Roads

In the development of road infrastructure, public-private partnership (PPP) models in the build-operate-transfer (BOT) format being implemented in other states are unlikely to succeed, because the low levels of existing traffic would not justify PPP models. Hence, there must be exceptions from the use of PPP in state highway projects.³¹ In planning road networks under the SARDP, attention should be given to roads within the state as these are crucial to creating a unified market within the state and increasing tourism activity.

Air Connectivity

In the absence of a large road network and any rail connection, some focus has to be placed on increasing air connectivity in the state.

Power

The state's power policy (2007) outlines a very comprehensive path for the power sector, which continues the emphasis on hydel power, but will also promote thermal power to meet the immediate needs of the state.

Customs Stations

Given that one of the goals of the vision for the state is expanding trade linkages with Bangladesh, there is an urgent need to upgrade all the facilities related to this area. This includes infrastructure related directly to border trade, such as weighing stations, laboratories, certification facilities, and so on, and facilitating infrastructure such as banking services, power supply, internet and telecommunication services, warehousing facilities and cold storage, and a good road network capable of allowing heavy load-bearing vehicles.

³¹ Similar concerns were expressed in the Sixth Sectoral Summit of the NEC.

6.8.2 Basic Services Infrastructure

Devolution of Service Delivery

There are several well documented advantages of devolution of service delivery to local communities in various services such as water supply, rural roads, small works, housing, and sanitation. For a start, devolution helps reduce the cost of delivery, as the active participation of beneficiaries tends to lower the costs of service interventions. Another major benefit is that local residents are most familiar with local conditions, and can use their knowledge to best decide where to situate the service, whether it is an irrigation system, local road, or community centre, etc., how to conserve natural resources, and how best to maintain other resources. User preferences are also more likely to be reflected in local delivery mechanisms. Although, as communities are not homogeneous, it is important to examine whose preferences are being voiced. Delivery of services to economically and socially disadvantaged groups could face a threat of capture by local elites unless some safeguarding measures are introduced — measures that are typically ensured by some sort of elected body.

Water Supply

The state is blessed with abundant rainfall and this natural resource can be tapped by harvesting rain water. An obvious area that has to be tackled scientifically and immediately is to effectively tap rainwater through rainwater harvesting systems, especially in areas where feasible surface or underground sources are not available. This could be done through the construction of rain fed reservoirs. Further, in urban areas, prefabricated tanks can be given to households to harvest rain water, which can meet the 'non-consumption' needs of people, and save precious treated water supply for drinking and cooking.

Box 6.2: Hill Areas: Diverting Streams

Traditionally, wherever there were streams, especially in the hill and mountain regions of India, people diverted the water with the help of simple engineering structures into artificial channels that would take the water to agricultural fields. The most technologically sophisticated system can be traced to north-eastern India where people built bamboo pipes to carry water from natural springs over long distances using an intricate network of pipelines spread over difficult terrain.

The entire system worked like a modern drip irrigation network that delivers measured quantities of water straight to the roots of the plants. Some 18–20 litres of water enters the bamboo irrigation systems every minute, and after getting transported over several hundred metres, is reduced to 20–80 drops per minute at the site of the plant.

Source: Binayak Das, Prabhanjan Verma, and Suresh Babu (2002), "A Midsummer Dream," in *Down To Earth*, June 30, Society for Environmental Communication, New Delhi; quoted in Sunita Narain (2006) "Community-led Alternatives to Water Management: India Case Study" Occasional Paper for the *Human Development Report 2006* http://hdr.undp.org/en/reports/global/hdr2006/papers/Narain_Sunita.pdf

In a state where over half the population is below the poverty line, harnessing water is at the heart of alleviating poverty by providing livelihood opportunities to the rural poor. Therefore, the Government of Meghalaya has launched a programme called 'Integrated Basin Development and Livelihood Promotion Programme (IBDLP)' during the Twelfth Five Year Plan, wherein harnessing water has been assigned the central focus. The thrust areas of the IBDLP include integrated water resources management, creation of Small Multipurpose Reservoirs (SMRs), and generating water centric livelihoods such as fisheries and aqua tourism. The objective is not only to capture surface run-off and water along the drainage lines and reduce erosion but also to formulate water policy and aim at better river governance. The SMRs will be used for various productive purposes like aquaculture, drinking water supply, mini hydel (<100KW) irrigation, aesthetic value, tourism, and eco-system promotion. Considerable investments are supposed to be made in this flagship programme.