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Economic Profiles of Northeast Region (NER) of India and Bangladesh

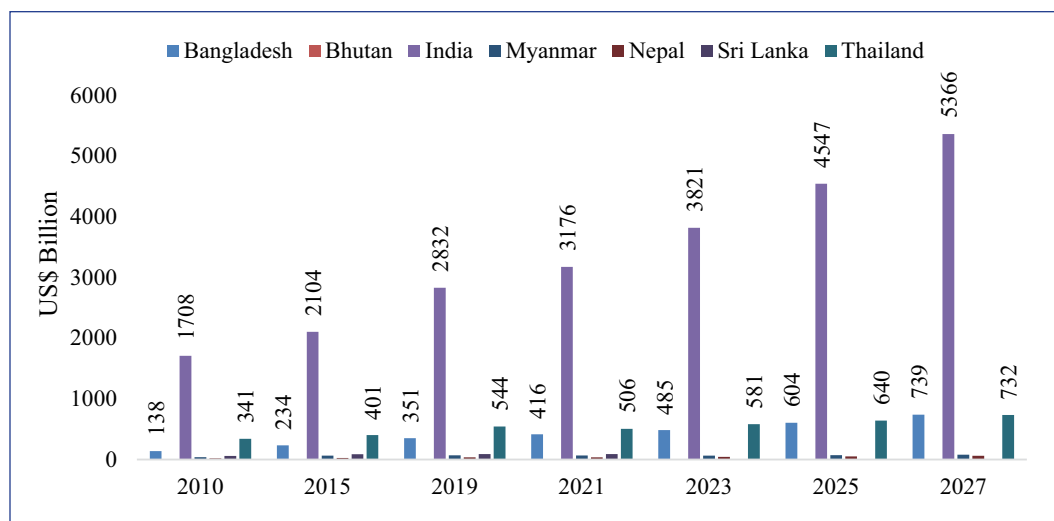
1. Introduction

India and Bangladesh share bonds of history, language, culture, and multitude of other commonalities. In recent years, both India and Bangladesh have shown high growth potentials among the Bay of Bengal countries. Even with the slowdown due to the Covid-19, India and Bangladesh grew at 8.7 per cent and 6.9 per cent in 2021, respectively (Appendix Figure 1). The GDP forecast of the Bay of Bengal countries show that India is expected to become a US\$ 5366 billion economy by 2027, followed by Bangladesh (US\$ 739 billion) and Thailand (US\$ 732 billion) (see Figure 1). In terms of GDP

growth, Bangladesh is expected to have the highest growth rate of 6.9 per cent, followed by India (6.2 per cent) and Bhutan (5.8 per cent) in the Bay of Bengal region.

Moreover, the strategic location of India's NER and Bangladesh complement each other and present an opportunity to further strengthen economic development and connectivity with the immediate neighbourhood as well as the Indo-Pacific region. Bangladesh is India's biggest trade and development partner in South Asia. Over the recent years, trade, connectivity and infrastructure development have significantly improved between the two countries. Further enhancing cooperation between India's

Figure 1: GDP Forecast of Bay of Bengal Countries



Source: IMF, World Economic Outlook (WEO)

NER and Bangladesh is expected to enable exponential benefits for both countries. For India, transit and transshipment across Bangladesh is important as it is expected to boost the economy of India's eastern and northeastern states, including West Bengal¹. For Bangladesh, the NER of India is not only a gateway but also an emerging market as the country is surrounded by India from three sides. Therefore, strengthening connectivity between Bangladesh and Eastern and Northeastern states of India will provide economic opportunities and further scope of development. Bangladesh and NER belong to the same geography, which got fragmented due to the partition in 1947.

Natural resources abound in NER. The area is blessed with not only natural resources like oil, natural gas, and hydropower but also an agro-climate condition that has been assisting the area in producing the valuable agro-horticulture goods. Some of its distinct advantages include skilled labour force, a high level of literacy, and access to clean water. The NER is also India's eastern gateway as it shares international borders with Bangladesh,

Bhutan, China, Myanmar and Nepal. However, the region faces difficult terrain and inadequate infrastructure, which have been major deterrents to economic growth.² In other words, the growth of the NER is severely constrained by transportation and logistics bottlenecks, which have long been recognised as major obstacles.³

India's NER has a 5437 km long international border with Bangladesh, Bhutan, China, Myanmar and Nepal. India and Bangladesh share 4096 km (54 per cent) of international border, which is the longest international border that India shares with any of its neighbours (Table 1). Out of which, NER shares 1885 km international border with Bangladesh, wherein 1,434 km is land border and 446 km is riverine tract. Four NER states, namely, Assam (268 km), Meghalaya (443 km), Mizoram (318 km) Tripura (856 km), and West Bengal (2216 km) share international border with Bangladesh. Except Meghalaya, the remaining NER states share both land and riverine borders with Bangladesh. Tripura and Mizoram among them have the longest land and river borders with Bangladesh. Agartala,

Table 1: Length of International Borders of NER States with Bangladesh (km)

| Indian State | Bangladesh |
|---------------------------------------|------------|
| Assam | 268 |
| Meghalaya | 443 |
| Mizoram | 318 |
| Tripura | 856 |
| West Bengal (WB) | 2216 |
| NER States | 1885 |
| NER and WB with Bangladesh | 4096 |
| NER and WB Share in India's Total (%) | 54 |

Source: Ministry of Development of North Eastern Region, Government of India, New Delhi

the capital of Tripura, is located 1,650 km from Kolkata via Shillong and Guwahati; however, it is only 350 km via Bangladesh. Moreover, the distance between important cities of Bangladesh and India's NER is between 20 and 200 km.⁴

Although four NER states and West Bengal share an international border with Bangladesh, the lion's share of border trade between Bangladesh and India is handled through Petrapole in West Bengal and Benapole in Bangladesh. There are 36 land customs stations (LCS), 4 integrated check posts (ICP), and 5 railway interchange sites between the two countries that are used for cross-border trade (refer Appendix Table 1). The Petrapole ICP handles the majority of overland cargo traffic and passengers between the two countries. It is the only land port which facilitates trade of almost all products, except a few regulated by the customs, making it one of the busiest and most crowded land ports. Bangladesh is the primary trading partner of Tripura, which has the longest border with Bangladesh among the NER states. The official trade between Tripura and Bangladesh started in 1995-96 through Agartala LCS. There are currently eight LCSs: Agartala, Old Ragnabazar, Srimantpur, Muhurighat, Khowaighat,

Dhalaighat, and Sabroom. Sabroom LCS is not yet operational, while Dhalaighat LCS is solely functioning for immigration-related purposes.

The NER contributes about 3 per cent to India's GDP and is home to about 46 million people. Assam is the largest economy in the NER; the state alone contributes about 60 per cent of the NER's GDP (Table 2). In terms of per capita income, Sikkim is the richest state in the NER, followed by Mizoram and Arunachal Pradesh. The economic growth rates of most of the NER states are growing close to the average growth rate of other Indian states, except Arunachal Pradesh, Sikkim and Tripura. Services are the mainstay of the economies of the NER states, which make up around 54 per cent of the region's GDP and provide a significant portion of the region's employment and means of subsistence. Another vital industry for the NER economy is agriculture, which accounts for over 9 per cent of its GDP. The industrial sector's 37 per cent contribution to the NER GDP reflects the sluggish growth of manufacturing and commercial operations. Today, the rise in construction of public utilities in the NER is, thus, a manifestation of the NER's growth. Numerous roads and highways, bridges, railways, waterways,

“ Bangladesh has witnessed meteoric rise. Rapid economic growth has been supported by a robust demographic dividend, substantial ready-made garment (RMG) exports, sustained remittance inflows, and stable macroeconomic conditions. Several infrastructure projects have been initiated in Bangladesh, which are expected to offer competitive opportunities for business and trade in Bangladesh and bolster economic development of the country. ”

Table 2: Economic Profiles of the NER States and Bangladesh, 2020-21

| Country/ State | Population | Per Capita GSDP | GSDP | Share of GSDP (%) | | | Annualized GDP Growth Rate (%) |
|-------------------|------------|--------------------|--------------|-------------------|----------|----------|--------------------------------------|
| | (Million) | ('000 Rs.) | (Rs Billion) | Agriculture | Industry | Services | (2015-16 to 2020-21) |
| Arunachal Pradesh | 1.384 | 123.64 | 188.7 | 10.86 | 26.54 | 41.84 | 5.79 |
| Assam | 31.206 | 65.49 | 2284.6 | 11.36 | 43.60 | 40.43 | 3.64 |
| Manipur | 2.856 | 59.10 | 207.7 | 11.64 | 19.86 | 68.00 | 4.81 |
| Meghalaya | 2.967 | 68.25 | 237.5 | 8.39 | 23.21 | 60.61 | 2.85 |
| Mizoram | 1.097 | 168.98 | 144.2 | 6.94 | 22.08 | 62.71 | 3.19 |
| Nagaland | 1.979 | 81.15 | 179.9 | 15.33 | 16.90 | 63.26 | 4.18 |
| Sikkim | 0.611 | 303.63 | 190.4 | 6.79 | 60.35 | 33.01 | 5.79 |
| Tripura | 3.674 | 103.18 | 372.4 | 13.50 | 27.41 | 50.99 | 6.81 |
| NER | 45.774 | 121.68 | 3805.4 | 11.17 | 37.36 | 45.85 | 4.15 |
| India | 1210.86 | 145.68 | 135584.7 | 9.15 | 36.65 | 54.23 | 3.58 |
| Bangladesh | 169.36 | 124.51 | 21087.2 | 11.63 | 33.32 | 51.30 | 7.96 |

Notes: GSDP = Gross State Domestic Product; Per Capita GSDP = Per Capita Gross State Domestic Product; CAGR = Annualised Growth Rate.

Sources: Reserve Bank of India (RBI) and World Development Indicator (for Bangladesh)

airports, land ports, townships, industrial parks, and many other such projects are being developed in the region.⁵

With the growth rate of 7 per cent, Bangladesh is home to approximately 169 million people and among the top 10 fastest growing economies in the world. The services sector is the mainstay of Bangladesh, contributing 51.3 per cent to GDP. Industry and agriculture sectors represent 33 and 12 per cent of GDP, respectively. Bangladesh

has witnessed meteoric rise. Rapid economic growth has been supported by a robust demographic dividend, substantial ready-made garment (RMG) exports, sustained remittance inflows, and stable macroeconomic conditions. Several infrastructure projects have been initiated in Bangladesh, which are expected to offer competitive opportunities for business and trade in Bangladesh and bolster economic development of the country.

2. Profile of Domestic Infrastructure of the NER

Together, the NER span an area of 2,62,179 sq. km, constituting 8 per cent of the country's total land area and housing about 4 per cent of its entire population.⁶ With China and Bhutan in the north, Myanmar in the east, Nepal in the west, and Bangladesh in the south and west, the region shares a lengthy international border with its neighbours. The region is a thriving source of the river Brahmaputra and its tributaries, India's largest perennial water system. Tribal people make up the majority of the population in most of the hill states in the region, including Arunachal Pradesh, Meghalaya, Mizoram, and Nagaland. Even among the tribal groups, there is a significant amount of variation. The NER states are largely similar to one another, yet they also have observable differences.

Many logistical issues plague the NER. The availability of physical infrastructure,

including banking, finance, communication, and transportation varies greatly between urban and rural areas. There have been wide gaps in infrastructure availability. Table 3 presents basic infrastructure and logistics indicators of the NER states and Bangladesh for the latest available year 2021. The profile suggests that the NER states are relatively better endowed with airports, LCSs, IWT, where the variation across the NER states is not very high except for the airport density in West Bengal, Assam, Tripura and Sikkim. However, the NER states suffer from the availability of electricity. For example, Arunachal Pradesh, Meghalaya and Tripura are yet to get an adequate supply of electricity. Only three of the NER states use IWT, among which Assam has the highest density in the NER. Although Assam, Mizoram and Tripura share a riverine border with Bangladesh, Tripura is yet to utilize the inland waterways for the transportation of goods and passengers.

Table 3: Basic Infrastructure Indicators of NER States, 2021

| States | No. of Operational Airports | Airport** | No. of River and Sea Ports | IWT* | No. of LCS | Availability of Electricity ^s | Electricity Requirement ^s | Electricity Not Served |
|-------------------|-----------------------------|-----------|----------------------------|-------|------------|--|--------------------------------------|------------------------|
| Arunachal Pradesh | 1 | - | - | - | 1 | 710 | 750 | 4 |
| Assam | 5 | 7.65 | - | 33.04 | 15 | 9820 | 9800 | |
| Manipur | 1 | 4.48 | - | - | 1 | 970 | 920 | |
| Meghalaya | 1 | 4.46 | - | - | 10 | 2010 | 2110 | 10 |
| Mizoram | 1 | 4.74 | - | 6.87 | 3 | 720 | 650 | |
| Nagaland | 1 | 6.03 | - | 22.93 | - | 820 | 810 | |
| Sikkim | 1 | 9.54 | - | - | 2 | 550 | 550 | |
| Tripura | 1 | 14.09 | - | - | 8 | 1480 | 1540 | 6 |
| West Bengal | 1 | 1.13 | 2 | 3.81 | 36 | 51540 | 52240 | 70 |
| India | 110 | 3.35 | 16 | 2.29 | 120 | 1270660 | 1291010 | 2035 |
| Bangladesh | 11 | 7.45 | 11 | 40.44 | 23 | 80423 | 80500 | 77 |

Notes: *km per 1000 sq. km of area. **Number per 100,000 sq. km of area. \$MKWh- Million Kilowatt Hours

Sources: Calculated based on various issues of Statistical Abstract, Government of India and Bangladesh Bureau of Statistics (BBIS).

Airways

The NER is connected with the rest of India majorly by air. Assam is the state that has the highest number of operational airports (5) in the NER, whereas Arunachal Pradesh is the only NER state where airport services are restricted to only 1 airport (Itanagar) (Table 3). Currently, 12 airports in the NER and West Bengal are served by airlines such as Agartala, Lengpui, Bagdogra, Dibrugarh, Dimapur, Guwahati, Imphal, Itanagar, Jorhat, Lilabari, Shillong, Silchar, and Tezpur. Although civil airlines now connect more airports, the movement of flights and freight has slowed down in 2021–2022, compared to 2010–2011 (Table 4). However, the volume of passenger flows has gone up over time, demonstrating the enormous potential of air travel in the NER and the investment prospects in airlines and civil aviation infrastructure. The new Integrated Terminal Building in Guwahati has had its foundation stone laid, and is expected to be ready soon. The year 2018 saw the opening of the new greenfield airport in Pakyong (Gangtok). Agartala international airport has been renovated already. The integrated international terminal is under construction at Imphal. Under the UDAN programme, Guwahati Airport is most likely to be connected to Bangladesh and countries in Southeast Asia. Agartala is expected to be connected with Chattogram by air.

Roads and Highways

Roads are of particular importance in the NER because they provide access to inland parts of the country. However, geographic constraints make the construction of roads an expensive endeavour in the NER. The NER has a road network of 5,73,982 km., which is only 9 per cent of India's total road network (Table 5). Rural road network constitutes 94 per cent and urban road network constitutes only 5 per cent in NER. Amongst NER states, Assam with 5088 km has the highest road density, followed by Tripura (4303 km) and Nagaland (2284 km). In terms of accessibility, the rural road network in NER has been superior to urban road networks. The quality and strength of urban road access in Arunachal Pradesh, Manipur, Mizoram, Meghalaya and Sikkim lag behind other NER states. Arunachal Pradesh has the highest road density with 40 km per 1000 population, followed by Sikkim with 20 km and Nagaland with 19 km. Comparing the road density indicates that availability of urban road network per 1000 population in Assam, Manipur and Mizoram is inadequate as compared to the rural road network. West Bengal with 2,838,65 km road length, registered similar rural and urban road densities, indicating that quality and strength of urban road access is similar to that of the NER. With 3 km road density per 1000 population, West Bengal lags behind all NER states.

Table 4: Movement of Aircraft, Passengers, and Freight from the NER

| | Aircraft Movements | Passengers | Freight |
|---------|--------------------|------------|----------|
| | (No.) | | (tonnes) |
| 2004-05 | 33,019 | 1,447,453 | 10,304 |
| 2010-11 | 67,395 | 4,590,271 | 24,087 |
| 2013-14 | 58,839 | 5,065,733 | 21,116 |
| 2015-16 | 68,734 | 5,649,842 | 28,064 |
| 2021-22 | 64,274 | 4,441,910 | 26,437 |

Source: NEC

Till 2019, the NER had a total length of National Highway (NH) of 13,640 km, much lower than other regions of India (Table 6). Mizoram has the highest and Nagaland has the largest NH density (93.37 km), followed by Tripura (81.44 km) and Manipur (78.38 km). During 2012-13 and 2018-19, NH density and availability of roads per 1000 population in Nagaland registered a CAGR of 17.72 per cent, followed by Sikkim (17.58 per cent) and Tripura (11.44 per cent). This indicates that over the last seven years there has been an improvement of the quality and strength of road transportation infrastructure in these states. However, road density of Meghalaya deteriorated between 2012-13 and 2018-19.

The Government of India has taken steps to strengthen road networks in the NER under the National Highways Development Project (NHDP) and Special Accelerated Road Development Programme in North East (SARDP-NE) schemes (Table 7). SARDP-NE aims to (i) upgrade National Highways

to two to four lanes; (ii) provide connectivity of all 88 District Headquarters by two-lane road (47 connected already); (iii) establish connectivity to backward and remote areas of NER; (iv) improve roads of strategic importance, and (v) improve connectivity to neighbouring countries. Out of total length of about 6,000 km, projects in about 5,645 km have been awarded under Phase A of SARDP-NE including Arunachal Pradesh Package of roads and completion has been achieved in about 3,975 km.⁷ The SARDP-NE Phase 'A' is expected to be completed by 2023-24. In addition, the Ministry of Development of the North Eastern Region has also taken up projects for filling gaps in infrastructure through its schemes such as NLCPR State, North East Road Sector Development Scheme (NERSDS) and North East Special Infrastructure Development Scheme (NESIDS) (Table 7).

Among other road projects, the following needs a special mention. Under Bharatmala Pariyojana, 5,301 km in the NER have been

Table 5: NER Road Length, by Area and Population, 2018-19

| State/Country | Road Length (km) | | | Road Density (km/'000 sq. km) | | | Road Density (km/'000 population) | | |
|-------------------|------------------|--------|---------|-------------------------------|---------|-------|-----------------------------------|-------|-------|
| | Rural | Urban | Total | Rural | Urban | Total | Rural | Urban | Total |
| Arunachal Pradesh | 25832 | 59 | 50555 | 308 | 0.71 | 660 | 2 | 0.27 | 40 |
| Assam | 372510 | 6268 | 343609 | 4749 | 79.90 | 5088 | 19 | 0.04 | 13 |
| Manipur | 25339 | 126 | 29180 | 1135 | 5.63 | 1451 | 9.00 | 0.04 | 11 |
| Meghalaya | 32537 | 571 | 43836 | 1691 | 25.46 | 1795 | 11.00 | 0.19 | 14 |
| Mizoram | 11849 | 11 | 13374 | 562 | 0.52 | 771 | 11.00 | 0.01 | 15 |
| Nagaland | 28039 | 1470 | 36703 | 1691 | 88.70 | 2284 | 14 | 0.74 | 19 |
| Tripura | 40236 | 1073 | 13510 | 3837 | 102.36 | 4303 | 11 | 0.29 | 12 |
| Sikkim | 8550 | 156 | 43215 | 1205 | 22.02 | 2284 | 14 | 0.26 | 20 |
| West Bengal (WB) | 157497 | 95065 | 283865 | 1775 | 1071.13 | 3198 | 2 | 1.04 | 3 |
| NER | 544892 | 9734 | 573982 | 1897 | 40.66 | 2330 | 11 | 0.23 | 144 |
| NER + WB | 702389 | 104799 | 857847 | 3672 | 1111.79 | 5528 | 13 | 1.27 | 147 |
| India | 3622228 | 541554 | 6331757 | 1458 | 164.73 | 1652 | 3 | 0.45 | 4 |

Source: Ministry of Road and Transport, Government of India

approved for improvement; out of this, 3,246 km of road for the development of the economic corridor in the Northeast. In 2018, the 9.15-km-long Dhola-Sadiya Bridge, India's longest river bridge, connecting Assam and Arunachal Pradesh, was inaugurated. Three highway projects of length 66 km in Arunachal Pradesh have been completed, which include Hunli to Anini (16 km) NH313, Singer River to Sizoh Nallah (23 km) NH 513 and Pasighat to Pangin (27 km).⁸ The government has awarded 35 projects of length 536 km and costing Rs.7707.17 crore. This is also to be noted that 4-laning of Imphal-Moreh – Pkg I (20 km) connecting India-Myanmar-Thailand Trilateral Highway and 57 km long Aizwal Tuipang Pkg providing access to Kaladan MMT Project are two important highway projects in the NER.

The Government of India has taken steps to strengthen road networks in the NER through several road and rope projects (Table 8). Some of the notable development projects are: 171 km long Churaibari-Agartala four lane highway construction in Tripura, NH 208 route Khowai-Teliamura-Amarpur-Harina upgradation work, construction of 20 suspension bridges on Indo-Bangladesh Border in Meghalaya, construction of a four-lane highway on Dimapur-Kohima NH 4 in Nagaland. Moreover, MoUs have been signed between Tripura state and National Highways Logistics Management Limited for the construction of four ropeways in Tripura.

The Government of India has also taken initiative to strengthen road connectivity of India's NER with Bangladesh by developing new infrastructure projects and reviving the pre-partition routes. For example, the construction of the Maitri Setu, built over the Feni River, would reduce the distance between Tripura and Chattogram port to just less than 100 km. In addition, road connectivity in Meghalaya's Dawki, southern Assam's Sutarkandi and Tripura's Agartala

linking eastern and south-eastern Bangladesh is also being improved. The Government of India is also working on a multi-modal transit hub at Sabroom that can help goods reach the port in Bangladesh in a few hours.

Railways

The presence of railways in the NER is more than 125 years old, originating around when the first passenger railway system came into operation in 1881 between Assam's Dibrugarh and Sadiya. Unfortunately, the railway system in the NER was severely disrupted with the partition of India in 1947. However, the creation of a new railway zone in 1958 for the NER, the Northeast Frontier Railway (NEF Railway) helped in further development of the railway system in the NER.⁹ Challenges are difficult terrain, lack of appropriate technology, and shortage of funding.

The NER states have a rail network of 2,760 km (Table 9). Amongst them, Assam with 2492 km has the highest rail length, followed by Tripura (221 km). Till date, Mizoram has the weakest rail network system. In terms of rail density per 1000 sq. km, Assam (31.77 km) and Tripura (21.08 km) have the highest rail density in the NER, whereas the remaining others have extremely weak access to rail network systems. Among NER states, Tripura has the highest access to rural and urban rail network system per 100 population with 4.84 km per 100 population and 14.35 km per 100 population, whereas Assam has much better access to urban rail network system with 5.66 km per 100 population. With 4,184.5 km rail network length, West Bengal has better rail density in terms of area and population than most of the NER states. Except Sikkim, all NER states have running tracks with Assam having the longest running track (2,702 km) and total track (3,662 km), followed by Tripura (265 km and 337 km) (Table 10). Railway track

The Government of India has taken steps to strengthen road networks in the NER through several road and rope projects.

Table 6: NER National Highway Length, by Area and Population, 2018-19

| State/Country | Road Length (km) (2018-19) | Share in Total (%) | Road Density (km/'000 sq. km) | | Road Length (km/'000 Population) | |
|-------------------|----------------------------|--------------------|-------------------------------|------------------------------|----------------------------------|------------------------------|
| | | | 2018-19 | CAGR (2012-13 to 2018-19)(%) | 2018-19 | CAGR (2012-13 to 2018-19)(%) |
| Arunachal Pradesh | 2537 | 5.02 | 30.30 | 3.26 | 1.83 | 3.26 |
| Assam | 3909 | 1.14 | 49.84 | 4.15 | 0.13 | 4.15 |
| Manipur | 1750 | 6.00 | 78.38 | 4.14 | 0.61 | 4.14 |
| Meghalaya | 1156 | 2.64 | 51.54 | -0.18 | 0.39 | -0.18 |
| Mizoram | 1423 | 10.64 | 67.50 | 4.77 | 1.30 | 4.77 |
| Nagaland | 1548 | 4.22 | 93.37 | 17.72 | 0.78 | 17.72 |
| Tripura | 854 | 6.32 | 81.44 | 11.44 | 0.23 | 11.44 |
| Sikkim | 463 | 1.07 | 65.25 | 17.58 | 0.76 | 17.58 |
| NER | 13640 | 2.38 | 38.87 | 5.26 | 0.30 | 5.26 |
| India | 132500 | 2.09 | 40.31 | 8.10 | 0.11 | 8.10 |

Source: Ministry of Road and Transport, Government of India

Table 7: Improvement of National Highways and Road Connectivity in the NER Under Specific Programmes

| | |
|--|-----------------------------------|
| Under Phase A and Arunachal Package of SARDP-NE by NHAI, MoRTH, BRO and PWDs (two-lane highways) (6000 km) | 3975 km Completed |
| Under SARDP-NE, Phase B (2210 km) | Begin after Completion of Phase A |
| Completed and Ongoing Projects under NERSDS (2017-18-2021-22) | 3 Completed and 4 Ongoing |
| Completed and Ongoing Projects NLCPR-State NERSDS (2017-18-2021-22) | 78 Completed and 157 Ongoing |
| Completed and Ongoing Projects NESIDS NERSDS (2017-18-2021-22) | 2 Completed and 49 Ongoing |

Sources: NEC and MoRTH

Table 8: Road and Rope Projects in NER States, 2021-22

| Projects | State |
|--|-----------|
| Two-Laning from Manu-Simlung | Tripura |
| Two-Laning of Khowai-Agartala Section | |
| Churaibari-Agartala 4 Lane Highway- 171 km | |
| Two-Laning from Jolaibari-Belonia | |
| Khowai-Teliamura-Amarpur -Harina NH 208 | |
| Construction of 4 ropeways in the state- MoU signed between Tripura Govt and National Highways Logistics Management Limited | |
| Development of Margherita-Deomoli Road in Tinsukia District in Assam- 13.25 km | Assam |
| Construction of 20 Suspension Bridge on Indo-Bangladesh Border in Meghalaya | Meghalaya |
| Dimapur-Kohima NH- 4 lane Highway under construction | Nagaland |

Source: Ministry of Statistics and Programme Implementation, Government of India

is under construction in Sikkim. The Sivok-Rangpo Broad Gauge Rail Line Project, once completed, will connect Sikkim with the rail network.

There are at present five divisions that serve these eight Northeastern states, viz. Katihar, Alipurduar, Rangia, Lumding, and Tinsukia. Today, the NF Railway directly or indirectly serves all eight NER states alongside parts of West Bengal and Bihar. The total length of

the present rail network in the NER is 2,831 km (as on 2019-20). About 970 km of gauge conversion project was completed in the NER in the last few years. All operational MG sections have been converted to the BG.

Indian Railways' aim is to connect all state capitals in Northeast India with railways. Mizoram and Manipur were connected by the BG railway lines. Tripura is already connected, and regular trains have been running. Projects

Table 9: NER State and Bangladesh Rail Length by Area and Population, 2018-19

| State/Country | Rail Length (km) | Rail Density (km/'000 sq. km) | Rail Length (km/'00 population) | | |
|-------------------|------------------|-------------------------------|---------------------------------|-------|-------|
| | | | Rural | Urban | Total |
| Arunachal Pradesh | 12 | 0.14 | 0.11 | 0.38 | 0.09 |
| Assam | 2492 | 31.77 | 0.93 | 5.66 | 0.80 |
| Manipur | 13 | 0.58 | 0.07 | 0.16 | 0.05 |
| Meghalaya | 9 | 0.40 | 0.04 | 0.15 | 0.03 |
| Mizoram | 2 | 0.09 | 0.04 | 0.03 | 0.02 |
| Nagaland | 11 | 0.66 | 0.08 | 0.19 | 0.06 |
| Tripura | 221 | 21.08 | 4.84 | 14.35 | 3.62 |
| Sikkim | - | - | - | - | - |
| West Bengal | 4184.5 | 47.15 | 0.67 | 1.44 | 0.46 |
| NER | 2760 | 7.86 | 0.28 | 0.74 | 0.20 |
| NER + WB | 6944.5 | 19.79 | 0.70 | 1.85 | 0.51 |
| India | 37054 | 11.27 | 0.44 | 0.98 | 0.31 |

Source: NER Databank

Table 10: NER Route, Running Track and Total Track of Railway Lines, 2019-20

| State | Route | Running Track | Total Track |
|-------------------|--------|---------------|-------------|
| | | (km) | |
| Arunachal Pradesh | 12 | 12 | 26 |
| Assam | 2,519 | 2,702 | 3,662 |
| Manipur | 13 | 13 | 18 |
| Meghalaya | 9 | 9 | 13 |
| Mizoram | 2 | 2 | 6 |
| Nagaland | 11 | 11 | 23 |
| Tripura | 265 | 265 | 337 |
| NER | 2831 | 3014 | 4085 |
| All India | 67,956 | 99,235 | 1,26,366 |

Source: NER Databank

for rail connectivity to state capitals of Sikkim, Meghalaya, Mizoram, Manipur, and Nagaland have been sanctioned by the Indian Railways. At present, the construction of a railway line from Jiribum to Imphal is going on, which is likely to be completed by 2024.

On 4 January 2014, the first BG train from Guwahati to Tezpur via Rangiya was started. The train has started operating between Naharlagun and Delhi. In Arunachal Pradesh, Bhalukpong-Tenga-Tawang (378 km), North Lakhimpur-Bame-Aalo-Silapathar (247.85 km), and Pasighat-Tezu-Parsuram Kund-Rupai (227 km) were made operational.

While Manipur will be connected through a 111-km-long line from Jiribam to Imphal with 37 tunnels and 22 bridges, the capital city of Mizoram will also be on the railways' map through a 52-km new line between Sairang near Aizawl and Bairabi bordering Assam. For providing connectivity to Gangtok, the construction work up to Rangpo has been going on, which is around 40 km short of the Sikkim capital, and, for Nagaland, the NFR is constructing the Dhansiri-Sukhobi-Zubza 91.75-km line with 90 bridges and around 26 km of tunnels connecting it to Assam. Assam and Meghalaya will be connected through the Byrnihat-Shillong line of 108.4 km.¹⁰

Indian Railways inaugurated the Bogibeel Bridge in Assam. The Bogibeel

Bridge provides a connection between the Rangia-Murkongselek section of the Northeast Frontier Railway on the north bank of the Brahmaputra and the Lumding-Dibrugarh section that lies to the south of the Brahmaputra. The 4.9-km-long bridge on the Brahmaputra River boosts the connectivity in the NER. The bridge has a two-lane railway track on the lower deck and a three-lane road on the top deck. Travel time from Assam to Arunachal Pradesh has been reduced drastically.

Some of the recent railway projects which are under construction in the NER are presented in Table 11. The 45-km long Sivok (West Bengal)-Rangpo (Sikkim) new BG rail line project consisting of 14 tunnels, 17 bridges and 5 stations is 51 per cent complete, according to the Ministry of Railway, and is expected to be completed in 2023.¹¹ With completion of this BG rail line project, Sikkim will get connected to the Indian railway network, which was only NER state with no rail link previously.

Tripura has witnessed major development works in the railway sector from 2014-22. The entire railway network in Tripura was converted to a BG network in 2014-22. Belonia-Sabroom (39.12 km) railway line in Tripura has been completed which will provide easy access to Southern Tripura and Chattogram Port in Bangladesh. To

Table 11: Status of Railway Projects under Construction in NER

| Projects | Detail | State |
|--|------------------|------------------------|
| Agartala and Akhaura | Length- 15 km | Tripura |
| Belonia - Chittagong | Length- 2.9 km | Tripura |
| Pencharthal to Dharmanagar via Kailashahar | Length- 45 km | Tripura |
| Sivok-Rangpo | Length- 38.65 km | Sikkim and West Bengal |
| Bhairabi – Sairang | Length- 51.38 km | Mizoram |
| Dimapur-Kohima Broad gauge | Length- 83 km | Nagaland |

Sources: Ministry of Statistics and Programme Implementation, Government of India and several media reports.

enhance connectivity, various sections like Agartala - Udaipur, Udaipur - Garjee, Garjee - Santirbazar, Belonia - Sabroom were connected by BG lines in Tripura. During the period from 2014 to 2022, 115 km of new BG lines were commissioned in Tripura. The international railway connectivity project through Agartala-Akhaura is under progress, which is expected to reduce travel time in Agartala-Kolkata route via Dhaka to 10 hours from 31 hours. This project is one example of reviving the British era railway link for enhancing railway connectivity and providing better infrastructural services to the NER.

In the pre-independence era, the people of Belonia in Tripura used to travel to Chittagong and Dhaka via the Feni junction with the help of railways. Following partition, the people of Belonia used to travel to Agartala via this junction itself. They initially landed in Akhaura from Feni district. And from Akhaura, they used to travel to Agartala by foot. The construction of a 3 km railway line between Belonia and Feni in Chittagong, which is in its initial stage, is expected to give Tripura access to Myanmar's Sittwe port. The distance between Belonia Railway Station (India) and Belonia Railway Station (Bangladesh) is 2.75 km. The Bangladesh portion of Belonia is located 165 kms away from Dhaka. Surveys have been completed for the 45 km rail line from Pencharthal to Dharmanagar via Kailashahar and the 170 km rail line from Dharmanagar to Pencharthal, Belonia via Kamalpur - Khowai to Agartala. Once all these projects are completed, the NER economy will benefit immensely. The tourism sector will also get a big boost.

In addition, several other projects have been completed and sanctioned for better and faster connectivity of the railway system to the Northeast.¹² For example, doubling of 142 km New Bongaigaon to Agthori via Rangia; two bridges on River Brahmaputra: Saraighat Bridge and Tezpur-Silghat Bridge

and electrification of entire railway network in NER of length 2352 km are some of the projects. The doubling of the 25.05 km long Hawaipur-Lumding section of New Jalpaiguri-Lumding project has been completed, which will increase the line capacity of the trunk line.

Inland Waterways

The NER has many large and small rivers, providing facilities for water transportation. The Brahmaputra and Barak rivers commonly have been used as the medium of transport for a long time.¹³ In the country, 20 National Waterways (NWs), out of 111, are in the NER. Out of the 25 NWs found feasible for cargo and passenger movement, 3 are in Assam and 4 in West Bengal.¹⁴ It is estimated that the NER has about 1,800 km of river routes that can be used by steamers and larger country boats.¹⁵ At present, the river stretch from Sadiya to Dhubri (891 km) along the Brahmaputra River has been declared as a National Waterway 2 (NW 2) since 1988. We have an inland water terminal at Pandu (Guwahati), two warehouses, railway siding and open storage, etc. Floating terminals at Dhubri, Jogighopa, Tejpur, Silghat, Bishwanath Ghat, Neamati, Bogibil, Dibrugarh, Panbari, and Oriumghat are being maintained with a berthing pontoon and gangway. Floating terminals can be provided at other locations on an as-needed basis. Two shore cranes and five floating cranes are available for loading/unloading of cargo at the terminals.¹⁶ However, shallow draft barges can only ply along the NW 2 due to low navigability. On top of that, night navigation is not possible in some parts along this stretch. However, night navigation aids have been installed between Dhubri (Bangladesh-India border) and Silghat (440 km).¹⁷ Differential Global Positioning System (DGPS) stations were set up at Dibrugarh, Silghat, Jogighopa and Dhubri. These DGPS stations aid safe navigation using electronic charts. Initiatives

have been taken by the Government to develop Pandu Port as hub of (inland) shipping in the NER as well as encourage entrepreneurs/cargo operators to boost inland navigation (Box 1). The government is developing the Indo-Bangladesh Protocol (IBP) Route at an estimated cost of Rs.305.84 crore. Bulk cargo and container movement from Kolkata and Haldia Ports to Pandu (Guwahati) Terminal via Indo-Bangladesh Protocol (IBP) Route will save logistics cost.

The River Barak between Bhangra to Lakhipur (121 km) in Assam was also declared a National Waterway. The development of the Barak River is taken up in two phases for shipping and navigation purposes. In Phase-I, the development of the

Bhanga–Silchar (71 km) stretch with up-gradation of existing terminals at Karimganj and Badarpur is likely to be taken up soon. Dredging of the Barak River in Phase-I was commenced in November 2017. In Phase-II, the development of the Silchar–Lakhipur (50 km) stretch with the setting up of new terminals at Silchar and Lakhipur is proposed.¹⁸

Some projects that have been completed are as follows:¹⁹ (i) navigational channel with a least available depth of 2.5 m. between Bangladesh Border–Neamati, 2.0 m. between Neamati–Dibrugarh, and 1.5 m. between Dibrugarh–Sadiya/Oriumghat are maintained; (ii) a multimodal terminal at Pandu with a low-level and high-level

Box 1: Development of Pandu Port as Hub of (Inland) Shipping in North East

The Government of India has established a Multi-Modal River port at Pandu (Guwahati) which is the most important location on National Waterways (NW-2) (River Brahmaputra). A master plan was prepared for phased development of the terminal at Pandu and development was carried out accordingly. A low-level jetty at a cost of 40.02 crores was made operational in 2009. Government has also approved a project for development of NW-2 at a cost of Rs. 461 crores during 2020-21 to 2024-25 for the establishment of a ship repair facility at Pandu at a cost of Rs. 72.6 crores as it is beneficial since North Eastern Region (NER) does not have any vessel repair facility with dry docking. At present, the vessels in the NER are taken to Kolkata through Bangladesh for dry dock repair.

Initiatives have been taken by the Government to encourage entrepreneurs/cargo operators to boost inland navigation in the North East. The initiatives are as follows: (1) fairway development works on the Indo-Bangladesh Protocol Route (NW-1 and NW-2/NW-16, NW-97) for smooth navigation of vessels; (2) Ro-Ro/Ro-Pax Service Commenced in National Waterway-2 for Neamati and Kamalabari (Majuli), Guwahati and North Guwahati and Dhubri and Fakirganj (U/SHatsingimari) routes; (3) Revision of Levy & Collection of Fees for a period of 3 years; (4) Enhanced regional trade using IWT mode by adding new Ports of Call and routes in India and Bangladesh under Protocol on Inland Water Transit and Trade (PIWT&T) and allowing trade between Bhutan and Bangladesh under the supervision of Inland Waterways Authority of India (IWAI), (5) Standard Operating Procedures (SOPs) for facilitating the stakeholders to use IWT and access the various information related to NW between India and Bangladesh such as agreement on the use of Chattogram and Mongla Ports for movement of goods to and from India, MoU on Passenger and Cruise Services on the Coastal and Protocol Route, MoU on use of IWT of Bilateral Trade and Transit cargoes, SOP for the Movement of Vessels on (PIWT&T) to contain the spread of COVID19, SOP and Check List for Ro-Ro/Ro-Pax vessel operations on NW and SOP for Car-D Portal; (6) Carried out stakeholder consultations at six different locations (Kolkata, Kochi, Mumbai, Patna, Goa and Dhaka) in FY-20 and 9 conference-cum-webinars during FY-21.

Source: PIB 22 March, 2022; <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1808088>



Identified cargo movements through the IWT include coal from Meghalaya, fly ash from Farakka to various destinations in the Northeast, limestone for cement plants, petroleum products from Numaligarh refinery, bitumen from Haldia, and food grains from Kolkata to various destinations in the Northeast for the Food Corporation of India, TMT bars and steel products from West Bengal to Northeast, to mention a few.



jetty; (iii) the Ro-Ro terminal at Dhubri with RCC Ro-Ro Jetty; (iv) a floating terminal at 11 locations on NW 2 i.e. Hatsingimari, Jogighopa, Pandu, Tezpur, Silghat, Biswanathghat, Neamati, Bogibeel, Sengajan, Oakland/Dibrugarh, and Oriumghat; (v) a DGPS at Dhubri, Jogighopa, Biswanathghat, and Dibrugarh for safe navigation; (vi) Ro-Ro service for providing connectivity between the north bank (Dhubri) and south bank (Hatsingimari) of river Brahmaputra. The Ro-Ro service has created a direct link between Assam and Meghalaya, enabling trucks/vehicles to avoid a circuitous road route of approx. 220 km through Jogighopa Bridge. The Ro-Ro services between Dhubri and Hatsingimari started 7 January 2017; (vii) day navigational aids for safe shipping and navigation in entire stretches of NW 2; (viii) night navigational aids for safe shipping and navigation in Bangladesh Border–Pandu and Pandu–Silghat stretches of NW 2; (ix) river conservancy works like bandalling and dredging for maintaining navigable depth in shallow location; (x) fortnightly/monthly Thalweg Survey in entire stretches of NW 2; and (xi) regular cargo service on NW 2 is carried out by IWAI through departmental tug and a 400-tonne capacity barge (taken from IWT Assam).

Recently, running the waterways and development and maintenance work for NW 2 Brahmaputra River (Dhubri – Sadiya) and

NW 16 on Barak River has been taken up from 2020-21 to 2024-25 (Table 12). Development of NW 17 project on the Kopili River is in the appraisal stage.

The largest expected cargo movements in the NER shall arise from the ambitious power projects being implemented by various private sector companies along with the National Hydroelectric Power Corporation Ltd (NHPC), North Eastern Electric Power Corporation Ltd. (NEEPCO), and National Thermal Power Corporation (NTPC) on various tributaries of the Brahmaputra, particularly in Arunachal Pradesh. These developments are expected to generate cargo movements of about 50–100 million metric tonnes over a period of 20 years (2.5–5.0 million metric tonnes per year).²⁰ Therefore, the infrastructure requirements for the same will be enormous in size. The IWT can play the most complementary role in catering to the needs of such large requirements. Other identified cargo movements include coal from Meghalaya, fly ash from Farakka to various destinations in the Northeast, limestone for cement plants, petroleum products from Numaligarh refinery, bitumen from Haldia, and food grains from Kolkata to various destinations in the Northeast for the Food Corporation of India, TMT bars and steel products from West Bengal to Northeast, to mention a few.

Table 12: Waterways Development Projects in NER

| Projects | Detail | State |
|----------------------|-----------------------------------|-------|
| National Waterway 2 | Brahmaputra River Dhubri – Sadiya | Assam |
| National Waterway 16 | Barak River | Assam |
| National Waterway 17 | Kopili River | Assam |

Source: Ministry of Ports Shipping and Waterways, 2022

With the implementation of the India-Bangladesh coastal shipping agreement, cruise ships have been operating between India and Bangladesh. In 2020, the second addendum to the Protocol on Inland Water Transit and Trade (PIWTT) was signed in May 2020 for including two new India-Bangladesh Protocol Routes (Sonamura-Daudkandi on river Gomti and extension of Dhulia to Godagiri up to Aricha on river Padma), five new ports of call and two extended ports of call. The operationalization of the Sonamura-Daudkandi riverine in 2020 is likely to improve NER connectivity while considerably reducing travel time and expense. The operationalization of the new riverine trade route is projected to significantly boost the expanding trade across inland waterways between the two countries. Another riverine commerce route connecting Rajshahi in Bangladesh and Dhulia in West Bengal is being planned by India and Bangladesh as well. Also, a successful trial run of the transshipment of Indian commodities from Kolkata to Agartala via Chattogram was completed in July 2020, and later the trial runs through Mongla port and Ashuganj IWT were done. In January 2023, the Prime Minister of India launched the world's longest river cruise - MV Ganga Vilas, which will unlock the huge untapped potential of river cruises and herald a new age of river cruise tourism for India (Box 2).

To encourage inland waterways, some recommendations are as follows:

(i) designating the Barak River as a National Waterways, especially the 121 km from Lakhimpur to Bhanga; (ii) establishing Ro-Ro ports in Dhubri to Hatsinghmari (Phulbari), (iii) creating a ship maintenance facility at Pandu, (iv) development of the Ashuganj terminal in Bangladesh with road links and custom facilities for transit cargo to NER via the Akhaura land border, (v) linking of the Chattogram terminal in Bangladesh with road links and custom facilities for transit cargo to NER via the Sabroom land border, (vi) development of a multimodal terminal at Jogighopa, and (vii) construction of an approach road to Pandu port for heavy/container traffic.

India Energy Infrastructure

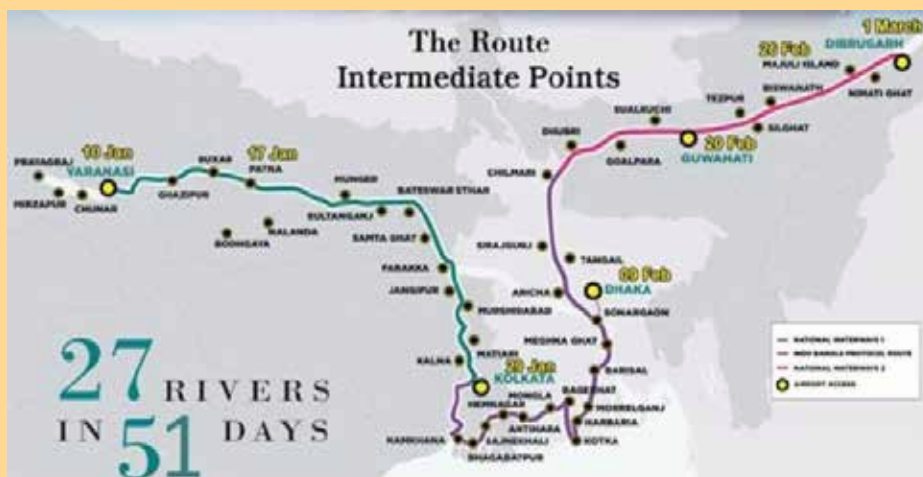
The NER has 23 per cent of India's estimated reserves of crude oil and has almost 40 per cent of the country's total hydropower potential.²¹ Additionally, the region also has abundant resource of oil and natural gas for thermal power generation. Despite huge potential, the NER ranks lowest in the country in terms of per capita energy consumption. This is mainly due to inhospitable climatic conditions, remote location and inaccessibility of geographical locations etc., ultimately leading to lesser industrialisation.²² Among the NER states, Arunachal Pradesh, Meghalaya and Tripura are energy deficient states (Table 3), whereas about 30 per cent of the electricity is imported from Bhutan and other parts of India.²³

Bangladesh economy is heavily dependent on the ports for the country's trade. However, the ports lack efficiency and adequate infrastructure facilities.

Box 2: MV Ganga Vilas Cruise

The MV Ganga Vilas Cruise is identified as the world’s longest river cruise covering a 3,200 km inland water route connecting Varanasi in Uttar Pradesh to Dibrugarh in Assam, and travels through Kolkata and Dhaka. MV Ganga Vilas will begin its journey from Varanasi in Uttar Pradesh and will reach Dibrugarh in Assam via Bangladesh in 51 days, sailing across 27 river systems in India and Bangladesh. MV Ganga Vilas has three decks, 18 suites on board with a capacity of 36 tourists, with all the luxury amenities. The first voyage was flagged off by the Prime Minister of India on 13 January 2023 consisting of 32 tourists from Switzerland signing up for the entire length of the journey. The journey will give the tourists an opportunity to embark upon an experiential voyage and indulge in the art, culture, history, and spirituality of India and Bangladesh.

This luxury cruise is curated to bring out the best of the country to be showcased to the world and travel World Heritage Sites, National Parks, River Ghats, and major cities like Patna in Bihar, Sahibganj in Jharkhand, Kolkata in West Bengal, Dhaka in Bangladesh and Guwahati in Assam. The tour also covers forty historic sites on the banks of the river Ganga which include Mahabodhi temple, Hazarduari Palace, Katra Masjid, Bodh Gaya, Chandanagar church, Char Bangla Temple and other places.



Source: PIB 20 23, <https://pib.gov.in/PressReleasePage.aspx?PRID=1890895>

Cooperation in the energy sector has become one of the hallmarks of India-Bangladesh relations. In the last decade, India and Bangladesh have made efforts to strengthen energy cooperation which include agreement between the Power Grid Corporation of India Ltd. and Power Grid Company of Bangladesh for a 400 KV line linking the Power Grid Corporation of India Ltd. and Power Grid Company of Bangladesh; Baharampur, India and Ishurdi, Bangladesh renewable energy interconnection study; at least 500 MW of imports from West Bengal

to Bangladesh; about 300 MW–500 MW of imports from Palatana project in Tripura to Bangladesh; construction of regional power-trade grids. The National Thermal Power Company (NTPC) and Bangladesh Power Development Board (BPDB) signed an MoU in 2010 to set up a 1320 MW (2x660 MW) coal-based power project (Maitree Super Thermal Power Project) in Rampal in the Sunderban area, which is implemented by Bangladesh-India Friendship Power Company Private Ltd., a 50:50 Joint Venture owned by the NTPC and BPDB. The first unit of the

Maitree Super Thermal Power Production in Bangladesh's Khulna province is already supplying 660 MW to the country's national grid.²⁴

In addition, India has also helped Bangladesh achieve its goal of 24,000 MW of installed capacity by 2021 by bringing private Indian companies on board to enter Bangladesh's power-generation, transmission, and distribution sector. Deals worth US\$ 5.5 billion were inked between BPDB and Indian companies such as Adani Power Limited and Reliance Group. Adani Power Limited invested US\$ 2.5 billion in a coal-based power plant with a capacity to generate 1,600 MW electricity. Reliance Group has signed a US\$ 3 billion deal to set up an imported Liquefied Natural Gas-based power plant in Bangladesh with a capacity to generate 3,000 MW power. The two countries also agreed to evacuate power from the NER (Rangia and Rowta) to Muzaffarnagar in India through Bangladesh through a ±800 kilovolt (kV), 7,000 MW, high-voltage direct-current (HVDC), multi-terminal, bipolar grid line with suitable power-tapping points at Barapukuria in Bangladesh.²⁵ In March 2023, India and Bangladesh launched the India-Bangladesh Friendship Pipeline (IBFP) connecting Siliguri in West Bengal and Parbatipur in Dinajpur district of Bangladesh. The IBFP is the first cross border energy pipeline between India and Bangladesh with a capacity to

transport 1 million metric ton per annum (MMTPA) of High-Speed Diesel (HSD) to Bangladesh.²⁶ The pipeline will travel 125 km across Bangladesh and 5 km in India, passing through Panchagarh, Niphamari, and Dinajpur. Assam-based Numaligarh Refinery Limited (NRL) will facilitate export of fuel via the Siliguri Marketing Terminal to Bangladesh Petroleum Corporation's Parbatipur depot in Bangladesh. This is the second cross-border energy pipeline between India and its neighbours. The operationalisation of the Friendship Pipeline will enhance ongoing energy cooperation between the two countries and will further strengthen people to people linkages between two sides.

3. Profile of Domestic Infrastructure of Bangladesh

With an area of 147,570 sq. km, Bangladesh is home to approximately 169 million people. Although the country is rapidly growing, it is yet to reap the benefits of the demographic dividend. A large number of people are also migrating from Bangladesh every year for employment abroad. Insufficient power supply and inadequate infrastructure are still a major deterrent to the country's development. The Bangladesh economy

Table 13: Bangladesh Road Network, by Area and Population, 2015

| Road Classification | No. of Roads | Total Length (km) | Road Density (km/'000 sq. km) | Road Length (km/'000 Population) | Share in Total (%) |
|---------------------|--------------|-------------------|-------------------------------|----------------------------------|--------------------|
| National Highways | 110 | 3,990.75 | 27.04 | 0.02 | 18 |
| Regional Highways | 147 | 4,897.71 | 33.19 | 0.03 | 22 |
| Zilla Road | 735 | 13,587.82 | 92.08 | 0.08 | 60 |
| Total | 992 | 22,476.28 | 152.31 | 0.13 | |

Source: Road and Highways Department, Government of Bangladesh

is heavily dependent on the ports for the country's trade. However, the ports lack efficiency and adequate infrastructure facilities. Table 13 shows the basic infrastructure and logistics indicators of Bangladesh for the year 2018-19. Bangladesh is well endowed with airports, LCSs, IWT; however, the country is yet to receive an adequate supply of power. Although the IWT is a major mode for transportation of goods and passengers, the very limited resources have been allocated for the IWT development. In what follows, both NEI and Bangladesh lack much in the form of electricity and require proper allocation of resources and investment in developing IWT logistics.

Airways

Bangladesh can be reached by air from any part of the world. It has 13 operational airports and Short Take-off and Landing (STOL) ports. These are Dhaka, Barisal, Chittagong, Comilla, Cox's Bazar, Ishurdi, Jessore, Rajshahi, Syedpur, Sylhet and Thakurgaon. Of these, Dhaka, Chittagong and Sylhet airports serve international routes. The Bangladesh Civil Aviation Authority is a public sector entity entrusted to construct, maintain and supervise airports and regulate air traffic. Air cargo and STOL services have been handed over to the private sector by the government. Several international carriers fly to and from Dhaka. For example, Biman, Bangladesh's national carrier, connects Dhaka with 27 major cities of the world: Abu Dhabi, Amsterdam, Athens, Bangkok, Bombay, Kolkata, Doha, Dubai, Jeddah, Karachi, Kathmandu, Kuala Lumpur, London, Muscat, Dhahran, Baghdad, Kuwait, Yangon, Rome, Tripoli, Tokyo, Singapore, Bahrain, Frankfurt, Ho Chi Minh City, Hong Kong, Jakarta, Sarjah, Seoul, Riyadh and Delhi. Sylhet and Chattogram airports have direct flights with several Gulf countries and India.

Roads, Highways and Bridges

In Bangladesh, the road transport infrastructure has been crucial for moving both people and cargo. The low lying topography, which necessitates a significant raised earth embankment for all types of roadways, the regular monsoon floods brought on by the phenomenon of global climate change, and the washing out of the road embankment are the emerging challenges of the sector. Bangladesh has a road network of 22,476.28 km, of which 3,990.75 km constitute National Highways (NH), 4,897.71 km constitute Regional Highways (RH)²⁷ and 13,587.82 km constitute Zilla Road (ZR)²⁸. About 60 per cent of the total road network system consists of ZR, followed by RH (22 per cent) and NH (18 per cent) (Table 14). This indicates that the ZR has better access to the road network system in Bangladesh as compared to NH and RH. Road density in terms of both 1000 sq. km. and per 1000 population are 152.31 km and 0.13 km, indicating weak accessibility and availability of roads in Bangladesh. Among the three broad categories, the NH has the lowest road density with 27.04 km, which implies that upgradation of NH networks with more lanes are needed to commensurate with higher traffic growth in the country.

Bridges and culverts are an integral part of road networks in Bangladesh in order to control the traffic and congestion in the country. There are 3584 bridges with length of 178.49 km and 14,814 culverts with length of 70.53 km in Bangladesh.²⁹ In recent years, the construction of a number of bridges such as the Bangabandhu Jamuna Bridge, Meghna Bridge, Meghna-Gumti Bridge, Bangladesh-China Friendship Bridge, Shambhuganj Bridge and Mahananda Bridge has been completed. It has further integrated the country by predicating a strategic link between the east and the west of Bangladesh, thereby generating multifaceted benefits to the

people and promoting inter-regional trade. Apart from quick movement of goods and passengers, it is facilitating transmission of electricity and natural gas and has integrated the telecommunication links. Moreover, new bridges such as 2nd Sitalakhya Bridge, 3rd Buriganga Bridge, Dapdapia Bridge, 3rd Karnafuly Bridge, Tista Bridge, etc. are being constructed to ensure uninterrupted traffic flow.

Following important construction projects are ongoing to reinforce Bangladesh's road networks.

- The construction of a 3.4 km tunnel under the river Karnaphuli is already completed, which will connect the west part of Chattogram city to the East part, reduce traffic congestion and ease direct road communication along Dhaka-Chattogram-Cox's Bazar corridor.
- Major steps have been taken to construct a 20 km long Bus Rapid Transit (BRT) lane from Gazipur to Hazrat Shah Jalal international Airport. An elevated section of 4.5 km of BRT lane is being constructed by Bangladesh Bridge Authority (BBA).
- A 7.3 km long link road in the form of large bridge and tunnel from Panchabati of Narayanganj to Muktarpur of Munshigonj is being constructed for establishing an easy transportation link between Mukterpur Bridge and Dhaka City and 4-laning of 33 km approach road on both sides of the Bangabandhu Bridge.
- A 24 km long Dhaka-Ashulia Elevated Expressway from Hazrat Shah Jalal (R) international airport to EPZ through Ashulia is being constructed with the help of China, which will connect Asian Highway Network and almost all National Highway. Moreover, it will reduce traffic congestion in Abdullahpur-Ashulia-Baipail-Chandra corridor.
- A 39.24 km long Elevated Expressway from Baliapur of Dhaka-Aricha Highway to Langolbond of Dhaka-Chattogram Road through Nimtoli-Keranigonj-Fatulla-Bandor with the help of Malaysia. This expressway will connect National Highways and Asian Highway. It will reduce traffic congestion in and around Dhaka city and traffic from Chattogram, Sylhet and other eastern parts and from the south western region through Padma Bridge to the north-western districts will be convenient.
- Bangladesh Bridge Authority (BBA) has completed a preliminary design of four routes of Dhaka Subway, aiming to complete the construction work by 2030. The four preliminary routes are the 30.51 km subway line from Gabtoli to Bholabo in Rupganj, 29.35 km long route from Jhilmil in Narayanganj to Tongi junction. The third route is 19.5 km long between Keraniganj and Sonapur in Narayanganj, and the fourth route will be 47.54 km long between Jahangirnagar University and Narayanganj. The current plan is to construct Route-1 (Tongi- Airport-Kakoli- Mohakhali- Moghbazar- Palton-Shapla Chottor-Sayedabad- Narayanganj Signboard) and Route-2 (Aminbazar-Gabtoli-Asad gate-New market-TSC- Ittefaq-Sayedabad).
- A feasibility study is underway to construct a tunnel under the river Jamuna, which may connect Gaibandha and Jamalpur district as an alternative passage along the Bangabandhu bridge.
- The Padma Multipurpose Bridge has been inaugurated. In addition to roadways, the bridge has telephone, internet, gas lines, and rail connections.

Railways

Bangladesh Railway has a total network of 2,877.10 km. Railway network is divided

Table 14: Key Railway Network Master Plan Corridors

| Corridor | Railway Network |
|-------------|---|
| Corridor 1 | Dhaka - Chattogram - Cox's Bazar-Deep Sea Port |
| Corridor 2 | Chilahati - Ishurdi - Khulna – Mongla |
| Corridor 3 | Dhaka - Bangabandhu Bridge - Darsana/Benapole |
| Corridor 4A | Dhaka - Bangabandhu Bridge - Rajshahi – Rohanpur |
| Corridor 4B | Dhaka - Bangabandhu Bridge - Ishurdi - Parbatipur-Chilahati/Birol |
| Corridor 5 | Dhaka - Sylhet/Shahbazpur |
| Corridor 6 | Dhaka - Bangabandhu Bridge- Sirajganj / Roypur (Jamtoil) - Burimari |
| Corridor 7A | Dhaka - Mawa - Bhanga - Jashore - Khulna – Mongla |
| Corridor 7B | Dhaka - Mawa - Bhanga - Jashore – Benapole |
| Corridor 7C | Dhaka - Mawa - Bhanga – Barishal |
| Corridor 7D | Dhaka - Mawa - Bhanga - Kashiani - Gopalganj - Tungipara |
| Corridor 8A | Dhaka - Mymensingh - Jamalpur - Tarakandi- Bangabandhu Bridge |
| Corridor 8B | Dhaka - Bhairab Bazar – Mymensingh |
| Corridor 9A | Dhaka - Mawa -Jajira-Rajbari-Moukuri (Mizanpur) - Bara Durgapur (Khas Char) - Pabna – Ishurai |
| Corridor 9B | Dhaka - Paturia - Douladia - Moukuri (Mizanpur) - Bara Durgapur (Khas Char) - Pabna – Ishurdi |

Source: Railway Master Plan 2019

into two regions: eastern and western. The headquarter of the eastern region is located in Chattogram with 194.70 DG track and 1113.57 MG track, whereas the headquarter of western region is located in Rajshahi with 534.67 MG track, 659.33 BG track and 374.83 DG track. Bangabandhu Bridge was constructed as DG track from Parbatipur to Ibrahimabad (east station of Jamuna Multipurpose Bridge). The bridge opened for traffic in June 1998 and in August 2003, direct train connection between Dhaka (Joydebpur) and Rajshahi was established with the first intercity passenger train.

Bangladesh Railway (BR) operates international, inter-city and suburban rail systems on its multi-gauge network. The Bangladesh Railway provides an efficient service to places of interest such as Chattogram, Sylhet, Khulna, Mymensingh, Bogra, Rajshahi, Dinajpur starting from Dhaka. It also owns coach production facilities. Rehabilitation of existing railway lines, modernization of signalling systems and acquisition of new rolling stocks to improve the performance and

to cope up with the upcoming new situation linking the network with the Trans-Asian Railway are the important challenges for the BR. Apart from these, reducing operational bottlenecks by double tracking all major railway corridors and harmonization of railway tracks by phases, institutional reform, pragmatic role in easing traffic congestion by improving commuter train service in Dhaka and Chattogram, proper use of land and other assets, introducing more Public-Private-Partnership (PPP) in railway sub-sector are important challenges in front of the BR.

At present, there is only one Inland Container Depot (ICD) at Kamalapur, Dhaka, which is connected by rail, and insufficient to carry future loads. Today, approximately 75,000 to 80,000 containers are being handled by the BR between CPA and ICD Kamalapur. Another ICD is under process of establishment at Dhirasram, north of Tongi and south of Joydebpur. It is 264 km only from Chattogram, whereas the distance of Kamalapur is 321 km from Chattogram. It is expected that Dhirasram ICD will be able to handle 500,000 TEUs per

Box 3: India-Bangladesh Train Services

Maitree Express

With the launch of the Maitree Express in 2008, the pre-partition train services between India and Bangladesh were re-established after being closed for 43 years. Maitree Express is the first modern day, fully air conditioned, international, express train service connecting Dhaka in Bangladesh to Kolkata in the Indian state of West Bengal. There are two major river crossings, the 100-year-old Hardinge Bridge over the Padma River and the Bangabandhu Bridge over the Jamuna River. The train runs 5 days a week and travels around 400 km to reach Dhaka from Kolkata. Earlier there were two stops for immigration checks in Kolkata and Dhaka. One in Gede on the Indian side and the other in Dorshona on the Bangladeshi side. Since November 2017 immigration and customs have been completed at Dhaka and Kolkata and all coaches have been changed to air conditioned LHB coaches, thus enhancing the travel experience. This has reduced travel time by two and half hours. It takes around 8 hours 50 minutes to cover the entire stretch.

Bandhan Express

In November 2017, the passenger service train, Bandhan express was launched between Kolkata and Khulna, an industrial town in Southwestern Bangladesh. The route recreates the pre-partition Barisal Express route. The train starts at Kolkata railway station on the Indian side, stopping at Dum Dum and Bangaon before reaching the Indian border at Petrapole. The train then crosses to Benapole on the Bangladeshi side, going through Jhikargachha & Jessore, before reaching Khulna railway station. New immigration systems have been put in place to speed up the process while earlier passengers would have to get off the train with their luggage at the border station, walk through Customs and immigration and board the train again. An end-to-end immigration and customs system is in place at station of origin and destination only. The immigration process is done in Kolkata and Khulna. Since its inauguration, the train run only on Thursday but in February 2020, the frequency was increased and now the train runs twice in a week (i.e., Sunday and Thursday).

Mitali Express

In March 2021, a non-stop passenger train, Mitali Express, was inaugurated, which connects Siliguri and Dhaka. The train runs between Dhaka Cantonment and New Jalpaiguri in West Bengal via Chilahati, a border railway station in Bangladesh. The distance between Dhaka and Chilahati is 453 km and from Chilahati to New Jalpaiguri is 71 km. The bi-weekly train has 10 coaches, four AC cabins, four AC chairs and two power car brake vans. It is expected to give a boost to tourism in both the countries. The train will run from New Jalpaiguri to Dhaka Cantonment on Sunday and Wednesday and Dhaka Cantonment to New Jalpaiguri on Monday and Thursday. From August 2021, India and Bangladesh have also started regular operation of freight trains through the restored Haldibari - Chilahati Rail Route. The distance between Haldibari Railway Station till the international border is 4.5 km, while that of Chilahati is around 7.5 km. till the 'zero point'. Around 20 freight trains per month are expected to be interchanged through this rail link. The link is intended to improve freight and passenger connections between Bengal and the Assam and West Bengal regions, and will aid the growth of trade and economic development in the region.

Source: Several media sources

annum. Pangaon river port / ICD is running with minimum capacity and is underutilized.

Traffic flows vary significantly across the Bangladesh rail network. Some lines are primarily used for passenger trains, while others for goods and few are heavily used

for both. Dhaka-Chattogram, Akhaura-Sylhet, Dhaka-Jamalpur Junction, Dhaka-Narayanganj, Abdulpur-Chapianowabgonj are the most heavily used lines for passenger traffic. Chattogram-Dhaka and Ishardhi-Khulna are most heavily used for freight



The IWT continues to be an important mode of transport not only in the inland movement of freight and passengers but also in the transportation of import and export items through the ports of Chattogram, Mongla, and Payra.



traffic. Special type flat wagons required for container movement were initially arranged by converting some existing wagons. Subsequently 80-bogie container flats were procured from China and another 100-bogie container flats were procured from India. An ICD has been opened at Dhaka with custom and port facilities for clearance of container traffic, and exclusive container trains were introduced.

In Bangladesh Railway Master Plan 2019, nine key railway networks have been identified, which aim to unlock the potential of the railway in Bangladesh through planned investment in track, signalling, rolling stock, maintenance and human resource and to be implemented by 2045. This long-term Railway Master Plan focuses on the infrastructure component requirements. The key corridors are listed in Table 14.

Bangladesh has three international train services with India (Box 3). Train services between Dhaka and Kolkata commenced on 14 April 2008 through the Maitree Express. Later, Bondhon Express was started between Khulna and Kolkata in 2018. In March 2021, a non-stop passenger train, Mitali Express, was inaugurated, which connects Siliguri and Dhaka.

Since 2009, Bangladesh Railway has newly constructed 330.15 km of rail lines, 91 station buildings, 295 bridges and converted 248.50 km railway tracks into dual gauge (DG) tracks. Furthermore, 1,335.23 km railway track, 644 bridges, 177 station buildings, 430 passenger coaches, 277 wagons have been rehabilitated. To address the shortage of rolling stocks, 20 MG locomotives, 26 BG locomotives, 270 passenger coaches and 20 sets Diesel-electric multiple units (DEMU), 165 BG and 81

MG tank wagons, 270 Flat wagons and 30 Brake vans were procured. After inclusion of railway tracks over the Bangabandhu Bridge, a railway link between east and west zones of the country has been established.³⁰

The Bangladesh Government, underscoring the need for railway communication, attaches topmost priority to railway amongst all the surface mode of transports in Vision 2021 document. Few of the ongoing rail construction projects are as follows:³¹ (1) Construction of the single line on the Dual Gauge track from Duhazari to Cox's Bazar via Ramu and Ramu to Gundum of Myanmar; (2) Construction of railway line from Khulna to Mongla Port; (3) Construction of DG double line (1st Amendment) in the 3rd and 4th DG line of Dhaka-Tongi section of Bangladesh Railway and Tongi-Jaydebpur sections; (4) Construction of the double railway line from Akhaura to Laksam and the conversion of existing rail lines into DG; (5) Construction of a DG rail line parallel to the existing MG rail lines in Dhaka-Narayanganj section; (6) Establishment of Padma Bridge Rail Link (1st Amendment); (7) Construction of Akhaura-Agartala DG Rail Link (Bangladesh part); (8) Renovation of Bangabandhu Sheikh Mujib Railway Bridge; (9) Conversion of MG into DG line from Parbatipur to Kownia; (10) Construction of double line railway at Khulna junction of Bangladesh Railway; (11) Railway renovation and construction including signalling for Rooppur nuclear power plant; (12) Construction of BG railway between Chilahati and Chilahati border with India; (13) Construction of new DG railway station at Bogura to memoir Shaheed M Mansur Ali; (14) Construction of double line from Joydebpur to Ishhurdi; (15) Conversion of

Table 15: Waterways Development Projects in Bangladesh

| Name of the Project | Estimated Cost (Taka in Lakhs) |
|--|--------------------------------|
| Construction of Walkway and others allied work on Evicted to the North bank of Dakatia River Shekhatia Bridge to Shuchipara Bridge at Sharasti Upazila in Chandpur District.) | 4248 |
| Modernization of three DGPS Beacon Stations including Control Station & Monitoring Station (1st revised) | 1968 |
| Capital Dredging of 53 river routes in inland waterways (1st phase: 24 River Routes) (2nd revised) | 192300 |
| Procurement of 20 Dredgers with Ancillary Equipment and Accessories (1st revised) | 208800 |
| Improvement of navigability from Mongla to Pakshi River route via Chandpur-Mawa- Gualanda | 95600 |
| Establishment of Port facilities at Nagarbari (1st revised) | 55295 |
| Construction & Instalation of dimarcation pillar, Walkway, Bank Protection, Jetty with allied work on Evicted Foreshore Land of the River Buriganga, Turag, Balu and Sitalakhya (2nd Phase) | 84855 |
| Improvement and Restoration of Navigability for Old Brahmaputra, Dharala, Tulai & Punarbhba River | 437100 |
| Procurement of 35 Dredgers with Ancillary Equipment and Accessories | 448903 |
| Construction and placement of special type terminal pontoons with allied facilities | 16271 |
| Establishment of Dhaka-Laksmipur Navigational route on Meghna (lower) River | 4988 |
| Modernization of River Port including allied facilities of Paturia and Daulatdia | 135170 |
| Bangladesh Regional Waterway Transport Project-1 (Dredging in Chittagong-Dhaka- Ashuganj IWT Corridor along with associated linked routes and construction of terminal with allied infrastructure) (1st revised) | 334942 |
| Establishment of Inland Container River Port at Ashuganj | 129300 |
| Necessary Training and Procurement of Hydraulic Engine with Spare Parts for Salvage Vessel of BIWTA | 418 |
| Establishment of River Port at Chilmary area (Romna, Jorgash, Ragibpur, Roaumary, Nayarhat) | 23559 |
| Determination of Standard High Water Level (SHWL), Standard Low Water Level (SLWL) and Re-Classification of Inland Waterways in Bangladesh | 1891 |

Source: Bangladesh Inland Waterways Transport Authority (BIWTA)

the MG railway line of the Akhaura-Sylhet segment into DG; and (16) Construction of high-speed train line between Dhaka and Chattogram.

It is important to note that existing railway network in Bangladesh is not suitable for handling the traffic requirements of the country. Moreover, emphasis on the road sector is not sustainable for a land scarce country like Bangladesh in the long run. Rail

can play a supportive role in building a high capacity, efficient and environmentally sound transport system in Bangladesh.

Inland Waterways

Bangladesh being a country with many rivers. Inland Water Transport (IWT) is a major mode for the transport of goods and people. The IWT continues to be an

“ Siltation in Karnaphuli river in Chattogram has forced the Bangladesh to build a new port further downstream. The 18-meter-deep port under construction at Matarbari will play a catalytic role in reducing the cost of importing and exporting of goods. ”

important mode of transport not only in the inland movement of freight and passengers but also in the transportation of import and export items through the ports of Chattogram, Mongla, and Payra. IWT is also the cheapest mode of transport, compared to road or rail. Considering the facts of land-man ratio and scarcity of land for further expansion of road networks in the country, IWT sub-sector has given the utmost importance specially dredging various river routes for making them navigable round the year. There are 11 major IWT ports (Dhaka, Chandpur, Barishal, Khulna, Baghabari, Narayanganj, Bhairab Bazar, Ashuganj, Chattogram, Mongla, and Payra), 23 coastal island ports, 133 launch stations and more than 1,000 minor landing points located in Bangladesh. The total length of rivers in Bangladesh is estimated to be in the range of some 24,000 km, providing a very high degree of penetration. Out of this total, 6,000 km are accessible for movement of modern mechanized vessels during the monsoon season, and out of this, some 3,800 km are navigable throughout the year. Bangladesh Inland Water Transport Corporation (BIWTC) is an apex body under the Ministry of Shipping. In addition, Bangladesh Inland Water Transport Authority (BIWTA) manages development, maintenance and control of inland water transport and of certain inland navigable waterways. The BIWTA has taken up several development activities for modernization and port facilitation (Table 15).

Pangaon International Container Terminal is an inland river port on the bank of River Buriganga in Dhaka. In February 2017, the first Indian ship from Kolkata docked at the Pangaon International Container Terminal

and inland river port. In July 2017, China and Bangladesh signed an agreement to allow vessels to travel to the port. One of the most important industrial ports of the Bengal delta, the Port of Ashuganj is a notable river port in eastern Bangladesh. The port is a regional transshipment centre in eastern South Asia. It is located 28 km from Brahmanbaria town and 43 km from the Akhaura land border between Bangladesh and India. Ashuganj port acts as a port of call for cargo shipments to the nearby Indian state of Tripura. Cargo unloaded in Ashuganj port is transported by road to the Akhaura-Agartala land border and vice versa. The transshipment route allows access for several Indian states, including Mizoram, Manipur, Nagaland and Assam. The coastal shipping for containers is developed mainly for imports from Chattogram Port (NCT) to the river ports located near to Dhaka.

India and Bangladesh are reviving centuries-old inland waterways that once moved goods and people throughout both countries as well as into Bhutan and Nepal. In order to improve/increase the trade and tourism of between India and Bangladesh, a Protocol to facilitate the use of international waterways was signed in 2015, which outlined 8 routes for operators. Operators are interested to use Kolkata-Haldia-Raimongal-Chalna-Khulna-Mongla-Kawkhali-Barishal-Hizla-Chandpur-Narayanganj-Aricha-Sirajganj-Bahadurabad-Chilmari-Dhubri-Pandu-Shilghat (Assam) route, stretching 1,535 km. An IWT container terminal is already in operation at Pangaon, with a design capacity of handling 116,000, containers (TEUs). This river port has encouraged containers movements between Kolkata and Dhaka, and Chattogram and Dhaka without much technical difficulties. There are no inter-country passengers’

movements by the IWT. However, these routes are highly underutilized, partly due to rapid siltation, lack of sufficient navigational aids, and partly due to limited number of ports of call (4 ports on either side).

The Bangladesh government is building a Deep Sea Port (DSP) at Matarbari with Japanese assistance, which is one of the ongoing mega projects. The DSP at Matarbari is being constructed in the Dhalghat area of Maheshkhali upazila of Chattogram Division of Cox's Bazar District of Bangladesh. The Chittagong Port Authority (CPA) is one of the development (equity) partners. The objective of the Project is to strengthen the port logistics capacity of Bangladesh by constructing a DSP at Matarbari area, thereby contributing to acceleration of logistics with neighboring countries. Besides, siltation in Karnaphuli river in Chattogram has forced the Bangladesh to build a new port further downstream. The 18-meter-deep port under construction at Matarbari will play an essential role in reducing the cost of importing and exporting of goods.

Bangladesh Energy Infrastructure

With the growing pace of development in Bangladesh, the demand for energy is also increasing rapidly. The total power generation capacity of the country, including captive and renewable energy, has recently increased to 25,566 MW.³² A large part of the demand is being met mainly by natural gas. A total of 28 gas fields have been discovered in Bangladesh, of which 20 are in operation. Gas production in Bangladesh has increased from 1,788 million cubic feet in 2009 to 2,525 million cubic feet in 2022.³³ Besides, 600-753 million cubic feet of to meet the increasing demand for gas, 600-753 million cubic feet liquefied natural gas is being imported and added to the national grid daily.³⁴ To meet the growing energy demand, 34 power

plants with a capacity of 13,530 MW are under construction.³⁵

Given the availability of land, energy transportation facilities and load centres, Bangladesh has been implementing several mega projects at Payra, Maheshkhali and Matarbari and aims to transform the region as a power hub. Among them, the Payra Coal Power Plant built in Kalapara Upazila of Patuakhali District is the largest power plant in Bangladesh with commercial production of 1,320 MW thermal power. It is a joint venture between the North-West Power Generation Company Bangladesh Limited (NWPGL) and China National Machinery Import and Export Corporation (CMC). The construction of 1,320 MW coal-based Maitri Super Thermal Project at Rampal and Matarbari 1,200 MW ultra-super critical coal project with Japanese assistance in Maheshkhali Upazila of Cox's Bazar District are running in full swing. The 2,400 MW nuclear power plant project is under implementation at Rooppur with Russian assistance. It is expected to generate around 15 per cent of the country's electricity once completed.

Bangladesh is also emphasizing on the development of transmission system to ensure uninterrupted power supply. The Payra-Gopalganj 400 KV double circuit transmission line and Gopalganj-Rampal 400 KV transmission line have already been commissioned. In addition, Mongla-Khulna 230 KV transmission line has been constructed. 6 transmission lines of 400 KV and 230 KV voltage are being constructed for power evacuation of Rooppur nuclear power plant. The foundation work of the Padma River crossing section of Gopalganj-Aminbazar 400 KV transmission line is going on, which is 7.5 km long with 7 towers.³⁶

Bangladesh is also developing its capacity in renewable energy. Around 780 MW of

electricity is being generated from renewable energy sources and has the potential to produce more from solar, wind, hydro, and other forms of renewable.³⁷ Power generation from solar power generation is being emphasized with a view to generating 10 per cent of country's total demand from renewable energy. Besides, Bangladesh is working with Bhutan and Nepal to import hydro-powered electricity to Bangladesh. With the implementation of these projects, it will be possible to ensure quality electricity supply to all in the future.

4. Conclusions

Infrastructure bottlenecks are among the largest inhibitors of economic growth in NER and Bangladesh. Difficult terrain and inadequate infrastructure, inadequate power supply, road and rail population density in most of the NER states and inadequate IWT connectivity have been deterring economic development and integration of the region with neighboring countries particularly Bangladesh. Similarly, challenges of land scarcity, population density, inadequate power supply, siltation of rivers in Bangladesh have been hampering the economic development and potential of becoming a transport and transshipment center in the sub-region. Predicating road, rail, air, IWT linkages and reviving the existing ones between India's NER and Bangladesh will prove to be a win-win situation for both countries.

In recent years, several infrastructure development initiatives have been implemented by India in linking the NER with its neighbouring countries particularly, Bangladesh. Maitri Setu has been built over the Feni River. Improvement in road connectivity in Meghalaya's Dawki and southern Assam's Sutarkandi; Tripura's Akhaura linking eastern and south-eastern Bangladesh, Agartala-Akhaura railway line, Belonia and Feni,

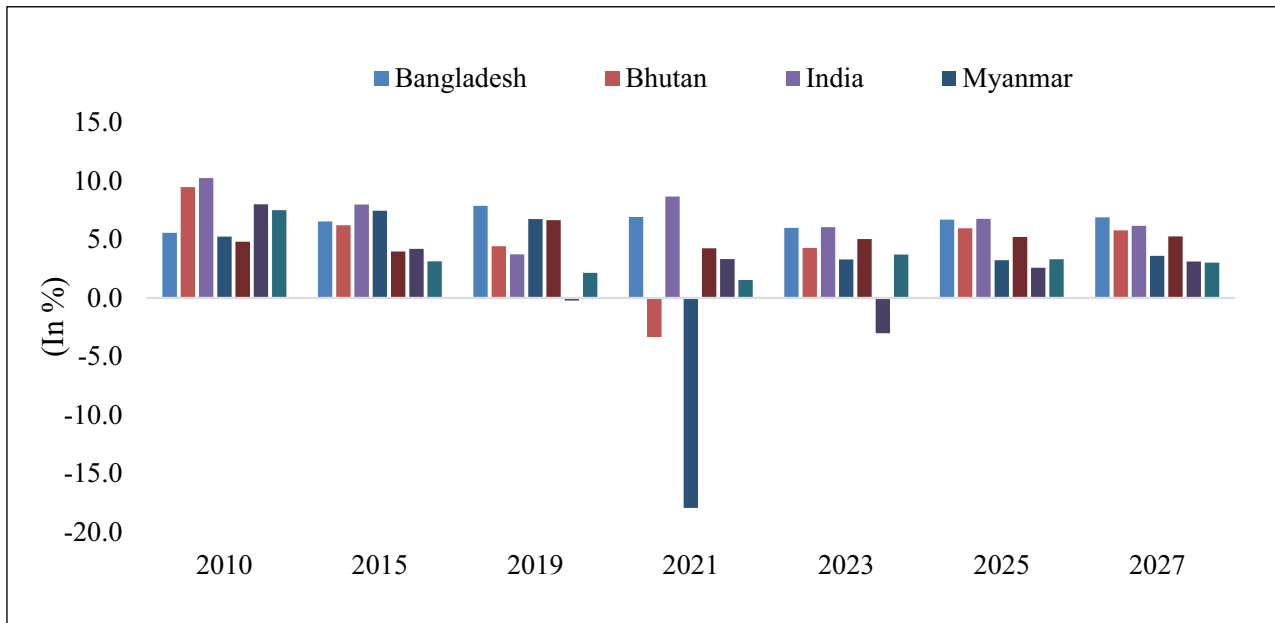
Chittagong railway line; Sabroom multi-modal transit hub are some of the noteworthy infrastructure development projects. The Sivok (West Bengal)-Rangpo (Sikkim) new BG rail line is a nontrivial development for connecting Sikkim with the rest of India through rail routes. Railway line is expected to reach Manipur's capital by the middle of this ongoing decade.

In the last decade, several infrastructure projects have been initiated in Bangladesh, which are expected to benefit Bangladesh not just in the economic development but in terms of trade, road, rail, IWT and port services as well. Integrating the transport network of Bangladesh with NER and other South Asian countries such as Bhutan and Nepal would help in ending their semi-isolated status. With the opening of the Bhangabandhu Bridge over the Jamuna River and the Padma multipurpose Bridge, the Dhaka-Chatto gram transport corridor and other strategic transport corridors can facilitate trade between Bangladesh and the NER of India and West Bengal, thereby attracting more foreign and domestic traffic to the country.

Moreover, developing port infrastructure in Bangladesh is imperative as the economic development is taking place widely day by day, and export, import and cargo handling in the seaports are increasing rapidly. Given the sea port's proximity to India's NER, the Matarabari-NER connectivity will be a game changer as the port facility has the potential to significantly boost economic activities in NER, providing close access to global shipping lanes. Within such a framework, NER will benefit from the improved access to the ports and important economic centers of the region, and a choice of routes and modes. However, there is a need to look at the finer details of the infrastructure projects, such as the project designs, their qualities, the priorities and social goals to make them cost-effective and sustainable.

Appendix

Appendix Figure 1: GDP Growth Forecast of BIMSTEC Countries



Source: IMF, World Economic Outlook (WEO)

Appendix Table 1: India-Bangladesh Border Posts and Railway Interchange

| Border Posts and Railway Interchange | |
|---|--|
| Land Custom Stations | Chitpur Railway Station and Dhaniaghat River Station |
| | Mahisasan Railway Station |
| | Sutarkandi |
| | Changrabandha |
| | Gitaldah road |
| | Haldibari Railway Station |
| | Hassimara Railway Station |
| | Phulbari |
| | Baghmara |
| | Dalu |
| | Ghasuapara |
| | Mahendraganj |
| | Golakganj |
| | Dawki |
| | Balat |
| | Shella Bazar |
| | Kotawalighat |
| | Singabad Railway Malda-Singabad-Amhura |
| | Gede Railway Station |
| | Ranaghat Railway Station |
| | Budge Budge |
| | Ghojadanga |
| | Petrapole |
| | Katihar Railway Station |
| | Dhalaighat |
| | Manu (Kailasahar) |
| | Old Raghna Bazar |
| | Muhurighat |
| | Howaighat |
| | Hilli (West) |
| | Radhikapur Railway Station |
| | Kalaichar |
| | Srinagar |
| Kamalasagar | |
| Raiganj Railway Station | |
| Hemnagar | |
| Integrated Check Post | Agartala |
| | Petrapole |
| | Sutarkandi |
| | Srimantapur |
| Railway Interchange | Haldibari-Chilahati |
| | Petrapole-Benapole |
| | Gede-Darshana |
| | Singhabad-Rohanpur |
| | Radhikapur-Birol |

Endnotes

1. West Bengal shares international borders with Bangladesh, Bhutan and Nepal. Its locational advantage makes the state a traditional market for eastern India, the NER, Nepal and Bhutan. It is also a strategic entry point for markets in Southeast Asia. It offers excellent connectivity to the rest of India in terms of railways, roadways, ports and airports.
2. See, for example, Sarma and Bezbaruah (2009).
3. See, for example, De (2011), Brunner (2010), RIS (2012a), and De and Kunaka (2019), to mention a few.
4. “An Indian bridge to boost neighbourhood trade”, <https://assamtribune.com/an-indian-bridge-to-boost-neighbourhood-trade>, accessed 24 February 2023.
5. See, for example, NITI Aayog (2018).
6. While population refers to the year 2011, area refers to the latest year, sourced from the Census of India.
7. Refer PIB (2021), <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1781649>
8. Refer, NEC (2020); https://necouncil.gov.in/sites/default/files/about-us/e_book1.pdf
9. NF Railway was carved out of the North Eastern Railway with headquarters at Maligaon, Guwahati.
10. This has also faced severe opposition from the influential Khasi Students’ Union, which has demanded a discussion with civil society groups and putting in place a ‘comprehensive and an effective’ mechanism to check influx of illegal immigrants before allowing work on the railway projects. In fact, there are also land-acquisition issues.
11. Refer, <https://swarajyamag.com/news-headlines/sikkim-rail-connectivity-progresses-rapidly-as-sivok-rangpo-line-reaches-halfway-mark>
12. Refer, NEC (2020); https://necouncil.gov.in/sites/default/files/about-us/e_book1.pdf
13. With the growth of the tea industry, these rivers became important carriers of trade. The East India Company started the water route along the Brahmaputra River from Kolkata to Dibrugarh in 1844, and steamships were introduced by the Joint Steamer Company in 1847. At about the same time, Silchar was linked with Kolkata along the Barak-Surma-Meghna navigation channel. However, with the partition of India in 1947, water transport in the NER faced slow progress.
14. For details refer, <https://pib.gov.in/PressReleasePage.aspx?PRID=1795504#:~:text=TO%20promote%20Inland%20Water%20Transport,from%2012th%20April%2C%202016>.
15. MDoNER
16. Refer, <http://iwai.gov.in/nationalwaterways/national-waterways-2-terminals>
17. Day navigation aids have been installed on the entire waterway from Dhubri to Sadiya/Oriumghat (891 km).
18. Refer PIB, <https://pib.gov.in/PressReleasePage.aspx?PRID=1523779>
19. PIB’s notification dated 26 July 2018.
20. MDoNER
21. NEEPCO (2022), <https://neepco.co.in/power-generation/power-potential>
22. NEEPCO (2022), <https://neepco.co.in/power-generation/power-potential>
23. Anbumozhi et al. (2019)
24. For details, Refer, <https://www.dhakatribune.com/nation/2023/01/15/coal-shortage-production-at-rampal-power-plant-halted>
25. Anbumozhi et al. (2019)
26. PIB (2023), <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1908377>
21. Regional Highways connect different regions and new district headquarters not connected by National Highways and Zilla Roads.
22. Zilla Roads are defined as Roads connecting Upazila head quarters and other important rural centres with the existing Road network.
23. For details refer, https://www.rhd.gov.bd/OnlineRoadNetwork/default_bridge.asp
24. Railways Master Plan 2019
25. Refer Bangladesh Website for details, [https://railway.portal.gov.bd/sites/default/files/files/railway.portal.gov.bd/project/da70a2a6_962b_462d_909f_2fe8f0e620ea/7.%20January-2023%20\(2\).pdf](https://railway.portal.gov.bd/sites/default/files/files/railway.portal.gov.bd/project/da70a2a6_962b_462d_909f_2fe8f0e620ea/7.%20January-2023%20(2).pdf)
32. Ministry of Finance, Bangladesh (2022-23)
33. Ministry of Finance, Bangladesh (2022-23)
34. Ministry of Finance, Bangladesh (2022-23)
35. Ministry of Finance, Bangladesh (2022-23)
36. Ministry of Finance, Bangladesh (2022-23)
37. Ministry of Finance, Bangladesh (2022-23)