



**GOVERNMENT OF INDIA
PLANNING COMMISSION
NATIONAL TRANSPORT DEVELOPMENT POLICY COMMITTEE (NTDPC)**

REPORT

OF

**THE WORKING GROUP ON IMPROVEMENT AND
DEVELOPMENT OF TRANSPORT INFRASTRUCTURE IN
THE NORTH EAST FOR THE NATIONAL TRANSPORT
DEVELOPMENT POLICY COMMITTEE**

June, 2012

To

Dr. Rakesh Mohan,
Chairperson,
National Transport Development Policy Committee,
6th Floor, Capital Court,
Olof Palme Marg,
New Delhi-110067

Subject: Submission of Final Report of the Working Group on Improvement and Development of Transport Infrastructure in the North East - NTDP.

Dear *Dr. Rakesh Mohan,*

On 8th August, 2011, you had constituted a Working Group to suggest ways and means to improve transport infrastructure in the North Eastern Region. The Working Group held detailed discussions with various stakeholders on five occasions and held Stakeholders Workshop at Guwahati on 29th November, 2011 which was enthusiastically attended by various groups of the region. Many ideas were thrown up in such discussions and the unique workshop, which have been suitably incorporated in our Report. I hope this Final Report helps you in framing the National Transport Policy especially taking into account the needs of the North Eastern Region which has never been tried earlier.

I must also place on record the excellent help and support that I got from the Ministry of DONER especially the erstwhile Secretary, Mrs. Jayati Chandra, Ms. Jayashree Mukherjee, Joint Secretary and Mr. Umakant, Director of DONER. I also got excellent support from the Office of Mr. B.N. Puri, especially Ms. Shruti who worked on the financial analysis of our proposal for the civil aviation sector.

Lastly, I must place on record the hard work put in by Ms. Jayashree Mukherjee in preparing the Report by working as Convenor of the Group and organizing the Stakeholders Workshop at Guwahati in November, 2011 which was a resounding success.

I am also thankful to Shri Naveen Bagotra, Private Secretary, M/o DONER who has toiled to type and design the report into its final shape.

with kind regards,

Yours faithfully,



(Vivek Sahai)

Chairman of Working Group on NER &
ex Chairman, Railway Board

14.6.2012

COMPOSITION OF THE WORKING GROUP

1	Shri Vivek Sahai, Former Chairman, Railway Board	Chairman
2	Shri B.N. Puri, Member Secretary, NTDPC	Member
3	Chairman Inland Waterways Authority of India (IWA) or her representative	Member
4	Director General, Roads, Ministry of Road Transport & Highways	Member
5	Director General, Border Roads Organisation (BRO)	Member
6	Shri Rohit Nandan, Joint Secretary, Ministry of Civil Aviation	Member
7	Joint Secretary (BSM), Ministry of External Affairs	Member
8	Executive Director (Projects), Railway Board	Member
9	Prof. Mahendra P. Lama, Vice Chancellor, University of Sikkim	Member
10	Representative of North East Council (NEC)	Member
11	Representative of Planning Commission, Transport Division	Member
12	Representative of Customs & Excise Board	Member
13	Representative of Asian Institute of Transport Development (AITD)	Member
14	Ms. Jayashree Mukherjee, Joint Secretary, DONER	Convenor

TERMS OF REFERENCE

- 1) To assess the Transport Infrastructure Deficit in the North East Region.
- 2) To assess the role of each mode of transport for improving the accessibility and mobility of both people and goods.
- 3) To make recommendations for provision of transport infrastructure and facilities keeping in view:
 - a. the role of each mode of transport
 - b. the requirement of traffic demand, particularly, that relating to movement of essential commodities
 - c. need to ensure balance between the ability of transport to serve economic development of the region and to conserve energy, protect environment, promote safety and sustain good quality of life.
 - d. need to adopt and evolve suitable technology for cost effective creation, economical maintenance and efficient utilisation of transport assets.
- 4) To assess transport infrastructure, requirement of providing connectivity with the neighbouring countries with a view to enabling trade between North Eastern Region and neighbouring countries.
- 5) To assess the investment requirement of Transport sector and to recommend measures to fund the projected investment.
- 6) To suggest measures to improve the capacity to evolve and implement projects in North East.

TABLE OF CONTENTS

I.	EXECUTIVE SUMMARY	1
II.	INTRODUCTION.....	5
III.	TERMS OF REFERENCE FOR THE WORKING GROUP ON NORTHEAST	8
IV.	OVERVIEW OF TRANSPORT SYSTEM.....	9
	4.1 Railways	9
	4.2 Roads.....	11
	4.3 Water Transport.....	12
	4.4 Airways.....	15
V.	IMPORTANT ISSUES AND STRATEGIES FOR TRANSPORT INFRASTRUCTURE IN NORTH EASTERN REGION	17
VI.	OVERARCHING TRANSPORTATION ISSUES	18
VII.	SECTORAL ISSUES	23
	7.1 Roads.....	23
	7.2 Air Connectivity.....	45
	7.3 Railways	62
	7.4 Inland Water Transport	86
VIII.	PROJECTED REQUIREMENT OF FUNDS	96

I. EXECUTIVE SUMMARY

1.1 It is for the first time that while formulating National Transport Policy, a separate attention has been paid to the transport needs of the North Eastern Region. The Working Group decided to look at the situation under three categories:

- (i) Intra-Regional Need
- (ii) Inter-Regional Need
- (iii) Trans Border Movement

1.2 The Working Group also examined the needs for various possible sectors viz. Road, Rail, Civil Aviation and Inland Water Transport to arrive at a holistic picture.

1.3 In a nutshell, our recommendations are as under:

1.3.1 Roads

- (i) Roads are going to be the mainstay for bringing transformational changes in infrastructure of the region.
- (ii) It is necessary to form a separate body under the aegis of M/o DONER to monitor the construction activities in the sector.
- (iii) It is imperative to have a GIS mapping of roads in this region for which MORTH should provide funds to the State and undertake the responsibility without any delay.
- (iv) There is a need for changing the technology being used for construction of roads to improve their longevity.
- (v) There is a need to have training institutions to develop skills in the local population for good maintenance of roads constructed both with the present technology and the superior technology whenever adopted.
- (vi) There is a need for foot suspension bridges in abundance.

- (vii) While four laning of many routes has been recommended and lot of them have already been sanctioned, the Working Group feels that it would be prudent to have the additional two lane constructed on the other side of the hill so that in case of landslides, the whole route does not get blocked/suspended. It may also help in meeting the environmental considerations.

1.3.2 Rail

- (i) New railway lines – one connecting the Sittwe Port in Myanmar to Tirap district in Arunachal Pradesh across Mizoram, Manipur and Nagaland and another line connecting Dhubri to Silchar via Meghalaya is considered essential to improve transportation in the region.
- (ii) The railway has now extensive know-how of tunnel construction with their experience of constructing tunnels in Konkan Railway Region and J&K projects. They may revise their alignments, wherever possible, to take the stations closer to the inhabited areas and also reduce distances by making prudent use of tunnels.

1.3.3 Civil Aviation

- (i) Civil aviation holds the key to not only linking the region to the rest of India but also catalysing trade and commerce with the neighbouring countries.
- (ii) It would be financially desirable to make a model for bringing in PPP as suggested in the report to develop a viable civil aviation network in the region.
- (iii) It is felt that bringing in private operators may change the scenario so much that cheap air travel may become possible through induction of smaller aircrafts with better technology for which a onetime capital cost may be met by the Government and the private operators may be asked to operate the services without any dependence from subsidy for day-to-day operations.
- (iv) In keeping with the geographical contours of the region and the thin spread of population, we are of the view that a hub and spoke model with hubs at Guwahati, Imphal and Agartala should be developed for the region.
- (v) DONER should catalyse development of meteorological forecasting network in the region to make civil aviation

predictable and safe. The necessary investments for that may be provided by the Government through DONER.

- (vi) Development of skill in the local population not only for operations of aircrafts but also for maintenance need to be developed. This can be done by bringing in an institute not only for developing aeronautical engineers but also for subordinate maintenance staff. This would facilitate night halt of aircrafts at various locations and provide connections in early morning so that local population may be in a position to reach Kolkata/Delhi/Mumbai in the morning hours to attend meetings and return in the evening.
- (vii) There is a vast network of airports in the region due to the war effort during II World War but many of them are lying dormant. The report has suggested that a few of these airports should be made operative within a time frame for civilian use to provide better connectivity not only for men but also for cargo.
- (viii) With the above suggestion, it would be possible to provide connectivity for horticulture/floriculture/aquaculture common in the region.

1.3.4 Inland Waterways

- (i) A large paraphernalia already exists for inland water transport in the river Brahmaputra. Proper usage of this capital is necessary, which can be achieved by entering into a long time treaty with Bangladesh Government to provide access from West Bengal through Assam to their river system. This can be possible if the Indo-Bangladesh Protocol on Inland Water Transit & Trade is extended for at least 10 years at a time to attract investment.
- (ii) Maintenance of barges and other supporting equipment must be developed near Guwahati without any further delay. This would make the barges available for the longer duration for transportation.
- (iii) Inland water transport should be utilised for movement of over dimensional consignments to avoid congestion on roads especially in the Chicken's Neck are of the corridor between North Bengal area and Assam.

- (iv) Barak River should be utilised for inland water transport in the North Eastern Region and also connecting it to Bangladesh by taking up this project as a National Project on similar lines as has been done for river Brahmaputra.
- (v) The optimal use of the waterways in the North East requires investment in vessels and their regular operations. Apart from the policy regime of an extended period of the Indo-Bangladesh Protocol, an agency either in the public sector or with introduction of private players has to be found.
- (vi) Infusion of PPP in inland water transport.

1.3.5 Development of multi-modal hubs

- (i) The geography and demography of the region is spread in such a manner in the North Eastern Region that the committee feels that development of multi-modal hubs at two stations will facilitate smooth transportation in the region in times of calamity as well as insurgency. These hubs have to be developed at following stations:

1. Dhubri
2. Badarpur

At both stations, it is possible to have connectivity from rail, road, inland water transport as well as civil aviation. These multi-modal hubs can be later on given to private players for operation or may be run by a corporation developed for this specific requirement.

1.3.6 Other salient issues

- (i) It was considered necessary by the Committee that the development of transport in North Eastern Region should be ahead of the transportation links to be developed with the neighbouring countries so that the North Eastern Region can exploit fully the connectivity with neighbouring countries by way of enhanced trade & commercial activities.

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II. INTRODUCTION

Asset Potential and Growth Mismatch

- 2.1 India's North East consists of eight states – Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura – occupying 2,62,179 sq. Km. and with a population of 4.56 crore as per 2011 Census. That is comparable to the area of Andhra Pradesh (2,75,069 sq.km) and the population of Orissa (4.19 crore).
- 2.2 The region is rich in natural resources, especially forests and water. The potential for development is immense. However, in spite of some progress in a few of the North Eastern states, overall growth rates over the past years have remained low. There are still a number of areas subject to continued violence and there is plethora of reports documenting natural resource degradation, depleting the very assets that carry the greatest potential for growth and development. In recent years, the region has missed out on the economic growth acceleration witnessed most parts of India. The region's agriculture sector has poor productivity. Diversification into services and manufacturing has been inadequate.
- 2.3 The road network is inadequate and quality of roads in the region is extremely poor. The total railway track length in the entire region is 2,592 km, with broad-gauge track confined to Assam only. Inland waterways in the Brahmaputra and smaller rivers, such as the Kaladan in Mizoram and Barak in Assam, have become virtually non-functional after the Partition.

1947 and 1965

- 2.4 Prior to 1947, the region formed an economic unit with East Pakistan/Bangladesh. The severance of East Bengal with the partition broke that economic integrity placing hurdles on future economic progress. It had isolated the region, sealed both land and sea routes for commerce and trade, and severed access to traditional markets and the gateway to the East and South-East Asia – the Chittagong port in East Bengal (now Bangladesh).
- 2.5 The Partition distanced the North Eastern Region to the rest of India by restricting connectivity to the narrow 27-km-wide Siliguri corridor, making the region a 'remote land' with 96 per cent of the boundary of the region forming international borders. The uneasy relationship with most of the neighbouring countries has not helped the cause of development of the region either.

- 2.6 After the 1965 Indo-Pak war, communication links were completely broken. With the emergence of Bangladesh, the threads were picked up again.

Chicken's Neck

- 2.7 The Western part of the region is connected to the Eastern part of the country through the Siliguri Land Corridor (Chicken's Neck), which has an approximate width of 33 kilometers on the eastern end and 21 kilometers on the western end. Any transport planning for the region will have to design an optimum use for this land mass.

Perspective Transport Planning

- 2.8 The objective of the North Eastern Region Vision 2020 is to enable the North Eastern States to reach the same level of economic growth and provide opportunities to its people as of the rest of the country. Transport planning for NER has to support the projected growth rates for the region. In addition, transport infrastructure has to also account for other variables which are not applicable to the rest of the country.
- 2.9 These are :
- 2.9.1 Security and strategic interest of the country as the NER is bound by international boundaries.
 - 2.9.2 Certain parts of the region continue to suffer from endemic violence, extortion, drug trade, etc. Bandhs, blockades are common. They affect economic activity. Transport infrastructure has to provide redundancies to account for such incidences.
 - 2.9.3 The infrastructure has also to take care of the typical topographical problems faced in NER such as landslides, seismic vulnerability. As some of the smaller hilly state have only one National Highway and inadequate railway connectivity, transport plans have to provide alternate connectivity so that if the existing route is blocked due to any natural disaster, other options are available.

- 2.9.4 The region being bound by international neighbours, connectivity to the neighbouring countries through land and water routes have to be created for exchange of trade, tourism and services.
- 2.10 The objective of the Transportation Development Strategy for the North Eastern Region is to promote and support the balanced and equitable economic development of the region.
- 2.11 The challenge of infrastructure creation in NER is to (a) complete the provision of infrastructure by 2025, (b) create institutional and functional mechanisms to sustain and maintain the infrastructure and (c) create policy regime for free movements of goods & people - within the region, from the region to rest of India and from the region to the international neighbours. We believe that the report will throw up ideas that will challenge policy maker to address transport issues from new paradigms in some respects. The report of the Working Group has been made keeping in view these factors.

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III. TERMS OF REFERENCE FOR THE WORKING GROUP ON NORTHEAST

- 3.1 By keeping in view the special need of the North Eastern Region, it has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Improvement and Development of Transport Infrastructure in the Northeast. The outline of the Working Group activities are as follows:
- 3.1.1 To recommend on processes, institutional set-ups required to respond to the changing dynamics of connectivity in the North Eastern Region.
 - 3.1.2 To assess connectivity for the region with a multi-modal perspective combining roads, railways, inland water transport and civil aviation. The time horizon for assessing the connectivity requirements shall be upto 2020 for medium term requirements. However, the next phase of consolidation shall be upto 2030.
 - 3.1.3 To suggest requirement of connectivity from the following perspectives:
 - (i) Connectivity within the North Eastern Region.
 - (ii) Connectivity with the rest of India.
 - (iii) Connectivity with immediate international neighbours and beyond for promotion of trade and commerce.
 - 3.1.4 To assess the investment requirement of Transport Sector and to recommend measures including alternative financing mechanisms to fund the projected investments.
 - 3.1.5 To suggest measures to improve the capacity to evolve and implement projects in Northeast.

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IV. OVERVIEW OF TRANSPORT SYSTEM

The North Eastern Region of India has international borders with China in the North, Myanmar in the East, Bangladesh in the Southwest and Bhutan in the Northwest. The Western part of the region is connected to the Eastern part of the country through the Siliguri Land Corridor (Chicken's Neck), which has an approximate width of 33 kilometers on the eastern end and 21 kilometers on the western end.

4.1 RAILWAYS

- 4.1.1 The presence of railways in the North Eastern Region is more than 125 years old when the first passenger railway system came into being in 1881 between Dibrugarh and Sadiya. Since then, the railway system in the region has grown considerably. In 1958, a new railway zone, viz. Northeast Frontier Railway was carved out of the North Eastern Railway with headquarters at Maligaon, Guwahati. There are presently five divisions which serve these eight North Eastern states, viz. Katihar, Alipurduar, Rangia, Lumding and Tinsukia. Today NF Railway directly or indirectly serves all the eight North Eastern states besides West Bengal and Bihar.
- 4.1.2 NF Railway has become the lifeline of the North Eastern region transporting essential goods all over the region. It moves coal and petroleum products from the region to rest of India. NF Railway also serves as a rail head for the landlocked Himalayan countries of Nepal and Bhutan and provides interchange facilities with Bangladesh.
- 4.1.3 The present rail network in the North Eastern Region comprises of about around 2602.35 route kms (as on 31.3.2011) out of which 1454.16 kms on the broad gauge and the remaining 1148.19 kms on the metre gauge. The state-wise distribution of the network is given in Table 3.1.

Table 4.1: State-wise Rail Network in the Region

(As on 31.03.2011)

State	BG	MG	Total Km
Arunachal Pradesh		1.26	1.26
Assam	1443.03	990.96	2433.99
Tripura	0	151.40	151.40

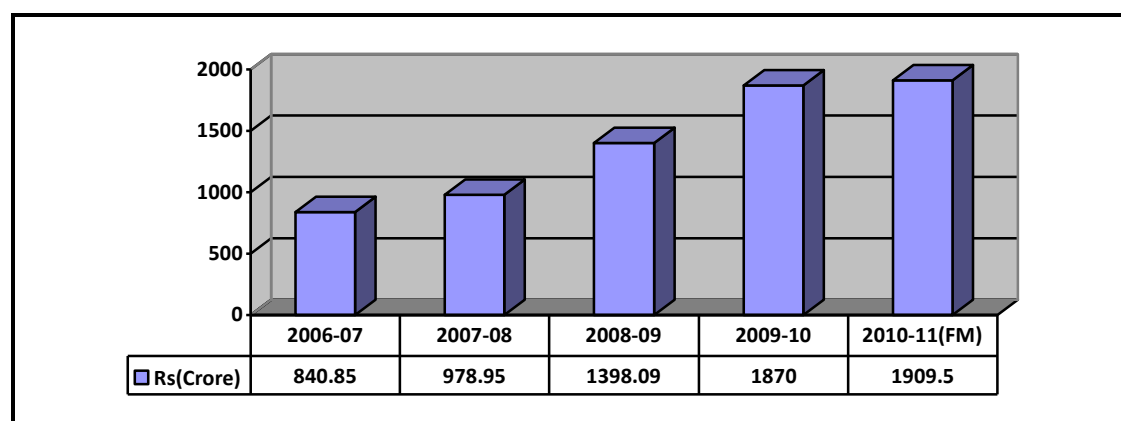
Nagaland	11.13	1.72	12.85
Manipur	-	1.35	1.35
Mizoram	-	1.50	1.50
Meghalaya	-	-	-
Sikkim	-	-	-
Total	1454.16	1148.19	2602.35

4.1.4 Out of the 1148.19 kms remaining on the metre gauge, 1130 kms has already been sanctioned for conversion to broad gauge under 4 projects which are already under progress. Seventeen projects comprising New line/Gauge conversion/Doubling and railway electrification are in progress with a total throw forward of Rs 16153.00 cr. The category-wise break up can be seen in Table 3.2.

Table 4.2 : Railway Sector Project Overview in North Eastern Region

Plan Head	Projects in Progress	Throwforward in Rs. Cr. (as on 01.04.2011)	Length of ongoing works (Km)	National Projects (no.)
New Line	12	12522	897.9	8
Gauge Conversion	4	2851	1510	2
Doubling	-	-	-	-
Railway Electrification	1	780	836	-

4.1.5 Out of these projects, ten projects have been declared as National Projects where the funding for the project is met to the extent of 75% by the Central Government and 25% by the Ministry of Railways. As a result of the focused attention, the Railways' investment in North Eastern Region has steadily been going up (Refer Figure 3.1 below) and output has also shown significant improvements.

Figure 4.1: Trend of Railway Sector Investment in NE Region

4.2 ROADS

4.2.1 Roads are of particular importance in the region because they provide access even to isolated villages in the hills. However, because of the low levels of economic activity in the region, little attention was paid in the past to the development of roads. There are a few geographic reasons for the lack of development of road transport in the region:

- (i) Northeast India is generally hilly or mountainous (except for some plains areas), making road construction expensive.
- (ii) Heavy rainfall in summer causes landslides in the hills and floods in the plains, often severely damaging roads.
- (iii) Because the region has many rivers and streams, road building often involves the construction of expensive bridges.
- (iv) Road-building materials, such as stone chips, are readily available, but are costly to transport to the work sites.

4.2.2 The details of available road network in the North Eastern Region by state are presented in Table No. 4.3.

Table No. 4.3: Length of road network in northeast India by state

State	Blacktopped / Gravelled (Km.)	Kacha (Km.) (Unmetalled)	Total (Km.)	Road Length (Km.)/100 Sq. Km.
Arunachal Pradesh	5,550	9,400	14,950	17.85
Assam	5,534	29,595	35,129	44.79
Manipur	4,110	1,768	5,878	26.33
Meghalaya	3,110	2,514	5,624	25.07
Mizoram	1,760	3,090	4,850	22.99
Nagaland	1,984	6,708	8,656	52.29
Sikkim	1,415	899	2,314	32.61
Tripura	3,693	3,180	6,873	65.46
NE India	27,159	57,154	84,274	32.14

Source: Basic Statistics of North Eastern Region, NEC, Shillong

4.3 WATER TRANSPORT

4.3.1 Northeast India has many large and small rivers providing facilities for water transport, especially in their plains sections. From the ancient period until roads were constructed, the Brahmaputra and Barak rivers were commonly used as the medium of transport. During the period of British rule the Brahmaputra and Barak-Surma rivers were used extensively for transport and trade between northeast India and the port of Calcutta (now Kolkata). 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 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 received a serious blow as a foreign country was born between northeast India and the port of Kolkata.

Figure 3.2 : National Waterway No.2



- 4.3.2 It is estimated that the North Eastern Region has about 1,800 kilometers of river routes that can be used by steamers and large country boats. The inland water transport departments of both the state and central governments have been trying to improve the water transport system in the region. The Brahmaputra now has several small river ports. In addition, there are more than thirty pairs of ferry ghats (crossing points) on the Brahmaputra, transporting both passengers and cargo. The Barak also has small ports at Karimganj, Badarpur, and Silchar and ferry services at several places across it.
- 4.3.3 In Arunachal Pradesh the rivers Lohit, Subansiri, Burhi Dihing, Noa Dihing, and Tirap are used for navigation by small country boats in those stretches where there are no rapids. The rivers Dhaleshwari, Sonai, Tuilianpui, and Chintuipui in Mizoram are also used for navigation with small country boats in convenient stretches. Similarly, in Manipur, the Manipur River, along with its three main tributaries, the Iril, Imphal, and Thoubal, is used for transporting small quantities of merchandise by country boats.

4.3.4 INFRASTRUCTURE FOR INFRASTRUCTURE CREATION : The largest expected cargo movements in the North Eastern Region 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), 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 tons over a period of 20 years. (2.5 - 5.0 million metric tons per year). Accordingly, the infrastructure requirements for the same will be enormous in size. IWT can play the most complementary role in catering to the needs of such large requirements.

4.3.5 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 Ltd.

4.3.6 KALADAN MULTIMODAL TRANSIT TRANSPORT PROJECT: (Map at 95) Project envisages development of an alternate connectivity to Mizoram through Myanmar. The Project is piloted and funded by Ministry of External Affairs. Following are the various components of the Project:

- (i) Port & IWT : Construction of a Port at Sittwe in Myanmar and development of Inland navigation along river Kaladan from Sittwe to Paletwa (158 kms) including supply of 6 nos. 300 tonne capacity cargo barges. Inland Water Transport (IWT) terminals are to be constructed at Sittwe and Paletwa.
- (ii) Highway (Myanmar) : Construction of a road from Paletwa to Indo-Myanmar border with Mizoram (125 kms).
- (iii) Road section in India : Construction of a road from Indo-Myanmar border till NH-54 at Lunglei in Mizoram (100 kms).

4.3.7 INDO-BANGLADESH INLAND WATERWAYS PROTOCOL : An Inland water transit and trade protocol exists between India and Bangladesh under which inland vessels of one country can transit through the specified routes of the other country. The existing protocol routes are (i) Kolkata-Pandu-Kolkata, (ii) Kolkata-Karimganj - Kolkata, (iii) Rajshahi-Dhulian-Rajshahi and (iv) Pandu-Karimganj-Pandu. For inter-country trade, four ports of call

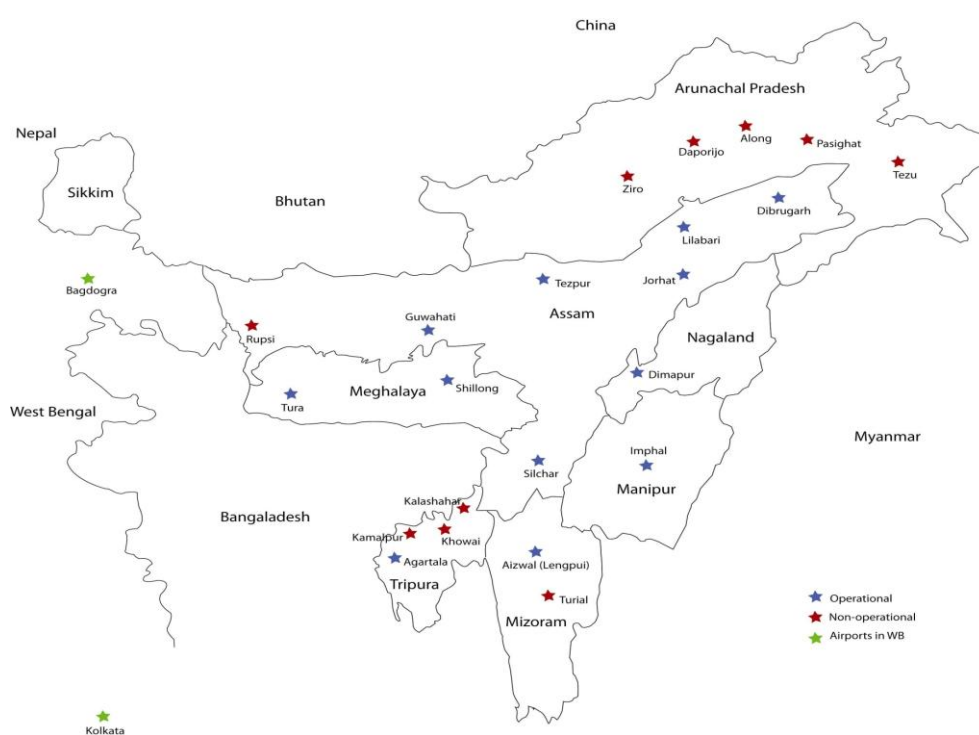
have been designated in each country namely; Haldia, Kolkata, Pandu and Karimganj in India and Narayanganj, Khulna, Mongla and Sirajganj in Bangladesh. The recent additions are Silghat in India and Ashuganj in Bangladesh. Under the Protocol, 50:50 cargo sharing by Indian and Bangladeshi vessels is permitted both for transit and inter-country trade.

4.4 AIRWAYS

4.4.1 Most of the places in the North Eastern Region are inaccessible and located in far-flung areas. The road and rail infrastructure is inadequate, therefore, air connectivity is the most viable means of transportation in the Region both for intra-State connectivity and the Region's linkage to the mainland.

4.4.2 There are a total of 23 airports in the North Eastern Region out of which 11 are operational. These airports are – Agartala, Aizawl, Dibrugarh, Dimapur, Guwahati, Imphal, Jorhat, Lilabari, Shillong, Silchar and Tezpur. The airport at Lengpui, Aizawl is owned by the State Govt. The 12 non-operational airports are – Along, Daporijo, Kailashahar, Kamalpur, Khowai, Pasighat, Rupsi, Tezu, Tura, Tuirial, Ziro and Shella. Three proposed Greenfield airports are to be developed at Itanagar, Cheithu and Pakyong. The detailed status of the airports in North Eastern Region is indicated in Figure 3.4.

Figure 3.4 : Status of Airports in North Eastern Region



- 4.4.3 There has been an overall growth of 104.10% in aircraft movement in the North Eastern Region between 2004-05 and 2010-11 and a growth of 211.6% in passenger traffic for the same period. To provide better connectivity to the North Eastern Region, the Govt. issued Route Dispersal Guidelines in March, 1994 stipulating the mandatory capacity deployment. Category-I routes are having 12 major trunk-routes. Category-II routes are stations in NE Region, J&K, Andaman & Nicobar and Lakshadweep. Scheduled operators have been stipulated to deploy 10% of capacity deployed on Category-I routes. For Category-II A routes which fall within NE Region, J&K, Andaman & Nicobar and Lakshadweep, scheduled operators have to deploy 1% of capacity deployed on Category-I routes. For Category-III routes which are routes other than in the categories mentioned above, scheduled operators have to deploy 50% of capacity deployed on Category-I routes.
- 4.4.4 Besides aircraft operations, helicopter services also operate in the NE Region. Pawan Hans Helicopters Ltd. have deployed various categories of helicopters in four States of NER which include one helicopter each in Meghalaya, Tripura, Sikkim and Arunachal Pradesh. These are now temporarily suspended.
- 4.4.5 A number of aerodromes were constructed in this region during World War II, when the eastern war front reached the Indo-Myanmar border. The Allied Forces built small aerodromes at Kahikuchi (near Guwahati), Mohanbari (Dibrugarh), Salanibari (Tezpur), Rawraiya (Jorhat), Lilabari (North Lakhimpur), Dimapur, and Imphal. After independence, some of these airfields were used by private companies such as Bharat Airways and Indian Airways for commercial services. After the nationalization of commercial air transport in India, the Indian Airlines Corporation took over the services and new airports were opened at Dimapur, Kumbhirgram (near Silchar), and Agartala. The airport near Guwahati was also shifted to Borjhar. In addition, smaller airports were constructed at Ziro and Tezu in Arunachal Pradesh, at Umroi (near Shillong), Tuirival (Aizawl), and at Kailasahar and Kamalpur in Tripura. The smaller airports are rarely used. The Borjhar (Lokapriya Gopinath Bordoloi) international airport is the only large one in this region. Some of these airports (for example Guwahati, Tezpur, Jorhat and Rawraiya) are also shared by the Indian Air Force.

V. IMPORTANT ISSUES AND STRATEGIES FOR TRANSPORT INFRASTRUCTURE IN NORTH EASTERN REGION

- 5.1 The challenges to ensure state of the art connectivity in the region are enormous. The gap between the region and the rest of the country in terms of various developmental outcomes, productivities and capacities of people and institutions is large and growing, and has to be bridged appropriately with various tailor made sectoral policy interventions. Even within the region, there are vast differences, particularly between populations living in the hills and in the plains and between those living in the towns and villages. Given the vast disparities within the region, a development strategy will have to be evolved depending upon prevailing resources, conditions and people's needs and priorities. The successful transformation of investments into developmental outcomes particularly in multi-modal transport sector requires a variety of strategic initiatives.
- 5.2 Thus, transport infrastructure is considered to be of the most important ingredients in the region to strengthen its integration within itself, with the rest of the country and its neighbours, as well as to transport people and goods more effectively within and out of the region. It is a vital input for the proposed shift from subsistence agriculture to cash crop based farming, as well as the planned development of industry and the service sector. Most of the area in the region is hilly and undulating with low population densities, accompanied by low per area production of goods. In the hilly terrain, what it is in the North Eastern Region (except in Assam and some parts of other states) development of inland waterways is the most expensive. Similarly, rail connectivity in such a terrain is not only time consuming but would need huge investments. It is road connectivity which would play a dominant role in fulfilling the transportation needs of the public. Air connectivity and inland water transport would certainly play a role for a limited segment of people and goods.
- 5.3 Accordingly, the objective of the Transportation Development Strategy for the North Eastern Region is to promote and support the economic development of the region with balanced and equitable development. It is to provide accessibility to all the parts of the region through a combination of complimentary multi-modal transportation networks and hubs.

VI. OVERARCHING TRANSPORTATION ISSUES

- 6.1 The Working Group held extensive discussions with all stakeholders including those in private sector. Before analysing sectoral problems, some common issues cutting across transportation sector are discussed here. These issues look at how transport infrastructure should be planned in the North Eastern Region, use of appropriate technology and improvement project implementation.
- 6.2 The issues and our recommendations thereon are as follows:
- (i) **North East is a compact region** – transport planning has to be done at three levels – intra-regional, with the rest of India and connectivity with the international neighbours and beyond for South Asia, South East Asia and China.
 - (ii) **Multi-modal transport planning** – the North East, for reasons well known is the region with its peculiar characteristics. Therefore, regional solutions for intra-regional movement of goods and passengers, connectivity with the rest of India and international connectivity have to be planned. At present, there is hardly any inter-sectoral planning amongst the five infrastructure sectors – road, civil aviation, rail, inland waterways and telecommunication. Even at the beginning of the 12th Plan, such an approach has not been undertaken. Therefore, body to continuously undertake regional transport planning with the required expertise has to be conceptualised.
 - (iii) **Institutional support** - Institutional support for multi-modal planning of transport and give implementation and technical support particularly to the road sector is felt necessary after discussing with stakeholders. Ministry of DoNER can be strengthened by creating an agency under it by getting technical manpower from infrastructure Ministries and agencies to plan and coordinate infrastructure.
 - (iv) **Multi-modal hubs** – Two locations in the North East, one in the south – Badarpur (District Karimganj, Assam) and one in the north – Jogighopa (District Bongaingaon, Assam) can

be made multi-modal hubs for their locational advantages and the existing transport facilities that they enjoy.

- a) Near Badarpur, Silchar is already a major railway hub and has a functioning airport. Ashuganj in Bangladesh on the Inland Waterway can be linked to Badarpur from where commodities can be transported by road and rail further in the region. Linking Badarpur to the nearest railway hub to Silchar and giving good connectivity between Badarpur and Silchar airport should be considered. A railway line through Meghalaya, starting from Dhubri-Tura-Shillong-Silchar is also being proposed. This will reduce the burden of transportation of bulk commodities on the lines in the Chicken's Neck.
 - b) Jogighopa is being developed as an inland waterway port. Transportation of bulk commodities from mainland through the waterways in Bangladesh can be brought to Jogighopa from where the railway links should be built connecting it to the nearest railway line at Gauripara. Rupsi airport is being developed by the Indian Airforce with civilian enclave which is around 66.8 km.
- (v) Explore the possibilities to provide at least 3-4 alternate linkages between all the State Capitals (Intra-Region Connectivity) and rest of the country (Inter-Region Connectivity) with National Highway standard road as well as Rail Linkages through multi-utility tunnelling for reducing travelling distances and time.
- (vi) **Infrastructure for infrastructure** – Investments in infrastructure in the NER has increased exponentially since the 10th Plan and is likely to continue in the 12th Plan. All construction agencies are beset with problems of accessing construction material, poor quality of roads and unavailability of rail links. It is therefore needed to have a joint strategy for all construction agencies to get over shortage of steel, cement, sand and stone chips (ballast) and the means to move them. According to an assessment, approximately 4590 lakh tonnes material would be required for next thirty years. The shortages are caused by transportation bottlenecks and paucity of natural sources of stone chips particularly. An innovative solution could be to source ballast from Myanmar. Also

innovative means to facilitate crossing of Brahmaputra at more locations are required. Need to map resources, especially stone-chips and sand, to ensure that all agencies involved in infrastructure creation have equitable and open access to the resources in a sustainable manner.

- (vii) **Use of appropriate technology** – More intensive use of tunnelling would be encouraged for road and rail networks to cut down the time taken for transportation. Improved technologies for building bridges quickly across small rivers and rivulets that crisscross the region are required. Bailey bridges/foot suspension bridges needs to be used much more intensively. Popularising the use of geo-textiles and bio-engineering will cut down the cost and time for construction.
- (viii) Explore the possibilities to provide **underground multi-utility tunnelling link** (road, rail, power line, telecommunication lines) at the Chicken's Neck area which will help in optimally utilising the narrow land corridor connecting North Eastern Region with the mainland India.
- (ix) **Maintenance of transport assets** – heavy and persistent rainfall over six to eight months, lack of generation of resources by State Governments cause poor maintenance of assets. Non-plan allocations are usually much smaller than the requirement. So the urgency is to resolve both financial and technical challenges for maintenance of roads.
- (x) **Catalysing the speed of construction** – A natural reason for delays in construction is the persistent rainfall. Strategies for expediting construction have to be devised to get around the natural obstacles and create systems whereby procedural and financial obstacles are smoothed. Acquisition of land, environment & forest clearances and shifting of utilities are common hindrances. What is peculiar to the North East is the long time gap between the release of funds from the Central Ministries and the final point where it is received by the implementing agencies. It is entirely within the states' administrative and political will to reduce these time lags. The agencies should take up the construction work in a mission mode to ensure timely completion and avoid delays and cost overrun to deliver projects.

- (xi) **Poor absorption capacity of the States that impact on creation of transportation infrastructure** – poor skills for preparation of quality DPRs, supervision, quality checks, drawing up well-designed contracts. Capacity of the State Governments has to be built up by imparting adequate and suitable training. MORTH has to take the initiative.
- (xii) **Obstacles in movements of vehicles among the North Eastern States** – Taxes, levies imposed by one State on the other. These prove obstacles to the development of market in the region.
- (xiii) Attracting private investors in infrastructure.
- (xiv) **Fund requirement** – The group has not hazarded comprehensive fund requirement for all that are being recommended in the following sector-specific sections as we are conscious of the limitation of availability of budgetary allocation. However, the following recommendations after observing expenditure trends and assessing the requirement posed by infrastructure ministries:

Road

- i. In the road sector, Special Accelerated Road Development Programme for North East (SARDP-NE) is the flagship programme implemented by Ministry of Road Transport and Highways. The performance is as follows:

Year	Sanctions/Awards		Length completed (km)	Financial (Rs. Crore)	
	Length (km)	Cost (Rs. Crore)		Allocation	Expenditure
2006-07	501	1285	Preliminary	550	450
2007-08	240	615	150	700	652
2008-09	187	835	290	1000	637
2009-10	188	1070	156	1200	676
2010-11	1615	9439	146	1500	1065
2011-12	992	4752	150	1950	1940
Total	3723	17996	892	6900	5420

It is seen that the length constructed annually (excepting for an exceptional 2008-09) is not more than 150 – 160 km. It is expected that the pace of construction will now pick up. Even then, unless it is doubled to at least 300 km, the completion of SARDP-NE projects will be a very far away dream. Even at the rate of 300 km/annum, it will take around 10 years to complete roads under Phase-A of Arunachal Pradesh Package. It is, therefore, recommended that MORTH increase annual allocation to at least Rs.3000 to Rs.5000 crore under SARDP-NE and take steps to increase the pace of construction.

Railway

- ii. **Railway should be able to spend Rs.3500 crore & build 150-200 km annually:** It is expected that in 2011-12, the North Eastern Region would utilise nearly Rs.2500 crore of funds allotted. It is also expected that 150 kms of new line would be added in this area. Railways will have to gear itself to utilise Rs.3500 crore in the region for achieving the targets by 2030. Adequate funding should continue to be provided. In 2011-12, the railways have added 150 km in the NER. Construction capacity and Planning should be strengthened so that the Railways are able to construct 150 to 200 km per year. Of course, financial support for strategic important lines should be provided by the Finance Ministry and from Railway resources regularly.

Civil Aviation

- iii. In the civil aviation sector, Airports Authority of India has spent Rs.601 crore in the 11th Plan for development of airport infrastructure in NER. In the 12th Plan, they require budgetary support of Rs.1833 crore. As this is not a big amount, it is recommended that the Ministry of Civil Aviation should provide budgetary support to AAI.

We now discuss the following sectors – road, civil aviation, railways and inland water transport in that order.

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VII. SECTORAL ISSUES

7.1 ROADS

7.1.1 Roadways are the backbone of transport and communication in the North East primarily due to terrain and sparse distribution of population. Road connectivity has to be planned in four categories:

- (i) Connectivity within each State
- (ii) Intra-regional connectivity
- (iii) Connectivity to rest of India
- (iv) Connectivity to neighbouring countries.

7.1.2 This section on roads is divided into three main parts:

- (i) Ongoing projects and schemes.
- (ii) Recommendations for intensification of the road network.
- (iii) Examination and recommendations of issues related to:
 - a) Capacities of State PWDs and contractors
 - b) Project implementation
 - c) Technology
 - d) Maintenance
 - e) Creation of data bases, use of e-governance
 - f) New institutional structures

(Please see map at page 44)

ONGOING ACTIVITIES

7.1.3 The region has a plethora of schemes dedicated to roads. The political leadership and public are actively conscious of the increasing need for quality roads. The Union Government has prepared an ambitious project under Ministry of Road Transport and Highways (MORTH) – Special Accelerated Road Development Programme for North East (SARDP-NE) – a special projects for the region to build/expand/improve the road

infrastructure for NHs, district connections and strategic roads. The PMGSY on the other hand takes care of rural connectivity. PMGSY has specific provision to take care of the sparse population and hilly terrain of NER and border blocks. For the in-between roads, MDR, ODR, inter-state roads and other urban roads, there are funding windows through different ministries. There is no dearth of projects for road construction/improvement. Investment in the road sector is increasing manifold from multiple sources. A snapshot of the large number of schemes/programmes is given below.

- (i) MoRTH – SARDP-NE, NHAI, CRF, BRO
- (ii) M/DoNER – NEC, NLCPR, SIDF, ADB-Road Project
- (iii) Planning Commission – State Plan, ACA, SPA
- (iv) Externally Funded Projects
- (v) BADP, BRGF, PMGSY, MNREGA
- (vi) Forest roads, urban roads,
- (vii) GS roads, Strategic Roads - BRO
- (viii) Others

7.1.4 **SARDP-NE (Map at page 43)**

Objectives

- (i) Upgrade National Highways connecting State
- (ii) Capitals to 2 lane or 4 lane
- (iii) Improve road connectivity to 60 district
- (iv) headquarters by at least two lane road (either
- (v) national highway or state road) to cover all 85
- (vi) District Headquarters in the region
- (vii) Provide road connectivity to backward and remote areas of NE region to boost socio-economic development
- (viii) Improve 1207 km roads of strategic importance in border area
- (ix) Improve connectivity to neighbouring countries

Length

(i)	PHASE – A	4099 km
(ii)	PHASE – B	3723 km
(iii)	Arunachal Pradesh Package	2319 km
Total		10141 KM

No. of Roads

(i)	PHASE – A	46
(ii)	PHASE – B	35
(iii)	Arunachal Pradesh Package	26
Total		107

This programme is expected to be completed not earlier than 2020. Initial sanction was in 2005 and so far around 700 km have been constructed. Mostly pre-project activities are going on.

7.1.5 **Pradhan Mantri Gram Sadak Yojana (PMGSY)** - As PMGSY is a flagship programme of the Government, being implemented and monitored by M/o Rural Development, it is not discussed in detail.

7.1.6 **State Highways, Inter-State Roads, MDRs & ODRs** – financed from a wide variety of projects and schemes of different Ministries and Departments.

7.1.7 **Strategic & Border Roads**

- (i) The Government of India has also embarked on an ambitious construction of strategic roads in border areas.
- (ii) As the NER is bound 96% by our neighbouring countries, construction and maintenance of border roads are very essential. The Government of India has taken up a big programme of construction of border roads on the international border through BRO and other agencies. A length of 9302 kms is being constructed which is almost similar to the length of SARDP-NE.
- (iii) We feel that this will greatly add to the stock of roads in the NER and serve the needs of the local population in

addition to strategic needs. Due to obvious reasons, the details are not discussed here. However, we recommend that the present organisational shortcomings afflicting the Border Roads Organisation which plays very major role in NER should be addressed by the Government at the earliest.

- (iv) A summary of the border roads being constructed in NER under the Indo-Bangladesh, Indo-China, Indo-Bhutan and proposed Indo-Myanmar border programme is given below:

7.1.8 Indo-Bangladesh Border Roads

- (i) Roads on Indo-Bangladesh Border – undertaken in two phases.

Total length in North East
(Assam, Meghalaya, Tripura, Mizoram) – 2656.11 km

Completed – 1988.63 km (75%)

- (ii) In Mizoram, progress appears to be slow as only 358 km out of 637 km has been completed.
- (iii) Slow progress due to land acquisition (in all States), public protests (Meghalaya), clearance of National Wildlife Board for Dampa Tiger Reserve in Mizoram and a stretch of 2.5 km undemarcated border.

7.1.9 Indo-China border

- (i) ITBP is constructing 8 stretches in Arunachal Pradesh (5 roads -271.04 km) and Sikkim (3 roads – 103 km). Work is ongoing with 5 roads almost being completed upto 60%.
- (ii) BRO is constructing 15 stretches in Arunachal Pradesh (13 roads -1326.77 km) and Sikkim (2 roads – 47.28 km). Probable date of completion - 2012-16.
- (iii) BRO has completed 10 stretches in Arunachal Pradesh.
- (iv) Air efforts not being provided adequately to BRO by Indian Air Force. Hence, progress is slowed down.

7.1.10 Indo-Bhutan roads

- (i) 313 km being constructed in Assam by Assam PWD at a cost of Rs.1259 crore. Work will be completed by April, 2016. State Government is preparing the DPRs.

7.1.11 Indo-Myanmar roads

- (i) CCEA Note has been prepared by Department of Border Management, MHA for creation of border infrastructure involving:

a.	Roads	4585 km
b.	Helipads	113
c.	Heli-base	2

Phase-I (2012-18) will involve construction of 1417 km roads, 56 helipads and two heli-bases at a cost of Rs.3302 crore. Inter-Ministerial Consultations are going on.

- (ii) International – In the international neighbourhood of North Eastern Region, India is constructing some important roads in Myanmar which will help in promoting trade and commerce between NER and Myanmar. These are - (1)Rih-Tiddim road, (2)Trilateral Highway linking India, Myanmar and Thailand, (3) small roads in areas of Myanmar bordering NER to help local population. Particularly (2) is of greatest importance to the region as it will open the NER to south East Asia. There will be seamless road connectivity between Guwahati and Bangladesh. In addition, through another link from Vientiane with Cambodia. Thailand and Myanmar have also be suggested by ASEAN and India. Due to strategic and trade reasons, we recommend the time-bound construction of not only the Tri-lateral Highway but also the alternate highway to NER from Vientiane.

INTENSIFICATION OF THE ROAD NETWORK

7.1.12 General Strategic Objectives

- (i) Container worthy route to all district headquarters in the plain areas – container worthy route for all points of international access in Arunachal Pradesh (Pangsau Pass), Manipur (Tamu-Moreh), Mizoram, (new point at Zorinpui), Agartala (Sabroom and Akhaura) and Meghalaya (Dawki & Mahendraganj)
- (ii) 4-lane access to all state capitals in the North East
- (iii) Development of alternative highway alignment linking West Bengal and Bangladesh through the Hili-Mahendraganj Corridor and the Kolkata-Bashirhat–Khulna Corridor.
- (iv) Development of modern highways using tunnelling and bridging technique to connect Gangtok and Imphal so as to reduce transit time and minimise environment damage.

7.1.13 Highways in the North East have to be developed for not only inter-state commerce but also for international commerce and trade. As a first step, each of the State capital deserves to be linked to the expanding highway network being developed under the NHDP. At present, only Guwahati is linked to the East West Phase-II of the NHDP, and Kohima is being linked by four-lane highway too. It will be built from Daboka, on the East West Highway as a spur to Dimapur and then upto Kohima. Shillong will have four-laning access only from Barapani and it will be an irony that a district headquarter like Jowai in Meghalaya will have a four-lane highway linking it to the main National Highway while the state capital of Shillong will not be so linked. Similarly, the three southern states of the North East will have problems of last mile connectivity. The closest four-lane highway for Imphal will be in Aizawl, Kohima and Siliguri. For Mizoram, it is through the proposed four laning of the Siliguri-Kolasib highway which has not yet been sanctioned. At any rate, there is no planning for any four laning in the ghat sections of Mizoram. Similarly Agartala will have four lane highway upto Silchar/Karimganj and thereafter traffic will run on a two lane highway. Itanagar is being connected by a four lane spur.

Upgradation of Standards for State Highway and District Headquarter Link Roads

7.1.14 The standard of roads being built to link the district headquarter under the SARDP-NE should also be gradually raised so that the container load can be carried in plain districts of Assam and also to other important transit points like Dimapur in Nagaland and Itanagar in Arunachal Pradesh. For these main state highways also, the standards similar to National Highways should be prescribed viz. the formation width of 12 mt with carriageway of 10 mt. and radius of curvature of 12 mt. to facilitate movement of large containers.

Nagaland

7.1.15 It is not possible at the present moment to envisage any serious international trade through Nagaland but bearing the future in hand, the Ministry of Road Transport and Highway should prepare project report for any future border crossing which the Nagaland Government may wish to pursue.

Manipur

7.1.16 At the moment, Manipur deserves the highest priority for four lane since it is a major security area and it has the worst road connectivity on account of frequent blockages on the approaches of National Highway. Four-laning is necessary to ensure that the goods can reach cheaply, quickly and safely and the exorbitant flight tariffs being charged come down to a reasonable level. In view of the special problems of Manipur, we suggest that four-laning be done in two phases; firstly the Kohima-Imphal route which ply through districts inhabited by Naga tribes and secondly the Silchar - Imphal route. The Silchar-Imphal route involves crossing of six bridges and five valleys and low altitude hill ridges. In view of the strategic importance of Imphal, we recommend that the MoRTH construct a four lane highway using the method of tunnelling through the ridges and building bridges across the valley. Similarly a tunnel through the main Kohima peak would ensure spur access from the Dimapur-Kohima highway to the Manipur Valley. The highway from Imphal upto the border at Moreh-Tamu also needs to be four laned since this is part of the Asian Highway No.1 proposed by UNESCAP and ADB and to which India is also a signatory. Tamu-

Moreh border will be the main entry point for all road borne traffic entering India from the ASEAN countries and we should aim that the goal of the Asian Highway No.1 needs to be an international standard. This point will be the most important international linking point on our North Eastern border.

Mizoram

7.1.17 For Mizoram four laning upto Aizwal is both commercially and political necessary. It is also recommended that four laning of the highway upto the Indo-Myanmar border at Zorinpui is necessary to have seamless linkages to the Kaladan Multimodal Project. This will provide a secondary access to India from the Myanmar side and will enable better utilisation of our existing investment in Kaladan. Mizoram should be considered as being a gateway state along with Manipur as far as international trade is concerned.

Tripura

7.1.18 The third gateway state for the North East could be Tripura. While the state of our negotiations with Bangladesh on access to Chittagong will be subject to political climates we need four lanning right from Sabroom on the southern tip of Tripura to the main East West Highway in Silchar. Such a strategic link could enable the North East to avail of entry points in Myanmar and Bangladesh depending upon the political relations. We are confident that once actual infrastructure is to be in place, the traffic in these roads will rapidly grow and it will be a concrete manifestation of our Look East Policy and will also increase the volume of trade with the neighbouring countries.

Sikkim

7.1.19 Sikkim suffers from relative geographical isolation. We recommend that the main highway from Siliguri to Gangtok be reconstructed on a new alignment using modern method of tunnelling and bridging of valleys in the contrast to the trans alignment with hill hugging routes. We should aim to reduce the transit time to Gangtok to Siliguri to about three hours by road. A road built using tunnels and bridges will provide to be not only all weather but which is not susceptible to blockage by either political disturbances in North Bengal or natural disaster.

Importance of proposed NH 31D (Salsabari-Ghoshpukur near Siliguri)

7.1.20 No mention of the road network in the North East can be completed without mentioning the delays in constructing National Highway 31D. This alignment is from Salsalabari to Ghoshpukur (near Siliguri) on the Assam-West Bengal border. For a length of 163 km, the new alignment is on the southern side of the North Bengal Corridor. In view of the anticipated growth of trade in the North East, it is possible that this strategy of highway will have to be six-laned in the near future. However, at the moment of presenting this report it is understood that full support of the Government of West Bengal for acquiring the land in North Bengal has not been available. Since this is a project of national importance which links the entire North East with the rest of the National Highway network, special effort has to be made at political level to ensure that this vital link is created and maintained.

Alternative link between North East and Rest of India

7.1.21 At the same time, development of alternative routes from the North East to West Bengal should be encouraged so that the North East cannot be isolated during any future hostility. Asian Highway No.1 enters Bangladesh from Dawki on the Meghalaya-Bangladesh border. However, the closest approach to Meghalaya to West Bengal is on the alignment Mahendraganj to Hili which is slightly over 100 kms. It is possible that the Bangladesh Government might permit India to access this route by linking it to the job of connecting Sylhet with Rangpur in Bangladesh. Such an action will be possible only with a major bridge over Padma (probably Sorakganj) and Barahmaputra. This bridge could simultaneously be used for development of Hili to Mahendraganj route to Meghalaya. The development of project report to this is strongly recommended.

7.1.22 The third possible route would be through southern Bangladesh from Dhaka to Kolkata. The present trans border arrangement is a long NH-35 through the Benapole-Petrapole border crossing connecting Jessore with Kolkata. However, there have been requests from Bangladesh Chambers of Commerce for a connection from Khulna to Kolkata on the South Eastern side of Kolkata through the India-Bangladesh border near Bashirpur. Such a connection would also enable industry and commerce to

benefit from an alternative port in Mongla, Bangladesh which lies the south of Khulna (Bangladesh). This would help to boost trade in the Greater Kolkata area. Bangladesh might also be persuaded to extend Agartala-Dhaka-Kolkata connectivity through Jessore or Khulna if India undertook major highway construction in the southern part of Bangladesh.

Need for roads for diverse objectives

7.1.23 Development of roadwork for the following purposes needs more attention than is being given yet :-

- (i) For evacuation of agricultural and horticulture products and other natural resources – The economic development of the North Eastern Region will come from the growth in the agriculture sector (particularly horticulture, floriculture, bamboo), services sector and the natural resources of hydro-power, tea, oil, limestone and coal. Evacuation of these products from their source of origin/manufacture/cultivation has to be planned by road or rail and inland waterways (air for highly perishable flowers).
- (ii) For evacuation of commodities, the development of the railway sector and inland waterways is critical. As there is intense pressure for road development to connect human habitations that are sparsely distributed in the region, agriculture link roads to evacuate agro-products to the nearest market do not get the required importance.
- (iii) It is recommended that serious thought be given to developing network of agriculture link roads to the nearest mandi/market for movement of agriculture/horticulture produce. Area under horticulture has increased in the NER due to the interventions made under the Horticulture Mission of the Ministry of Agriculture. Production of cereals has also increased in recent time in the plain areas of Assam. For the creation of robust market economy, network of roads to carry agriculture produce is essential. As road projects are generally selected on the basis of pressure from different sections, agriculture link roads do not have any constituency and hence are not pushed.
- (iv) Roads of strategic importance - these have been discussed above.
- (v) Next we list some roads that are essential to provide inter-State connectivity and connectivity to backward and border areas:

S.No.	State road proposed for upgradation	State	Length (km)
1.	Margreitta-Changlang-Khonsa-Hukanjuri-Sibsagar	Arunachal Pradesh & Assam	130
2.	Rowta (NH-52)-Udalgiri-Tamulpur-Jala-Goverdhana-Kajolgaon (NH-31) – Srirampur	Assam	406
3	Bishnupur-Nungba-Tamenglong-Tousem-Haflong	Manipur & Assam	180
4.	Tura-Phulbari-Dhubri-Srirampur	Meghalaya & Assam	100
5.	Chumukedima-Shedhumi-Niuland-Ralan-Sanis-Bhandari- (Merapani) – Longtho-Longehem-Tuli (foothill road)	Nagaland & Assam	250
6.	State road from Tuensang (NH-155) to Simulguri in Assam	Nagaland & Assam	265
7.	Tenglong to Sesenpur, via Khongsang and Rengpang	Manipur	133
8.	Churachandpur-Singhat-Sinzawl-Tuivai Road-Mizoram border, via Ngopa	Manipur & Mizoram	340
		Total length	1804 km.

(vi) Roads for Backward integration of Land Custom Stations (LCSs) and Integrated Check Posts (ICPs) –

7.1.24 Being 96% bounded by India's neighbour, the North Eastern Region is dotted with LCSs and now ICPs. There are 38 LCSs notified under Section 7 of the Customs Act, 1962 considering the trade potential of the location. Some have National Highways linking them but connectivity to most of the LCSs is quite poor. The Look East Policy as applicable to the North East envisages increasing commercial interchanges between NER, our international neighbourhood and beyond to South East Asia.

7.1.25 There are policy lacunae for providing robust connectivity to these LCSs. The Gol is working to upgrade the following LCS to

Integrated Check Posts at an approximate investment of Rs.120 crore each.

- (i) Moreh (Manipur)
- (ii) Dawki (Mehglaya)
- (iii) Agartala (Tripura)
- (iv) Sutarkandi (Assam)
- (v) Khwarpuchia (Mizoram)

7.1.26 A new statutory authority, the Land Ports Authority of India has been created under an eponymous Act recently. The ICPs will functions under this authority through sovereign functions will continue to be provided by the designated departments. This initiative is worthwhile. However, it leaves two important gaps.

- (i) The LCSs which are not being upgraded to ICPs, do not have any single point administrative control for their management or development. Their development is done by State Governments with funds from Assistance to States for Developing Export Infrastructure and Allied Activities (ASIDE) scheme of Commerce Ministry. Hence, their development is bereft of systematic planning and dependent on States' priorities.
- (ii) The second drawback arising from the first point is that backward integration in terms of connectivity also suffers. As there is tremendous pressure on State Government for different roads catering to different ethnic/pressure groups, connectivity to LCSs which are perceived as Central Government responsibility remain neglected. It is, therefore, recommended that a special programme to provide linkages to the Land Custom Stations should be taken up.

CAPACITY BUILDING OF STATE PWDS AND CONTRACTORS, PROJECT IMPLEMENTATION, TECHNOLOGY, MAINTENANCE, CREATION OF DATA BASES, USE OF E-GOVERNANCE, NEW INSTITUTIONAL STRUCTURES

Capacity Building

7.1.27 Investments in roads are increasing but there has been no corresponding assessment of the capacities of the PWD, BRO or other agencies to cope with the increasing burden.

7.1.28 Capacities related to the following require strengthening –

- (i) Identification of shelf of projects corresponding to a comprehensive well-developed plan
- (ii) Preparation of DPRs (often Project costs have to be enhanced as DPRs are not prepared properly). Ideally, preparation of quality DPRs can mitigate problems in implementation. For preparation of quality DPRs, 70% of the time should be ideally spent on the field and 30% in the office. If DPRs are made correctly and pre-construction activities duly completed, the project completion time will be certainly reduced.
- (iii) Bid documents
- (iv) Evaluation of bids
- (v) Drawing up of contracts
- (vi) Implementation, supervision,
- (vii) Quality control (lack of labs for quality control)

7.1.29 State PWDs possess wealth of good engineers having local knowledge base. However their exposure to good national/international practices is weak. DONER with support of MORTH and Indian Academy of Highway Engineers has taken initiatives of providing training to staff at various levels and in various aspects of planning, design, project management, maintenance, dispute resolution, quality assurance. These are to be continued in a schematic manner.

7.1.30 Poor availability of contractors and consultants in the region, addressing their concerns and enhancing their capacity.

- 7.1.31 Institutions such as Central Road Research Institute (CRR) under CSIR and Indian Academy of Highway Engineers should take more interest in the NER and evolve technology and management solutions for the North East. They should interact more regularly with the State PWDs in a pro-active manner. Assistance from DONER and NEC to the extent feasible will be provided.
- 7.1.32 Supporting the contractors associations in establishment of an academy of construction on lines of National Academy of Constructions (NAC), Hyderabad in the North Eastern Region for delivery of training to construction workers and equipment operators. Linkage with ITIs and polytechnics should prove helpful for geographic spread in the region.
- 7.1.33 Lack of equipment – how to increase supply. Presently it appears that there is no major dearth of equipment for bigger road contracts for NHAI or SARDP-NE roads. Big contractors are attracted towards NER with the large contracts being awarded now on EPC basis by NHAI and MORTH for SARDP-NE and East West Corridor. However, for the smaller roads, even State Highways and PMGSY packages, local contractors still do not have adequate equipment available. Big contractors coming from outside in NER are generally not interested in the smaller packages even if the few roads are bundled together in a single package.
- 7.1.34 A proposal for an Equipment Bank had been mooted few years ago by North Eastern Development Finance Corporation Ltd. (under Ministry of DONER), Guwahati. The proposal could not go far due to lack of land. We suggest that State Governments, NEDFi or any other agency (including private players) set up Equipment Banks at different locations in NER.
- 7.1.35 Training & capacity building at levels below Junior Engineers – Start courses in road technology in polytechnics.

Improvement in Project Management

- 7.1.36 Rainy season ranges from 6-8 months. Project management strategies have to be created around the difficulties that nature presents rather than always quoting rains as excuse for delays.
- 7.1.37 Project management cycles are stretched by bureaucratic systems within and outside the PWD and other construction agencies. Case in point are delays in receipt of funds from the State Finance Department to the implementing agency.

7.1.38 A vicious circle of delays, non-completion of projects is created in the following way :-

- (i) Due to large amounts being invested in the road sector, the number of projects being sanctioned by different central agencies and State Governments is increasing.
- (ii) Owing to the internal weaknesses, projects are not completed in time, Utilization Certificates are not submitted in time. On the other hand, funding agencies sanction new projects as they have to utilise their allocations. States are also happy to get new sanctions which appease the various interests which espouse one road or the other. Ultimately, the bunch of incomplete projects gets inflated with large committed liabilities. Construction of roads are sometimes treated as means of distributive justice and not projects to be professionally managed. There is little effort to develop contracting capacities. There are cases where construction of 30-km road takes six years and work is divided into 25-30 parcels.

7.1.39 Therefore, annual capacity of State Governments and implementing agencies should be assessed and combined with strict monitoring such as testing lab. Incidentally, quality control facilities are also quite poor.

Creation of GIS database of roads for the region

7.1.40 Creation of centralised database of road assets that are accessible to the public based on GIS or any other suitable technology is a must. This will prevent duplication of proposals for upgradation/ maintenance of same roads to different agencies, create transparency and help in proper monitoring. All State Governments and agencies must participate in the centralised database system. It will involve massive data entry as data is available at Executive Engineer or SDO, PWD level. However, such a data base combined with a GIS map will be of immense help in policy planning and monitoring. It can and should be even made open to the public as a stakeholder.

7.1.41 We strongly recommend that DONER, Department of Information Technology and MORTH seriously consider this idea. It will take time, finance and concerted effort but the outcome we think will be worthwhile.

E-governance in the State PWDs

7.1.42 None of the State Governments including Assam have embarked on serious use of e-governance – e-tendering, e-procurement and comprehensive computerisation of the PWD to improve their project management. A quick survey of the websites of the State PWDs shows that barring Arunachal Pradesh, Tripura and to some extent Manipur, none of the other States have functioning upto-date website. Use of e-governance will expand the purview of contractors taking up projects in the States. Several good models are already available which the NE States can use with their local modifications.

New technology – bridges, tunnels, geotextiles, bio-engineering

7.1.43 Bridges are numerous in the North East. Large requirement of semi-permanent timber bridges to be converted to brick and mortar or iron and steel bridges. Technology for laying bridges in short time and with low cost has to be promoted. Construction of bailey bridges should be promoted. Technology of bailey bridges has improved recently which should be used for North East. For interior areas, road bridges (miniature form of “Lakshman Jhoola”) should be promoted. These are low-cost and can be installed quickly. Steel girder bridges can also be promoted. They are also earth-quake resistant.

7.1.44 Emphasis on tunnelling to reduce the length of the roads. In snow-covered areas, tunnelling should be used to reduce the length of the road exposed to the elements. Tunnelling will also result in generation of gravel of which there is a shortage in North East. More tunnelling will reduce cost, distances and be environment-friendly.

7.1.45 In place of four-lane roads, preference may be given for construction of two lane roads suitable located on either side of the hill slopes. This is preferable because in hilly areas, two-lane roads will involve less earth-cutting and these two roads could be used separately for two directions.

7.1.46 The terrain and topography of the North East lends itself to increase use of new material such as geo-textiles and innovative methods to use local material such as bamboo through bio-engineering. The Ministry of Textiles is trying to promote the use of geo-textiles in NER. The State Governments and MORTH should take up visible pilot projects to promote use of new materials such as geo-textiles. The World Bank road project in Mizoram has effectively displayed use of bio-engineering using bamboo to

prevent landslides. These efforts can be expanded in other areas as well.

7.1.47 Under PMGSY, there is no provision for rope bridges/suspension bridges that are suitable for a region with scattered rivulets. We strongly recommend that rope bridges and bailey bridges be included in PMGSY guidelines for NER.

User Issues

7.1.48 Obstacles to inter-state movement should be removed. States should work on the principle of promoting inter-state movement of vehicles. Local transporters' association requested for considering a one-time payment of Road Tax for buses and commercial vehicle for the entire region.

7.1.49 There has to be a regular arrangement for formal integration of road agencies with user organisations (business groups, bus, truck transport organisations). Road agencies would need to become oriented to needs of users. For this, they could evolve Result Framework Document covering aspects such as road user satisfaction, level of service, status of accident hazards and control on time/cost overruns.

7.1.50 Social, Environment and Safety Concerns - Social, Environment and Safety Concerns should become integral part of any of the development projects. It would be essential to maximize the use of locally available materials within short leads. Their characteristics should be studied and strategies to improve their bearing capacity by adding innovative materials and/or stabilization techniques. CRRI should be pro-active in the region.

Maintenance

7.1.51 Maintenance is a major bug bear in the NER.

- (i) As maintenance is high cost due to heavy rainfall and terrain, availability of non-Plan funds is never sufficient for maintenance.
- (ii) The tendency is to build – neglect – rebuild in the garb of expansion. This cycle is used when public pressure is built up against the poor condition of the road.
- (iii) Much higher allocation for maintenance and professional management of maintenance.
- (iv) Maintenance by contractors for few years after the construction can be in-built in the contracts. Overall

accountability should be with the PWD for general maintenance and they have to be equipped financially and operationally to do so.

- (v) Promote concept of Performance Based Maintenance Contracts for 3 to 5 years. Start with roads receiving WB/ADB or GOI assistance under SARDP-NE programmes.
- (vi) Establishment and management of a dedicated Road Maintenance Fund.

7.1.52 The cost of poor maintenance is borne by the user and the people. It is reflected in the high rates of accidents and the low user life of vehicles in the NER. The growth in the number of commercial vehicles in the North East has been 50% higher than other parts of India despite the current slow-down. Thus, improvement of roads acquires immense importance. Due to poor conditions of roads, buses and trucks are rendered unusable after four years whereas in the rest of the country, heavy vehicles and trucks can be used for at least ten years. Multi-axle vehicles cannot ply behind Guwahati as the roads are of very poor condition. Transporters have to pay extortion demands. Maintenance cost of vehicles is higher and their commercial lives are lower.

New Organisational Structure for Road Construction/Upgradation

7.1.53 In the hierarchy of roads, National Highways are at the top and PMGSY is at bottom of the pyramid. There are village roads, forest roads, roads in small towns which are the responsibility of the Panchayats/local bodies/forest department/Nagarपालikas etc. In between are a slew of State Highways, Major District Roads (MDRs), Other District Roads (ODRs) which form the backbone of the transportation sector. Many of the MDRs are also inter state and inter district roads. These are funded by various agencies of the Central Government under different schemes and also untied and also Special Plan Assistance (SPA)/Additional Central Assistance (ACA) from the Planning Commission. The implementing agencies are NHAI, BRO and State PWDs.

7.1.54 BRO is beset with several organisational issues and its performance on critical roads draws the displeasure of State Governments at times. BRO works in the most difficult condition and has very little autonomy. As BRO is entrusted with many

important roads other than strategic GS roads, issues afflicting BRO should be addressed to enable the organisation to perform its role.

7.1.55 We repeat here of the need to strengthen the capacity of the State Construction Agencies. At the same time, we feel that bringing in quality standards and timely implementation of roads in NER cannot wait the time taken for improving capacities of State PWDs and other agencies. We need best quality roads in the North East as roads are the backbone of this region. Moreover, quality of the roads in hilly and heavy rainfall areas has to be superior. For all these reasons, the process of building them right from the stage of conceptualising to preparation of DPR till maintenance needs overhaul.

7.1.56 We are therefore recommending a new institutional structure for the road sector for the NER that would provide technical support and guidance to the State Governments without impinging the autonomy of the States while at the same time supporting them technically.

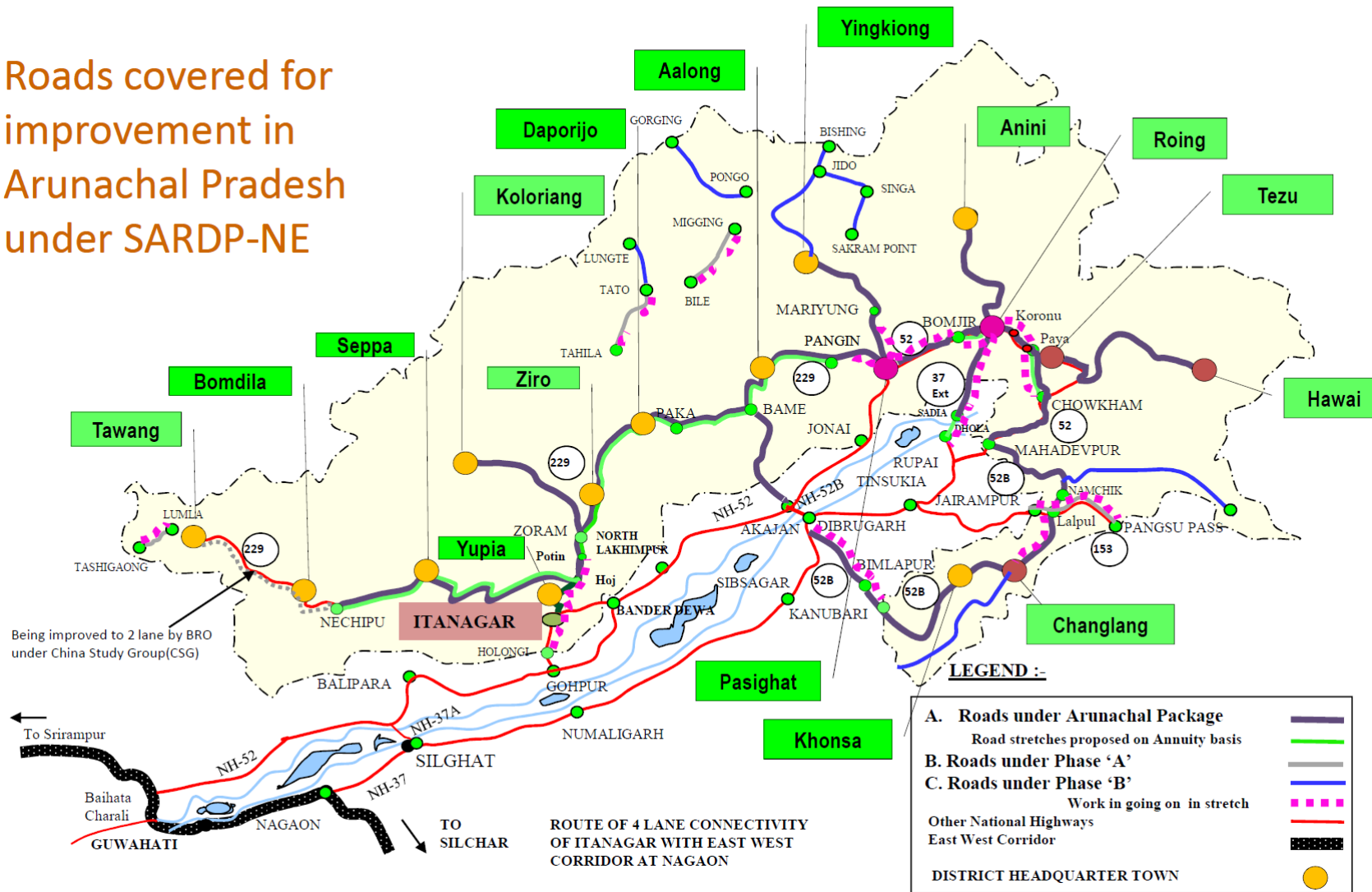
7.1.57 Two models that appear appropriate are (a) the structure of the Pradhan Mantri Gram Sadak Yojana and (b) Joint Assistance to Support Projects in European Regions (JASPERS) in the European Union. The PMGSY implementation model is working well to create good quality roads in interior areas. Another body to assist the State Governments in the road sector (apart from the PMGSY roads) covering State Highways, MDRs, ODRs, Inter-State roads, etc. with technical and managerial inputs should be set up whose structure could be on the lines of the PMGSY arrangements. The advantage of the PMGSY model is that of clear demarcation of roads of the Centre and State combined with strict standards of DPR preparation, bid documents, bidding transparency and robust MIZ.

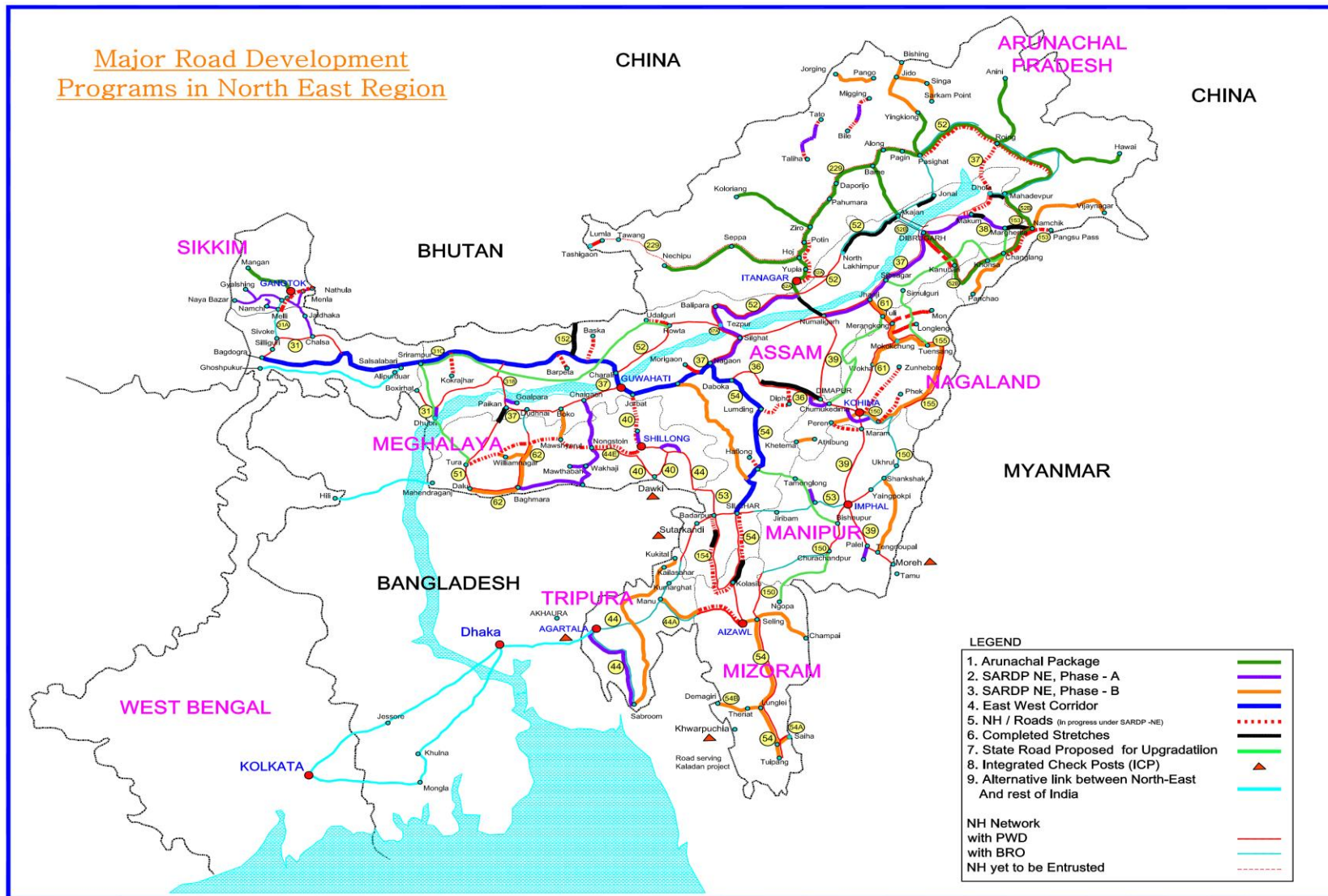
7.1.58 This PMGSY like organisation will be available for technical assistance the NE States. It will work in close cooperation with the States to produce accomplished project proposals which will meet parameters required for funding by different sources. Manned by technical experts, it will provide assistance for any stage of the project cycle from the early stages of conception through implementation and maintenance (*For more details on JASPERS please see www.jaspers-europa-info.org*). **This organisation may be put under the administrative control of**

Ministry of DONER. This model, combined with the GIS data base that has been proposed above, has the potential of vastly improving the way roads are conceptualised, designed, plans prepared, bid evaluated and awarded and finally maintained. This organisation can be christened as NER Road Development Authority (NERRDA).

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Roads covered for improvement in Arunachal Pradesh under SARDP-NE





7.2 AIR CONNECTIVITY

7.2.1 Most of the places in the North Eastern Region are inaccessible and located in far-flung areas. The road and rail infrastructure is inadequate, therefore, air connectivity is the most viable means of transportation in the Region both for intra-State connectivity and the Region's linkage to the mainland.

7.2.2 In terms of providing connectivity, the importance of civil aviation to the North Eastern Region ranges just below the roadways sector which is the most critical sector. It underscores the importance of civil aviation and disabuses the notion that civil aviation is for the economically better endowed. The development of the civil aviation assumes great importance for the region. The committee would also like to emphasise that as development of civil aviation is based more on commercial reasons, investments initially would surely have to come from the Government coupled with subsidies.

ONGOING ACTIVITIES AND POLICIES

7.2.3 This section deal with the following :

- Airport development
- Contribution of North Eastern Council
- Route Dispersal Guidelines
- Viability Gap Funding to Alliance Air by North Eastern Council from 2002-2012
- Support from Ministry of Home Affairs for helicopter services.

Airports/Advanced Landing Grounds in NER

7.2.4 NER is dotted with airports. Some of which are Second World War legacies reminding us and reinforcing the strategic aspects of transport planning in the region.

Statewise Airports

Sl. No.	Airports/Advanced Landing Grounds	Functional (√) / Non-Function (X)	Ownership	Type of aircrafts
Assam				
1.	Guwahati (licenced)	√	AAI	B-737/ A-321
2.	Dibrugarh (licenced)	√	AAI	-do-
3.	Jorhat	√	IAF (Civil Enclave)	-do-
4.	Tezpur	√	IAF (Civil Enclave)	-do-
5.	Silchar	√	IAF (Civil Enclave)	-do-
6.	Leelabari (licenced)	√	AAI	-do-
7.	Rupsi	X	Presently with AAI, being transferred to IAF to be developed with a Civil Enclave.	First phase development for ATR 72. 2 nd phase for A-320 with additional land being provided by State Government.
Manipur				
8.	Imphal (licenced)	√	AAI	B-737/ A-321
Meghalaya				
9.	Shillong (Barapani) (licenced)	√	AAI	B-737

10.	Tura (Baljek)	√ (This airport has no services ever since it was constructed though it has all facilities excepting helicopter services run occasionally between Tura and Shillong. Developed by State Government at an approx. cost of Rs.15 crore.)	Meghalaya Government	20 seater plane
Mizoram				
11.	Lengpui (Aizawl)	√	Mizoram Government (Transfer to AAI yet to be finalised)	B-737/ A-321
Nagaland				
12.	Dimapur (licenced)	√	AAI	-do-
13.	Chiethu (Kohima)	Proposed Greenfield Decision not finalised	AAI	Not known
Sikkim				
14.	Pakyong	Greenfield being	AAI	ATR type

		constructed. PDC – June, 2013		
Tripura				
15.	Agartala (licenced)	√	AAI	B-737/ A-321
16.	Kamalpur	X	AAI	Feasible for development of ATR-72 subject to availability of additional land.
17.	Kailashahar	X	AAI	Not possible to develop as additional land not available from State Government.
18.	Khowai	X	AAI	Not viable as very close to Agartala

Arunchal Pradesh

Sl. No.	Airport	District	Owned by	To be developed by	User Type Defence/ Civilian/ Dual use
1.	Aalo	West Siang	GOArP	MOD	Dual use
2.	Daporijo	Upper Subansiri	GOArP	AAI	Civilian
3.	Itanagar	Papum Pare	Greenfield (Final decision awaited)	AAI	Civilian
4.	Mechuka	West Siang	GOArP	MOD	Defence

Sl. No.	Airport	District	Owned by	To be developed by	User Type Defence/ Civilian/ Dual use
5.	Pasighat	East Siang	AAI	MOD	Dual use
6.	Tawang	Tawang	Under Control of MoD	MOD	Defence
7.	Tezu	Lohit	GOArP	AAI with NEC funding	Civilian
8.	Tuting	Upper Siang	GOArP	MOD	Defence
9.	Vijoy nagar	Changlang	GOArP	MOD	Defence
10	Wallong	Anjaw	Under Control of MoD	MOD	Defence
11	Ziro	Lower Subansiri	GOArP	MOD	Defence

Present Developmental Activities

7.2.5 The construction of airport at Tezu (Arunachal Pradesh) and Pakyong (Gangtok) the various Advanced Landing Grounds and civilian enclaves and developmental works in the operational airports are continuing.

7.2.6 The North Eastern Council had assisted Airports Authority of India and is continuing to assist in development of airports in the region. The airport at Tezu is being constructed with financial support from NEC.

Route Dispersal Guidelines

7.2.7 The Route Dispersal Guidelines have been important policy initiative of the Ministry of Civil Aviation that has helped to increase the number of seats available in the North East. The following table and map show the increase in air connectivity in

the North East over the last decade after the civil aviation sector was liberalised.

Traffic Trends in North East Region

Year	Aircraft Movements		Passengers		Freight Tonnes (In	
	No.	% Change	No. (in lakhs)	% Change	No.	% Change
2004-05	33019	4.5 %	14.47	10.8 %	10304	13.4%
2005-06	34036	3.1 %	16.21	12.0 %	11006	6.8%
2006-07	42069	23.6 %	22.72	40.2 %	9836	-10.6%
2007-08	55471	31.9 %	28.62	25.9 %	11260	14.5%
2008-09	58843	6.1 %	29.78	4.1 %	13346	18.5%
2009-10	62307	5.9%	36.28	21.8%	18947	42.0%
2010-11	67393	8.2%	45.10	26.5%	24087	27.1%
2011-12 (Provisional)	70576	4.7%	54.45	18.6%	23748	-1.41%

(Source: DGCA's presentation for PSC 18.4.12)

Viability Gap Funding to Alliance Air

7.2.8 North Eastern Council, Shillong has provided Viability Gap Funding to Alliance Air, a subsidiary of Air India, to operate ATR-42 aircrafts in the NER to increase intra-NER connectivity particularly to those stations where commercial services are inadequate. At present, Tezpur, Dimapur & Leelabari only have service of Air India/Alliance Air. So far, Alliance Air has been paid Rs.346.14 crore (from 2002 to December, 2011).

7.2.9 Assistance from Ministry of Home Affairs to NE State Governments for helicopter services

- (i) To facilitate transportation for general public in remote and hilly areas
- (ii) Given to all states except Assam and Manipur
- (iii) States have to follow a market based price discovery system
- (iv) Flying hours/annum are prescribed in the scheme
- (v) Not more than 20-25% can be used by State Government – rest by public
- (vi) 75% fare subsidised by MHA, rest is either paid by State Government or by the traveller.

ISSUES IN CIVIL AVIATION

Development of airports

7.2.10 **Plan funds for AAI for Capital Works** - For development and expansion of existing airports, providing essential night-landing and other safety features in the operational ones, developing greenfield airports and the non-operational airports, Airports Authority of India is unable to provide resources. Hence, resources would have to be mobilised from Plan funds. As air services are also essential developmental activities for NER, it is recommended that liberal plan funding should be made available to AAI for capital works.

7.2.11 **Public investment for civil aviation infrastructure** - Civil Aviation services for NER is an essentiality. For the people of Mizoram or Tripura, to go upto Kolkata will take three days for a one way journey by road. Hence, civil aviation services are used by the common people in NER. Therefore, public investment in is a must. As a parallel, the road sector has a fully publicly funded special road programme for NER – “Special Accelerated Road Development Programme for the North East (SARDP-NE)”. Similarly, the national projects of the Railways are covered under the Plan funded “Non-Lapsable North East Railway Development Fund of the Ministry of Railways”. Therefore, it is strongly recommended that a publicly funded programme for the complete development of the airport infrastructure in the region is prepared and implemented in the 12th Plan. By the end of the

12th Plan period, all work concerning airport development should be completed. AAI has projected requirement of Rs.3919 crore for NE Region during 12th Plan. Details of Rs.3919 crore is given below. NEC is also funding a few projects but that is not sufficient as NEC's budget is not large enough.

CAPITAL INVESTMENT PROPOSED BY AIRPORTS AUTHORITY OF INDIA IN NER FOR 12TH PLAN PERIOD (2012-17)	12th plan (Rs. in crore)
i) Capital Investment Proposed	2086.00
ii) Budgetary Support/ Grant in Aid proposed	1278.00
a) from MOCA	555.00
b) from NEC	
Total	3919.00

7.2.12 **Cost of land acquisition for airports** – Continuing the parallel with the road and rail sector, in both these sectors, the cost of land acquisition is included in the project cost. The State Governments do not have to bear the cost of land acquisition for roadways and railways. In contrast, Airports Authority of India insists on getting land from the State Governments free of cost. This imposes an undue burden on NE States and affects the development of airports. It is, therefore, recommended that land acquisition cost for civil aviation infrastructure in NER should be borne by the Union Government as part of the project cost.

Night landing and Instrument Landing Systems (ILS)

7.2.13 AAI has drawn up plan for full scale development of civilian airports in the region. AAI should be assisted to start night landing facilities and Instrument Landing Systems wherever technically feasible as it will increase the window of operations for these airports. In the absence of ILS and night landing (presently night landing is operational in Guwahati, Agartala and Imphal) the airports are not optimally utilised. In this IAF owned airports of Tezpur, Silchar, Jorhat & Bagdogra (it will continue to support Sikkim till aircrafts are not be able to land in Pakyong). Moreover,

Pakyong is not an all-weather airport. As Bagdogra airport operates as a civilian enclave, IAF should consider approving night landing with whatever security related restriction that it thinks appropriate.

7.2.14 The advantage of early day break in the North Eastern Region to start early morning flights is also not utilised as ATC hours are restricted due to non-availability of manpower. It is a chicken and egg situation as ATCs are not more intensively manned as few flights land. Airlines can operate more flights if ATC hours are increased, ILS and night landing facilities are made operational.

7.2.15 In the airports at Silchar, Tezpur and Bagdogra, these being IAF airports with civilian enclaves, the ATC is manned by the IAF. AAI should negotiate with IAF so that night landing facility for civilian aircrafts are allowed in these places with appropriate security restrictions.

7.2.16 **Assisting AAI for operation of NER airports which are unviable** - Airports Authority of India will perhaps have to be assisted for defraying operational cost at least for the near to medium future to operate the smaller airports that are presently there and the ones that are coming up.

Creation of locally trained manpower to run civil aviation infrastructure

7.2.17 **Inadequate trained manpower to run the airports & creation of training facilities in the Region** – Airport facility in the region are being expanded. As there is general reluctance for employees to work in the NER, airports are not adequately manned. Even the Indian Air Force says that they are not able to operate night landing facility in the civilian enclave for Silchar airport due to lack of manpower. Hence, it is recommended that local youth are trained in different sector of aviation, particularly in ground handling, navigation, logistics, etc.

7.2.18 For creation of a base of adequately trained manpower who would be willing to give their services to the region, local training facilities have to be developed. Lilabari in Assam(district North Lakhmpur) has space available for it. Challenge lies in setting up the facilities (with public investment), developing accredited curriculum and training courses and operating the institute. A

practical option would be to have a branch of the National Aviation Academy at Rae Bareilly in Lilabari. Aircraft maintenance courses could be started in polytechnics in the region. The aviation academy will have to be owned and run by the Central Government as no private agency is likely to find Lilabari presently attractive nor are State Governments capable of running such institutions. Civil Aviation is in the Union List of the Constitution.

7.2.19 We are not recommending training facilities to be set up with public investment in NER for pilot or air hostesses training as these are available in the private sector in adequate numbers outside NER also.

Hub and Spoke Model for operation and use of small aircrafts in spokes

7.2.20 **Hub and spoke model & use of small sized terrain friendly appropriate aircraft** - Airlines are run on commercial line. The line taken by operators and MoCA is that operations in the North Eastern Region are commercially loss making. The model presently operating is not suitable as it does not account for the topography, sparse spread by population, tenuous physical link with the rest of India and huge distances. A hub and spoke model with Guwahati and also Agartala, Imphal and Dibrugarh as hubs and other destinations and spokes should be a more appropriate model. Small aircrafts stationed in Guwahati and other hubs could operate early morning (to take advantage of early day break in the region) and bring travellers to Guwahati/Agartala and shift into bigger aircrafts to travel further to Delhi, Kolkata, Mumbai, etc. The transit time should not be more than 30-40 min in the morning and also evening so that travellers are able to reach destination outside the region by 10:00 – 10:30 AM and return the same day if possible. At least for Delhi and Kolkata, this model needs to be in place.

7.2.21 In order to get this model going, the following are required:

- (i) Development of physical infrastructure for hubs. This is the easier part as it involves plan investment by AAI with funds from MoCA/DONER/NEC. **Creation of airport hubs with hangars is strongly recommended to be immediately installed in Guwahati, Agartala, Imphal and Dibrugarh.**

- (ii) Making airlines use the facilities for the hub in Guwahati/Agartala/Dibrugarh is the more difficult as they do not have enough manpower to be placed there. Further locally trained manpower is not available. Trained and deployed people are unwilling to shift to Guwahati.
- (iii) For the hub and spoke model to be successful, small aircrafts are needed. At present, barring North East Shuttle, a private NSOP, no airlines is operating small aircrafts. Alliance Air operates ATR-42 with viability gap funding from NEC. Hence, change in policy and perhaps mindset to promote use of smaller aircrafts in the NER for the hub and spoke model is essential.
- (iv) Available models of smaller aircraft with tentative costs are as follows:

Name	Seating capacity	Cost
		(in \$ million)
Embraer ERJ 135	37	15
Bombardier CRJ 100/CRJ 200/CRJ 440	44 to 50	21 – 40
Sukhoi Superjet 100 SSJ60	53	27.8
Dassault Falcon 900	20	-
Dassault Falcon 700	14	50
Boeing BBJ	63	60
Antonov An 148	85	18 - 22
Fairchild Dornier 328 Jet	32	12

Multiple use of aircrafts

7.2.22 Air services within the region shall be based on the multi-utilities such as passenger traffic, high value cargo, medical and other emergency services. It addresses the viability issues of air services by operating smaller carriers. Further, this will stimulate the development within the region by bringing together the critical mass required for growth in terms of networking of sparse population, transport of high value commodities like flowers, fruits, medicinal plants, organic products. As horticulture and floriculture is growing in the NER, multiple use (passenger and cargo) of aircrafts will be useful in quick transportation of these perishable but high valued commodities to the markets outside NER. Passenger in peak hours and cargo in non-peak hours can be combined in small sized dual use aircrafts to carry both

passengers and cargo from spokes to the hub. It will also address the viability issue of small aircrafts.

Promotion of helicopter services

7.2.23 Helicopter services will play an important role in the civil aviation sector in NER especially for remote areas. Helicopter services, however, are expensive. How they can be made viable is a crucial question. We have discussed the scheme being operated by Ministry of Home Affairs for helicopter services. Thus, promotion of helicopters should not be lost sight of in the Region.

7.2.24 The hub and spoke model can be achieved by three-tier air services viz.,

- (i) connectivity between regional hubs (like Guwahati, Agartala, Imphal, etc) and Metros like Delhi and Kolkata – big aircrafts
- (ii) intra-regional connectivity between Regional hubs and smaller airports and airfields within the region - small aircrafts
- (iii) and finally, helicopter services in remote districts to the smaller airports/airfields/regional hubs, which may be operated depending on the daily/weekly needs.

7.2.25 Such three-tier system would fit into a 'Hub-and-Spoke' model to feed the big carriers to outside of the region and address the viability issues in a systematic manner.

Uptodate weather information

7.2.26 State of art weather information systems are required to prevent accidents and frequent cancellation and delays. As services are not reliable especially in routes that are in the interior, passengers feel safer to depend on roads. This lead to a chicken and egg situation where passenger load is not available affecting commercial viability. As the weather is tricky, therefore, regular up-to-date information to the pilot can reduce the number of cancellation and enhance the trust of the public in the regularity and certainty of air services. The Department of Meteorology should develop plan to effective collection of weather data & broadcasting it in real time to airline operators.

Tackling flight cancellations and unsuitable timings

7.2.27 The problem in civil aviation presently in NER is not the dearth of services but the absence of certainty and regularity and of course appropriate timings. Case in point are Shillong and Lilabari airports.

- (i) Arunachal Pradesh presently has no airport. There is only helicopter service between Itanagar and Guwahati subsidised by the Ministry of Home Affairs. As seats available are less, so passengers have to drive to Guwahati. Lilabari airport in North Lakhimpur, Assam is around 60 km from Itanagar and is well developed for large aircrafts. But services to Lilabari are so unreliable and in such inappropriate timings that passengers prefer to drive down to Guwahati spending time and fuel.
- (ii) Shillong is not only a tourist and educational destination but has large number of Central Government, civilian and Defence offices, it also has well established educational institution. A flight operated between Kolkata and Shillong is so irregular that again travellers prefer to drive down to Guwahati from Shillong clogging the already heavily used NH-37 between Guwahati and Shillong.

7.2.28 Therefore, operations in NER have to be taken out of the two uncertainties of flight cancellations and unsuitable timings. The issue of unsuitable timings can be addressed in our opinion if the hub and spoke model is operationalised, ATCs are remain open for a longer period, night landing and instrumentation landing system are put in place and up-to-date weather information is available to the pilots.

Promotion of connectivity with neighbouring countries

7.2.29 Promotion of air connectivity with neighbouring countries is a growing demand. While a direct Dhaka-Guwahati or Guwahati-Bangkok flight may not be commercially viable, hopping flights can be worked out. Connectivity to Myanmar is also required. Flights in small planes between Imphal-Mandalay/Yangon can be started.

Incorporating the specific requirements of NER in an aviation policy for the region

7.2.30 Main reason for lack of effective civil aviation services in North Eastern Region is application of same policy instruments for the rest of the country and the region as well. MoCA has already come out with a set of revised regulatory policy changes which is under active consideration should be finalised early. Flexible norms for NSOP to operate the interior routes and feed to the flights operating to the metro cities.

7.2.31 Recently, the Ministry of Civil Aviation has prepared a report on improving “Regional Air Connectivity” (Rohit Nandan Committee Report, 2012). It has made certain practical recommendations regarding:

- (i) Modifying Route Dispersal Guidelines to include more weightage to non-capital stations in NER. Additional connectivity created should be distributed in 40:60 ratio between capital and non-capital stations.
- (ii) Airline to be asked to deploy additional capacity in future in Meghalaya and Nagaland of course subject to market demand and adequate infrastructure.
- (iii) Promote deployment of small aircrafts
- (iv) Setting up Essential Air Services Fund to promote Government intervention for connectivity to peripheral remote locations. Such schemes are prevalent in developed countries also – UK (North East England and Wales), USA (Essential Air Services Programme, Small Community Air Service Development Programme), European Union, Caribbean and Pacific countries. This is particularly relevant to NER and we recommend that MoCA take a positive view.
- (v) As scheduled airlines in India desire to maintain homogenous fleet of aircrafts, the character of non-scheduled operators (NSOP) should be changed to allow them more flexibility as they operate smaller aircrafts (less than 40 seats). They should be allowed to publish their schedule and have joint operations with scheduled airlines. In this way, the hub and spoke model – small aircrafts at the spoke (NSOPs) can work together with scheduled operators at the hub. They can bring passengers in small aircrafts from smaller places to Guwahati or Agartala from where the passengers will be put in larger plane to connect them to the metros.
- (vi) Facilitating the promotion of regional airlines.

7.2.32 We urge the Ministry of Civil Aviation to take a quick and practical decision on the recommendation of the Rohit Nandan Committee.

BASIS OF MODEL CALCULATION ON VIABILITY OF AIRLINE OPERATIONS IN NER

7.2.33 Considering the significance of the development of the civil aviation industry in the NER, an exercise was carried out to work out the economics of airline operations. The main objective of this exercise is to put in place a mechanism for providing regular and reliable air service in the North East Region. It is felt that to meet this objective, it is necessary to ensure viability of air operations in the North East.

Findings from the Exercise

7.2.34 Several attempts to get data from Airline Allied Services Ltd didn't materialize. Owing to the absence of available data on operation of air services, the group relied upon the data provided by Shaurya Aeronautics Pvt. Ltd. This data was modified keeping in view the Indian conditions after discussions with the experts. Liberal norms were adopted to work out the cost. Hence, the cost of operations worked out in this exercise may be somewhat on a higher side.

7.2.35 The cost per available seat kms has been computed for 3 different scenarios- 2000 flying hours, 2500 flying hours and 3000 flying hours over a distance of 100 nm, 200 nm, 300 nm. (*Module calculation on viability at Annexure*)

7.2.36 The identification and classification of cost elements was supported by the data provided for running a Dornier 328Jet aircraft. For a 32 seater aircraft, the Study indicated that the operating cost per ASKms for all the different scenarios were in an approximation range of Rs 8.96 to Rs 11.73. Taking into account the load factor of 75% in the various scenarios, the operating cost per RPKms turns out to be in a range of Rs 11.95 to Rs. 15.64. This cost is further subjected to reduction since the above calculation has not taken into account the aspect of exploring air based freight transportation for avenues like:

- (i) Floriculture, horticulture and spices.
- (ii) Express Mail and Postal Services

7.2.37 Since tourism is at its nascent stage in the NER, scheduling of hopping flights during the day hours is another possibility to promote inter regional, intra-regional as well as international connectivity in the NER

7.2.38 The table below provides existing system of pricing of air tickets by Air India in the NER. The figures have been extracted from the airline's website and the calculation thus involves some level of judgment and empiricism due to lack of sound database.

Computation of Revenue per Passenger km

Origin-Destination	Revenue per Passenger (INR)	Air Distance between O-D (Km)	Revenue per Passenger Km (INR/Km)
Aizwal-Imphal	2395	172	13.92
Guwahati-Agartala	2495	267	9.34
Aizwal-Guwahati	2675	288	9.29

7.2.39 The above air fares are prevalent in a time lag of two months from the day of booking an air ticket. However, on a very short notice period, say a day or two, the following is the price structure between the cities-

Origin-Destination	Revenue per Passenger (INR)	Air Distance between O-D (Km)	Revenue per Passenger Km (INR/Km)
Aizwal-Imphal	3439	172	20
Guwahati-Agartala	3439	267	12.88
Aizwal-Guwahati	4429	288	15.38

7.2.40 Thus, it is noted that on a liberal basis, the simple average RPKms, hover around Rs. 10.85 to Rs 16.09 depending on the ticketing scenario. Since the data of foot count of passengers travelling between O-D was not available, weighted average method could not be adopted.

7.2.41 Imperatively, it is observed that the simple average cost of airline operations for all the different scenarios, turns out to be Rs. 13.40 at a load factor of 75% while the simple average revenue charge per passenger from Air India for 3 above three flights is Rs. 13.49. Figuratively, this implies that on varying the load factor, the gap between the operating cost per ASkm and the Revenue per passenger km would diverge distinctly. This value would also differ on taking into account the revenue earned for movement of cargo by airline operators. For a load factor of 60%, as portrayed by Airline Allied Services Ltd. the operating cost turns out to be Rs.16.75 and it is Rs. 14.36 at a seat factor of 70%. Thus, it gives us a unique vantage point to call firsthand that there requires a shift in the paradigm of providing capital subsidy for airline operators in the NER once the available resources are allocated efficiently.

7.2.42 By pursuing a new and an innovative policy based on the small aircraft-centric rationale, airline operators are required to primarily focus on operationalizing the existing smaller airports/airfields based on hub-and-spoke model hinges on small aircraft-centric operations without locking up huge capital. This methodology is not only cost-effective, but will also fit to the local requirement which will give immediate benefits by using the unutilized and idle assets available in the region.

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7.3 RAILWAYS

- 7.3.1 It is customary for transport plan to place railways after the road sector. Roads will continue to be the backbone of the North Eastern Region. However, once the railway network is in place, which we envisage in another 10 to 15 years, the natural advantages of railway system in terms of lower cost of carriage and ability to carry bulk over long distances will emerge in this region also. Therefore, it is essential that the planning is done in such a manner that the benefits of roads and rail merge in a multi-modal manner in future. The region is rich in power resources. Availability of power in future after the completion of several major power projects for operation of trains within the region can be envisaged. Smaller trains can crisscross the region to provide intra regional connectivity.
- 7.3.2 As investment by the Ministry of Railways is increasing in NER, the existing projects and plans are first discussed below.

Ongoing and Projected Activities

- 7.3.3 The major objectives to strengthen and expand the railway infrastructure by the Ministry of Railways in NER are presently as follows:
- (i) Connectivity to all State capitals
 - (ii) Conversion to unigauge – regionwide broadgauge network
 - (iii) Augmentation of network capacity for handling growth of traffic in future.
 - (iv) Expansion of network to unconnected areas of the region
 - (v) Improving trade and connectivity with neighbouring countries.
 - (vi) Strengthening international borders

(Please see map at page 85)

- 7.3.4 The Ministry of Railways has prepared a Master Plan for North Eastern Region to improve rail connectivity (a) within the region, (b) connectivity with rest of India and (c) connectivity across international boundaries.

Existing network

7.3.5 The present rail network in the North East Region comprises 2602.35 route kms (1454.16 kms on the broad gauge and the remaining 1148.19 kms on the metre gauge). The state-wise distribution of the network as on 31.03.2011 is as follows.

State	BG	MG	Total Km
Arunachal Pradesh		1.26	1.26
Assam	1443.03	990.96	2433.99
Tripura	0	151.40	151.40
Nagaland	11.13	1.72	12.85
Manipur	-	1.35	1.35
Mizoram	-	1.50	1.50
Meghalaya	-	-	-
Sikkim	-	-	-
Total	1454.16	1148.19	2602.35

7.3.6 At the time of independence, whole of North Eastern Region was served only by metre gauge railway. Huge investments have been made in the last sixty years through nearly 1500 kms broad gauge by converting the existing route in a very difficult terrain. Out of the 1150 kms remaining on the metre gauge, 1130 kms has already been sanctioned for conversion to broad gauge under 4 projects which are already under progress. With the completion of these four projects, only 20 kms of metre gauge would remain in the region. These meter gauges are declared as world heritage sites.

Category-Wise break up of present Projects

7.3.7 Seventeen projects comprising new line/gauge conversion/doubling and railway electrification are in progress with a total throw forward of Rs 16153.00 cr. The category-wise break up of projects are as follows:

Plan Head	New Line	Gauge Conversion	Doubling	Railway Electrification	Total
Projects in progress	13	4	1	1	19
Total Cost	22575.88	7504.57	246.07	821	31147.52
Cumulative Expenditure up to March'12	5080.16	5347.61	0	295	10722.77
Throw forward in Rs. crore as on 01.04.2012	12522	2851	0	526	20424.75
Length of ongoing works (Km)	965	1510 (893)	44.92	836	3355.92
National Projects (no.)	8	2	-	-	10

Non-Lapsable North East Railway Development Fund of the Ministry of Railways

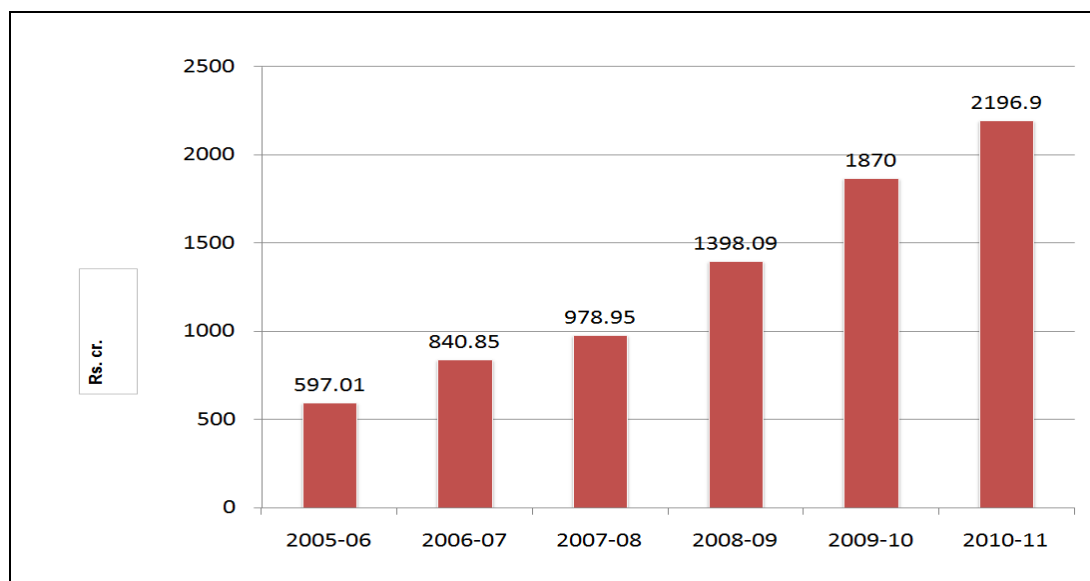
7.3.8 Ten of these projects have been declared as National Projects where the funding for the project is met to the extent of 75% by the Central Government and 25% by the Ministry of Railways. This special funding arrangement is helping the timely completion of the railway projects in NER.

Increasing investments in Railways in NER

7.3.9 Due to difficult terrain, poor condition of law and order leading to insurgency in certain areas, the targets of projects has been quite tardy. However, in the last five years, Ministry of Railways have put in strenuous efforts to deliver on various promises and utilises the fund allotted by the Planning Commission. As a result of the focused attention, the Railways' investment in North East

Region has steadily been going up and output has also shown significant improvements.

Railway Investments in NE Region



7.3.10 Achievements so far

Year	New Line	Gauge Conversion	Doubling
2007-08	20	107	-
2008-09	113	170	-
2009-10	-	110	-
2010-11	58	110	31
2011-12	148	409	-

Connectivity projects to all State Capitals

7.3.11 It is necessary to connect all state capitals with the rest of the country. The state capitals of Assam & Tripura are already connected. New lines for connecting state capitals of Arunachal Pradesh, Manipur, Nagaland, Mizoram, and Meghalaya have been sanctioned and work is in progress. In case of Sikkim, a new line from Sivok to Rangpo has already been sanctioned. The status and the likely targets for completion are as under:

Status of Connectivity to Capital Cities				
S. No.	State	Capital	Name of Project	Remarks & Target Date
1	Assam	Guwahati (Dispur)		Connected.
2	Tripura	Agartala	Kumarghat-Agartala	Connected
3	Arunachal Pradesh	Itanagar	Harmuti-Itanagar	Harmuti-Naharlung: Mar-2012
4	Manipur	Imphal	Jiribam-Tupul	Jiribam-Tupul: Mar-2014 Tupul-Imphal: Mar-2016
5	Nagaland	Kohima	Dimapur-Zubza	Mar-2015 (T) Extn. to Kohima will be processed after detailed survey, Problem in LA.
6	Mizoram	Aizwal	Bhairabhi-Sairang	Mar-2014 Extn. to Aizwal will be examined during detailed survey
7	Meghalaya	Shillong	Azra-Byrnihat-Shillong	Tetelia-Byrnihat in lieu of Azra-Byrnihat - Mar-2014 . Byrnihat- Shillong not fixed.
8	Sikkim	Gangtok	Sivok-Rangpo	Sivok-Rangpo – Mar-2015. Proposal of Rangpo-Gangtok was not agreed by.

Unigauge Network Conversion Projects

7.3.12 One of the major hindrances in smooth flow of traffic is the existence of meter gauge track along with broad gauge, which requires transshipment at Lumding and Rangiya. Once the gauge conversion is completed people can travel to rest of the country without changing in between for most parts of the country. It is expected that these projects shall be completed by 2014. The details are as under:

Gauge Conversion					
	Project	State	Km.	Remarks	Target date for completion
1	Lumding-Silchar- Jiribam & Badarpur- Kumarghat	Assam, Tripura, Manipur	482.73	National Project	Dec-2013
2	Rangia- Murkongselek alongwith linked fingers	Assam, Arunachal Pradesh	510	National Project	Mar-2014
3	Katakhal-Bhairabi	Assam, Mizoram	84		Dec-2014

Strategic Railway lines

7.3.13 North Eastern region of the country is strategically important from defence point of view as this region borders China, Bangladesh and Myanmar. A few strategically important new line projects have been identified in consultations with the Defence authorities, which apart from addressing our security concerns will also take the rail network to newer areas. Some of the lines that are proposed are as under:

Strategic Railway Lines		
S.N o	State	Section
1	Assam, Arunachal Pradesh	Murkongselek-Pasighat (sanctioned in 2011-12.) Passighat-Tezu-Rupai survey taken up.
2	Assam, Arunachal Pradesh	North Lakhimpur-Along-Silapathar survey taken up.
3	Assam, Arunachal Pradesh	Missamari-Tawang (sanctioned)

Augmentation of network capacity

7.3.14 The development of the rail network in the area is likely to increase the freight and passenger traffic and therefore

augmentation of the network capacity will be needed. At present, the route from New Jalpaiguri to Lumding has double line in parts. With growth of passenger and freight traffic likely to go up considerably in the future, the entire stretch from New Jalpaiguri to Guwahati will need to be doubled. The following routes are expected to be strengthened in due course.

- (i) Doubling of New Jalpaiguri – New Alipurduar route
- (ii) Doubling of New Bongaigaon to Guwahati route
- (iii) Doubling of Guwahati to Lumding route: Guwahati to Lumding route is the common portion which serves traffic going to Dibrugarh side and towards Silchar. To avoid congestion this route needs to be doubled. A part of the route between Guwahati and Digaru has already been completed and commissioned.

Expansion of the network

7.3.15 Railways already have 11 new line projects on hand which on completion will add 882 kms to the network in the region. The details are as under:

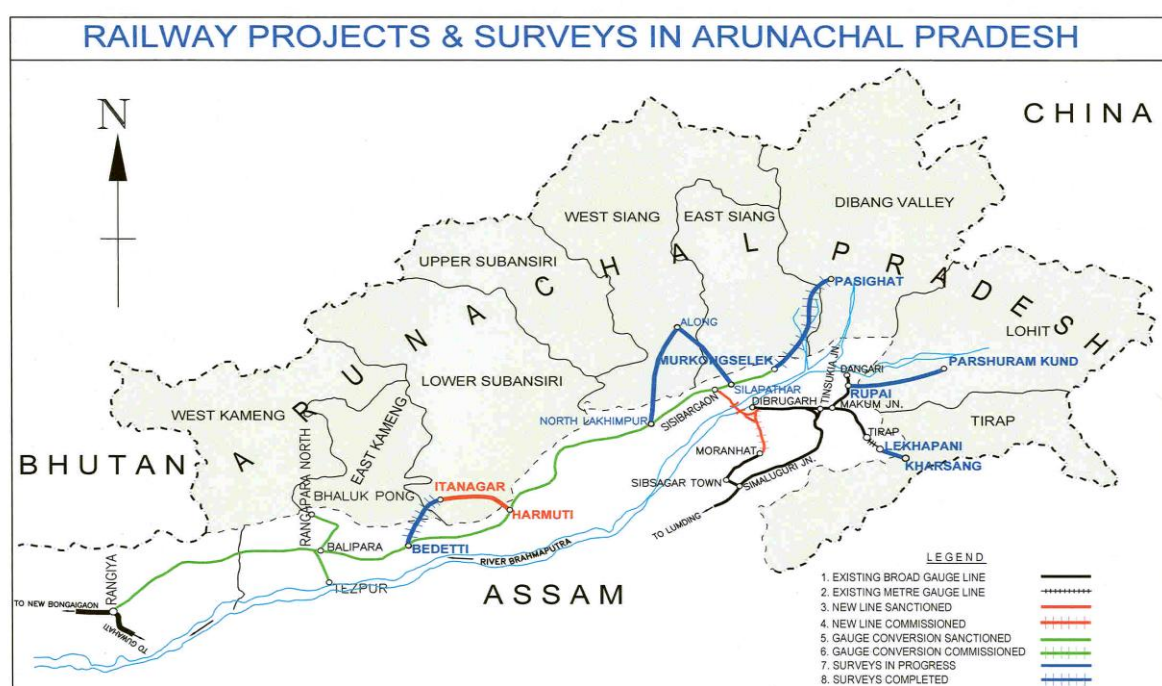
New Lines					
S.No	Name of Project	State	Length (km)	Remarks	Target date
1	Bogibeel Rail cum Road Bridge	Assam	73	National Project	Dec-2015
2	New Maynaguri-Jogighopa	Assam, W.Bengal	245.68		Mar-2014
3	Murkongselek-Pasighat	Assam	30.61		Mar-2015
4	Tetelia-Byrnihat in lieu of Azra-Byrnihat	Meghalaya, Assam	21.5	National Project	Mar-2014
5	Dudhnoi-Mendipathar	Meghalaya, Assam	19.75		Mar-2013
6	Harmuti-Itanagar	Arunachal, Assam	33		Harmuti-Naharlagun: Mar-2012

7	Byrnihat – Shillong	Meghalaya	108	National Project	Mar-2017
8	Bhairabi- Sairang (Aizwal)	Mizoram	51.38	National Project	Mar-2014
9	Jiribam-Tupul (Imphal)	Manipur	98	National Project	Jiribam-Tupul: Mar-2014 Tupul-Imphal: Mar-2016
10	Dimapur-Zubza (Kohima)	Nagaland	88	National Project	Mar-2015
11	Sivok – Rangpo	Sikkim, West Bengal	51.38	National Project	Dec-2015
12	Agartala-Sabroom	Tripura	110	National Project	Agartala-Udaipur: Dec-2012 Udaipur-Sabroom: Mar-2014

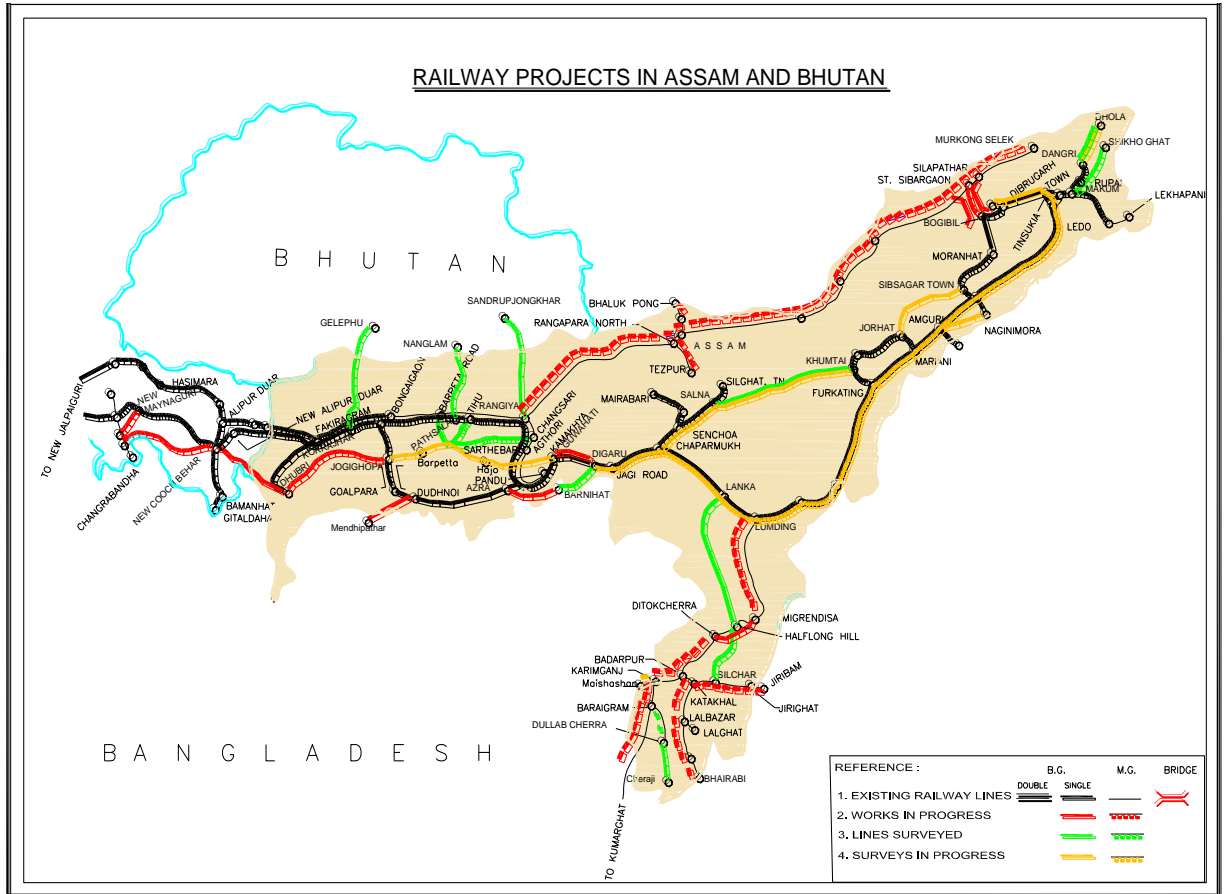
Ongoing Surveys

7.3.16 During discussions with the state government representatives of the eight states of the Northeast Region, some suggestions have been received. In many of the cases, surveys are yet to be done. A decision on taking up the construction of these lines will be done after the surveys are completed and funding mechanisms are in place. The list of lines where surveys are underway.

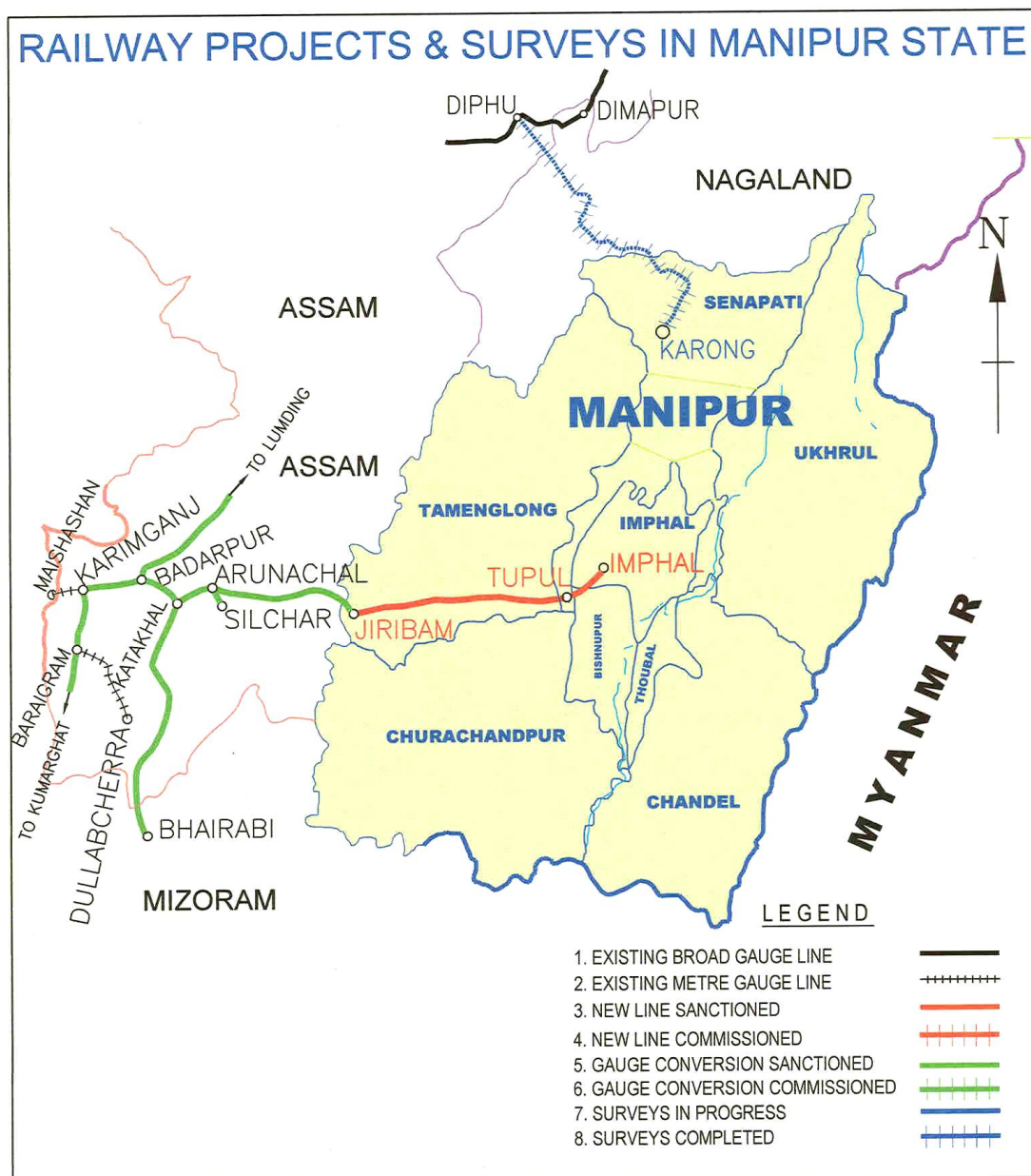
Arunachal Pradesh				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Lekhapani to Kharsang	Survey completed. Report under examination	31	318
2	New Line from North Lakhimpur to Shilapathar via Along	Survey completed and Report under examination.	248	11155
3	New Line from Jagun to Nampong via Jairampur.	Survey not yet sanctioned.		
4	New Line from Miao via Jagun and Kharsang.	Survey not yet sanctioned.		
5	New Line from Pasighat-Tezu-Parsuramkund.	Survey in progress	130	
6	New line from Rowta to Twang via Udalgiri-Shikardanga-Kalaktang-Shergaon-Tenga.	Not yet sanctioned.		
7	New Line from Misamari-Tawang	Survey in progress	329	



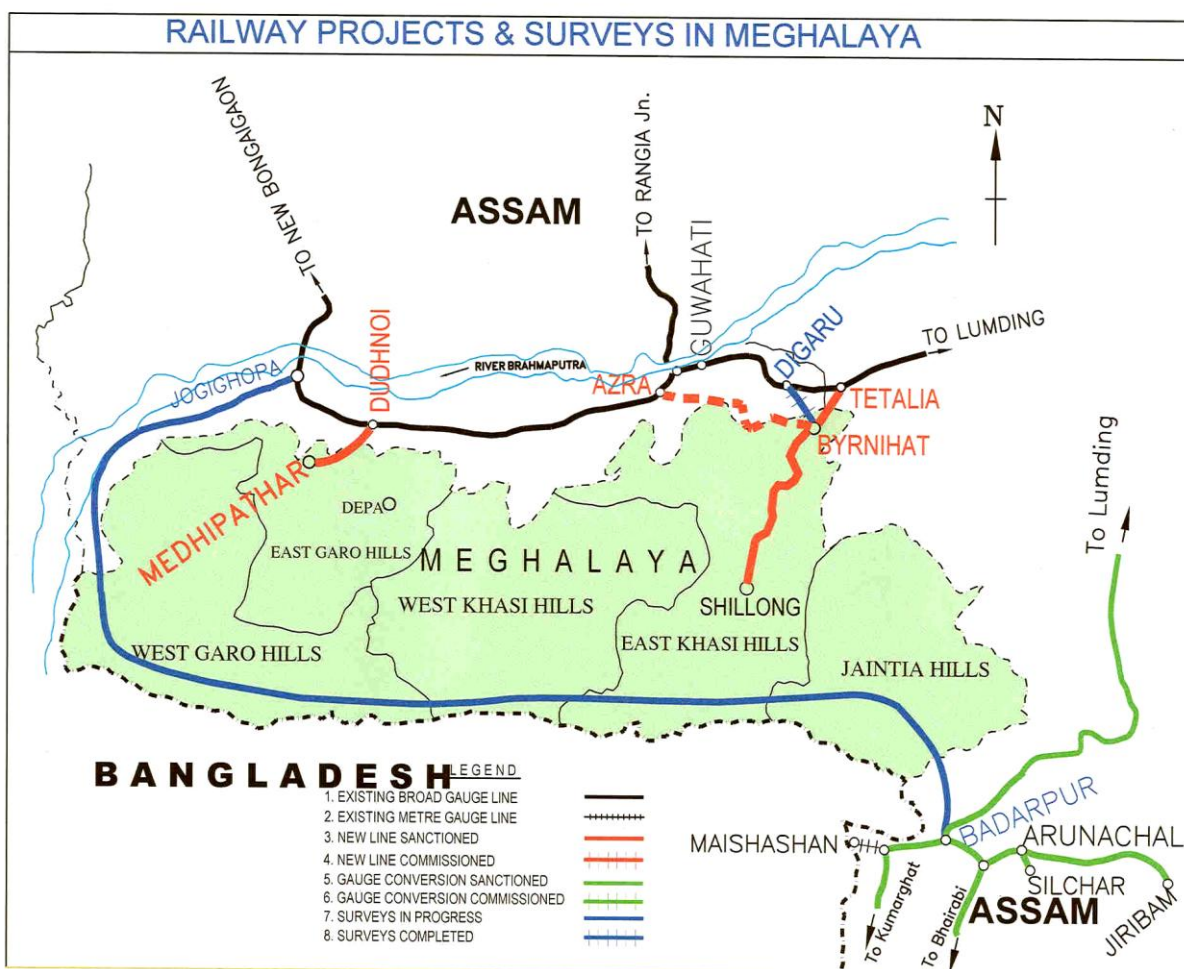
Assam				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Silghat to Tezpur along with construction of bridge river across River Brahmaputra	Survey in progress sanctioned in 2011-12	33	
2	New Line from Salona to Khumtai	Survey completed, Report under examination.	99	2932
3	New Line from Jorhat to Sibsagar. This part of Chaparmukh-Dibrugarh. To be done under PMRVY	Survey completed, 2010-11 and examined.	344	3491
4	2 nd Railway Bridge at Saraighat across River Brahmaputra	Survey completed, Report under examination.		300.67
5	New Line from Tirap – Lekhapani	Survey completed, Report under examination	6	52
6	New Line from Pancharatna to Silchar	Shelved by Board	437	18180.5
7	Doubling of New Bongaigaon to Kamakhya via Goalpara	Survey in progress	178	
8	Doubling of New Bongaigaon to Kamakhya via Rangiya	Survey in progress	150	
9	Doubling of Digaru to Dibrugarh	Survey completed	520	3189
10	Railway Electrification from Guwahati to Dibrugarh	RE from Katihar to Guwahati is sanctioned and work is in progress.		



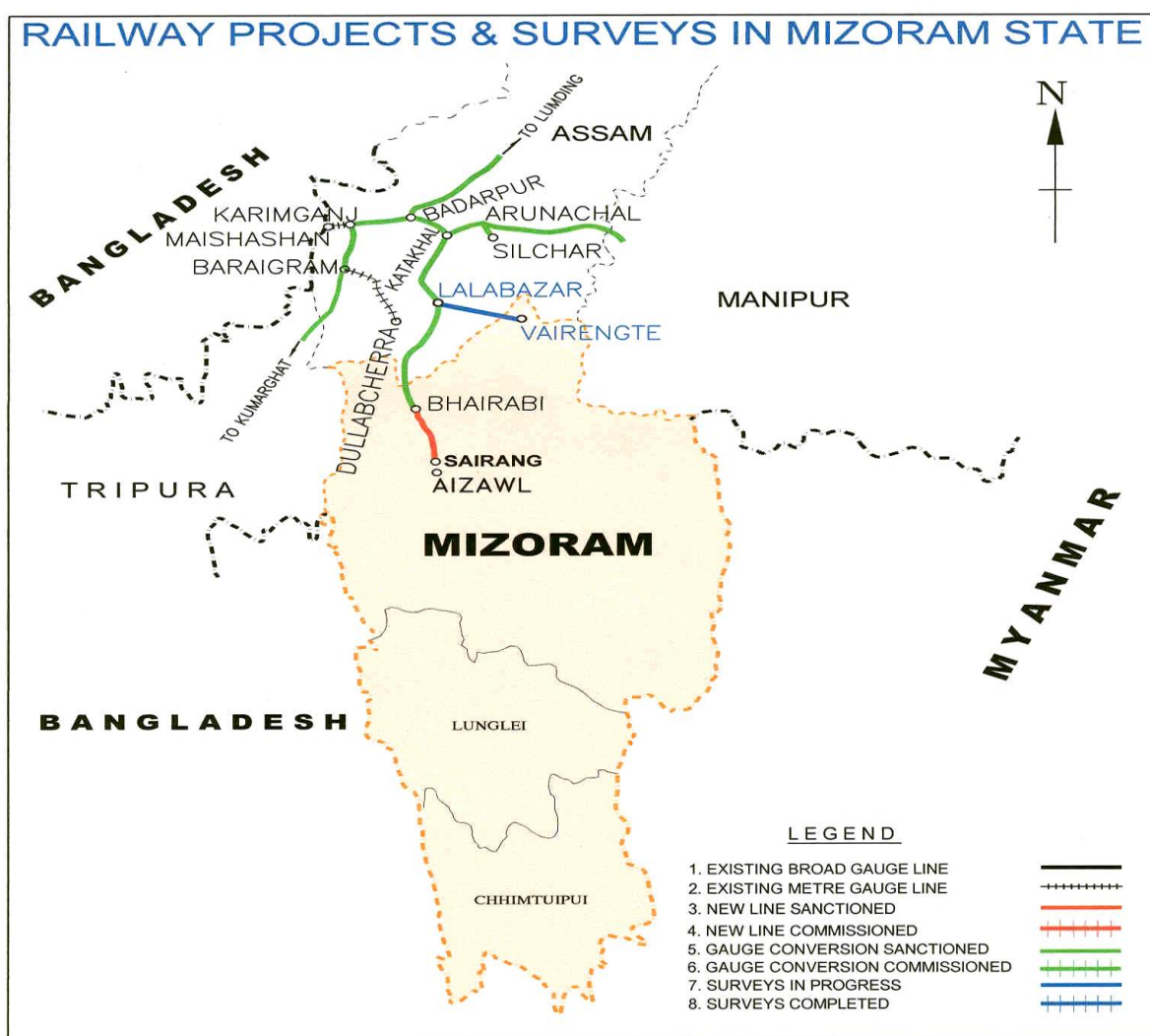
Manipur				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line between Imphal-Moreh (Myanmar)	Survey to be sanctioned.		



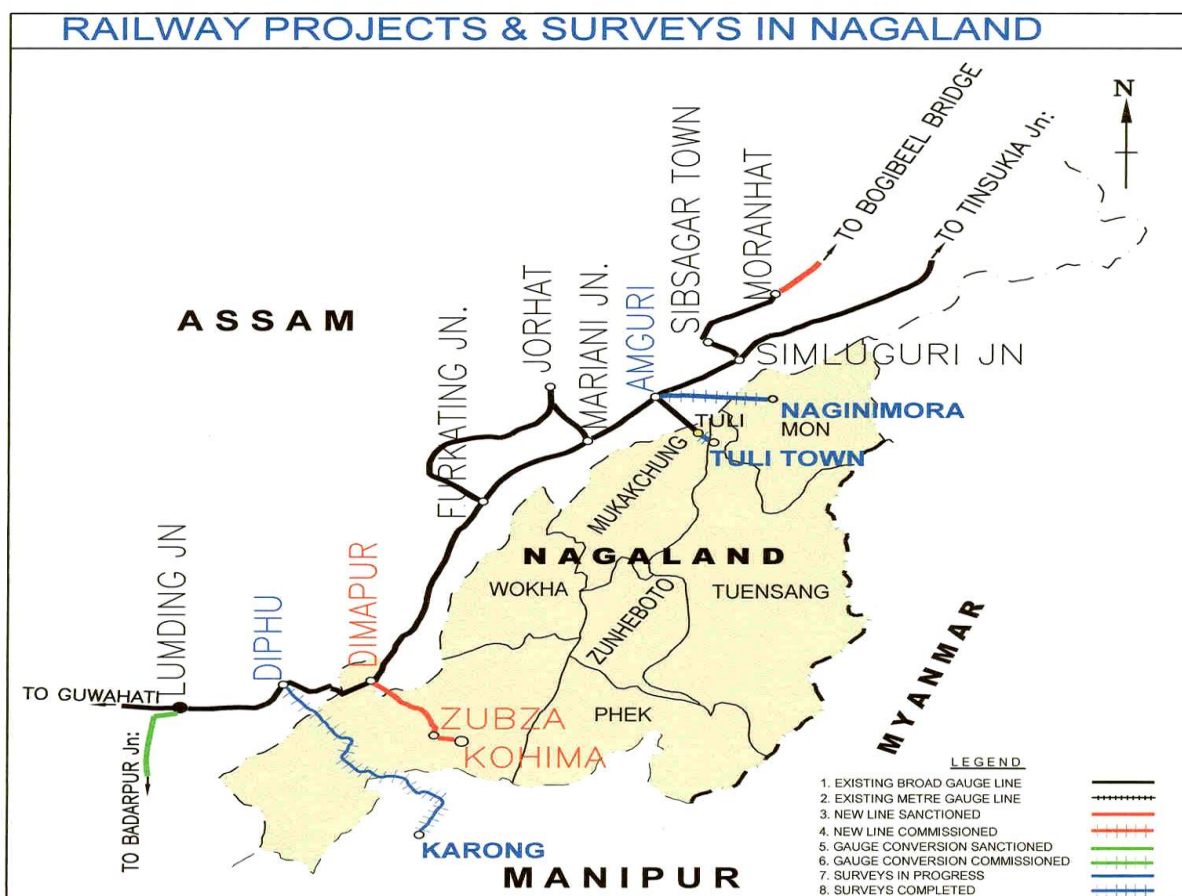
Meghalaya				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Jogighopa (Panchratna)-Tirikila-Selsella-Zikzak-Baghmara-Ranikor-Shella-Dawki-Silchar.	Shelved by Board	437	18180.57
2	New Line from Jowai-Lokro	Survey progress in	170	
3	New Line from Shillong to Chandranathpur	Survey sanctioned in 2011-12		



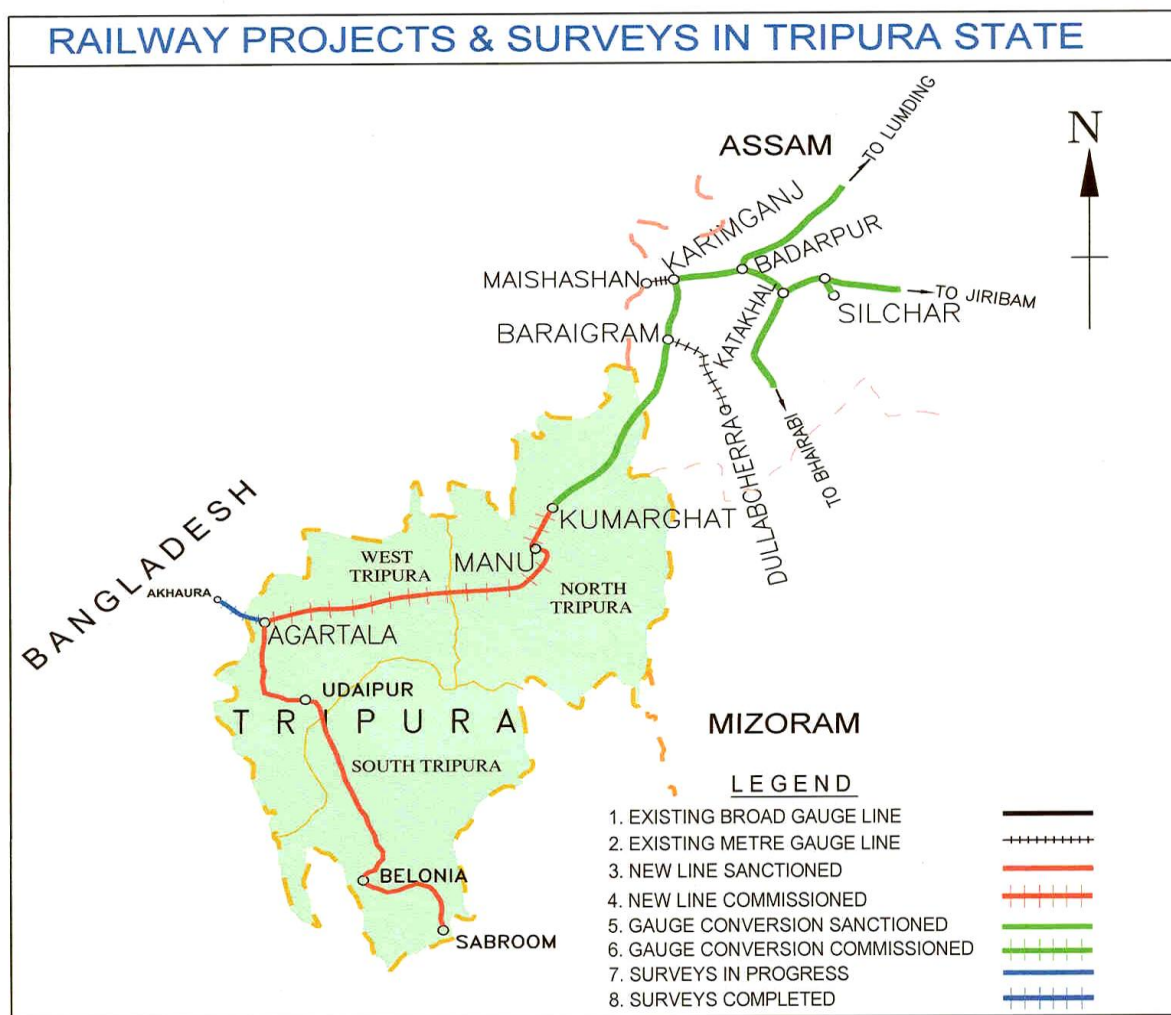
Mizoram				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Sairang to Indo-Myanmar Multi Modal Transit Transport Route at Hruitezwl and lateral extension to Tlabung and Chaphai.	Deferred		
2	Lalabazar (Assam)-to Vairengte (Mizoram)	-	20.3	364.10



Nagaland				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Dimapur to Tizit	Survey is in progress	190	
2	New Line from Amguri to Naginimora	Survey completed and report under examination	31	389
3	New Line from Tuli-Tuli Town	Shelved	9	109



Tripura				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	New Line from Agartala-Akhaura BG rail line as a National Project. (Total length on Indian side 5.4 Kms & cost Rs. 105.55 Cr.)	Survey progress	in 10	251.19
2	New Line from Belonia (Tripura) to Belonia (Bangladesh) and Sabroom- Ramgarh.	Survey not yet sanctioned.		



Sikkim				
S.No	Project	Remarks	Kms	Cost (Rs.Cr.)
1	Extension of New Line from Sivok - Rangpo (sanctioned) & Rangpo to Bhusuk (Gangtok)	Sivok – Rangpo sanctioned & being done by IRCON.	69	4853.36
2	New Line between Mirik-Rangpo	Mirik-Gangtok:- Survey already done, Rly asked to explore possibility of connecting this line to Sivok-Rangpo-Gangtok line at some point to save on cost.	163	11684.29



Issues, strategies and recommendations

7.3.17 In this section, we have suggested changes in technology and certain new lines that would open up new areas, create redundancies in the network to deal with natural calamities and strategic requirements. The international neighbourhood of India in that region is volatile. The location of NER being what it is, connectivity with and through the neighbouring countries is an imperative. At the same time, new areas which are facing violent underground activities have to be brought into the main stream by providing them bulk and cheap connectivity which can only be done through the railways.

7.3.18 The following issues listed below may be seen from this perspective:

- (i) **New line from Dhubri-Meghalaya-Silchar:** It is suggested that a new line through Meghalaya connecting Dhubri to Silchar via Tura-Shillong should be surveyed and taken up as an alternate route for Badarpur-Silchar and beyond. This new alignment will link the entry point of Jogighopa on the Indo-Bangladesh border to Meghalaya and southern Assam. It would create a link between the two proposed multi-modal hubs at Jogighopa (near Dhubri-65 km) and Badarpur (near Silchar-18 km). At Shillong it will connect also with the new sanctioned line to Byrnihat (in Meghalaya on the Guwahati-Shillong road) providing another alternate connection.
- (ii) **Electrification of Guwahati-Lumding-Silchar-Agartala (then Sabroom when completed):** At present, electrification of broad gauge line up to Guwahati has been sanctioned. In order to provide seamless connectivity within the region, electrification of Guwahati-Lumding-Silchar-Agartala line also should be taken up.
- (iii) **Finalisation of route & cost for Shillong, Gangtok and Kohima:** All the capitals of the states of the North Eastern Region are expected to be on the railway map by 2020. This deadline must be adhered to particularly as Shillong,

Gangtok and Kohima connectivity are yet to be finalised by way of alignment and costs.

- (iv) **New line between Imphal-Moreh-Mandalay** - Railways are already building a line up to Imphal. This line if extended to Moreh, which is a border town neighbouring Myanmar and will most certainly become India's gateway to land route to South East Asia, will enable greater interaction and trade between the two countries. The line should be extended upto Mandalay which is the commercial capital of Myanmar. An Imphal-Moreh- Mandalay Railway link will provide commercial opportunity for the North East for trade with Myanmar and beyond.
- (v) **Imphal-Kohima-Tirap (Arunachal Pradesh):** Connectivity should be provided from Imphal (which is a current National Project) to Kohima and take it further to connect Tirap in Arunachal Pradesh. This line would skirt the area adjoining the eastern international boundary, and would provide an alternate connectivity to all the capital towns in the region. It would catalyse industrial development in the region. Tirap and changlang districts are facing challenge of insurgency. Railway line will link these areas to the rest of region and further on.
- (vi) **Doubling from New Jalpaiguri to New Alipurduar:** At present, there is heavy traffic flow beyond Farakka towards North Eastern Region and the route suffers from huge bottlenecks. The work of doubling from New Jalpaiguri to New Alipurduar should be taken up with immediate effect.
- (vii) **Improve line capacity from Farakka to New Jalpaiguri through automatic block signalling :** Line capacity from Farakka to New Jalpaiguri should be increased which could be done by introducing automatic block signalling in the entire territory with an improved headway. This is a cheaper solution than building another line.
- (viii) **Badarpur as multimodal hub:** With broad gauge reaching Silchar and beyond, Badarpur could be developed as an intermodal transport hub where rail, road, inland waterway (Barak river) and civil aviation facility must converge. A proper intermodal rail hub at Badarpur be immediately conceptualised and taken on hand. The airport is at Silchar but the other modes of transport – road, rail and inland

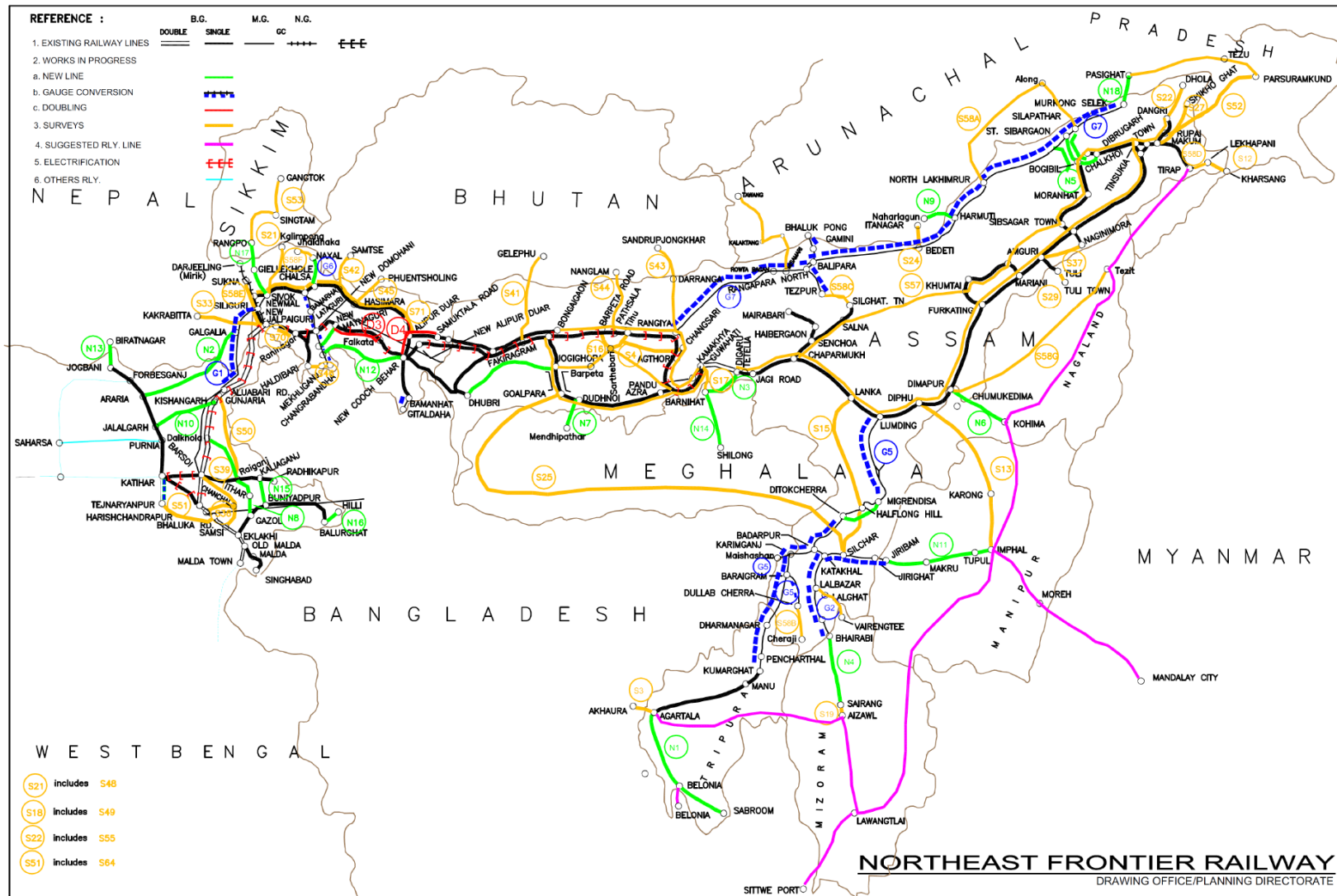
waterways converge at Badarpur. It will give a boost to the economy of the southern part of NER.

- (ix) **Rail link from Sittwe (Myanmar)** :The Kaladan Multi-modal Project is providing link from Sittwe Port in Myanmar through a waterway and road link in Myanmar. The Government of India has decided to provide funds for development of Sittwe port in Myanmar. However, this port does not have rail connectivity. It is recommended that rail connectivity from Sittwe to Aizawl should be conceptualised as it would help us exploit the investment in Sittwe port properly. Proper arrangements for handling containers on this route also have to be ensured. The line from Sittwe port can join Silchar which in turn is proposed to be connected to Meghalaya (proposed Dhubri-Silchar-Badarpur).
- (x) **Connectivity from Sittwe through Mizoram-Manipur**: It is suggested that a Railway line be built from Paletwa (Myanmar) – Indo Myanmar border – Lawngtlai (Mizoram) – Aizawl – Churachandpur – Imphal. This could be a long term projection. Due to the low draft of Sittwe Port, it cannot carry ships beyond 10,000 tones. A new deep sea port is being built in Myanmar at Kyaukpyu which can take vessels bigger than what Sittwe can take. To enable larger ship from mainland India to be able to dock in Myanmar and transport goods northward to NER by land, India can consider a railway line starting from Kyaukpyu instead of Sittwe in Myanmar.
- (xi) **Imphal as new rail hub (national & international)**: Through these new railway projects, Imphal too can become a rail hub in future in the following manner:
- a) Present proposal – Jiribam-Tupul-Imphal (National Project)
 - b) Eastward extension – Imphal-Moreh-Mandalay
 - c) Northward extension – Imphal-Kohima-via Northern Nagaland-Tirap (Arunachal Pradesh)
 - d) Southern extension – line coming from Paletwa (on the Kaladan Multi-modal route)-Indo-Myanmar border-Lawngtlai-Aizawl-Churachandpur-Imphal.

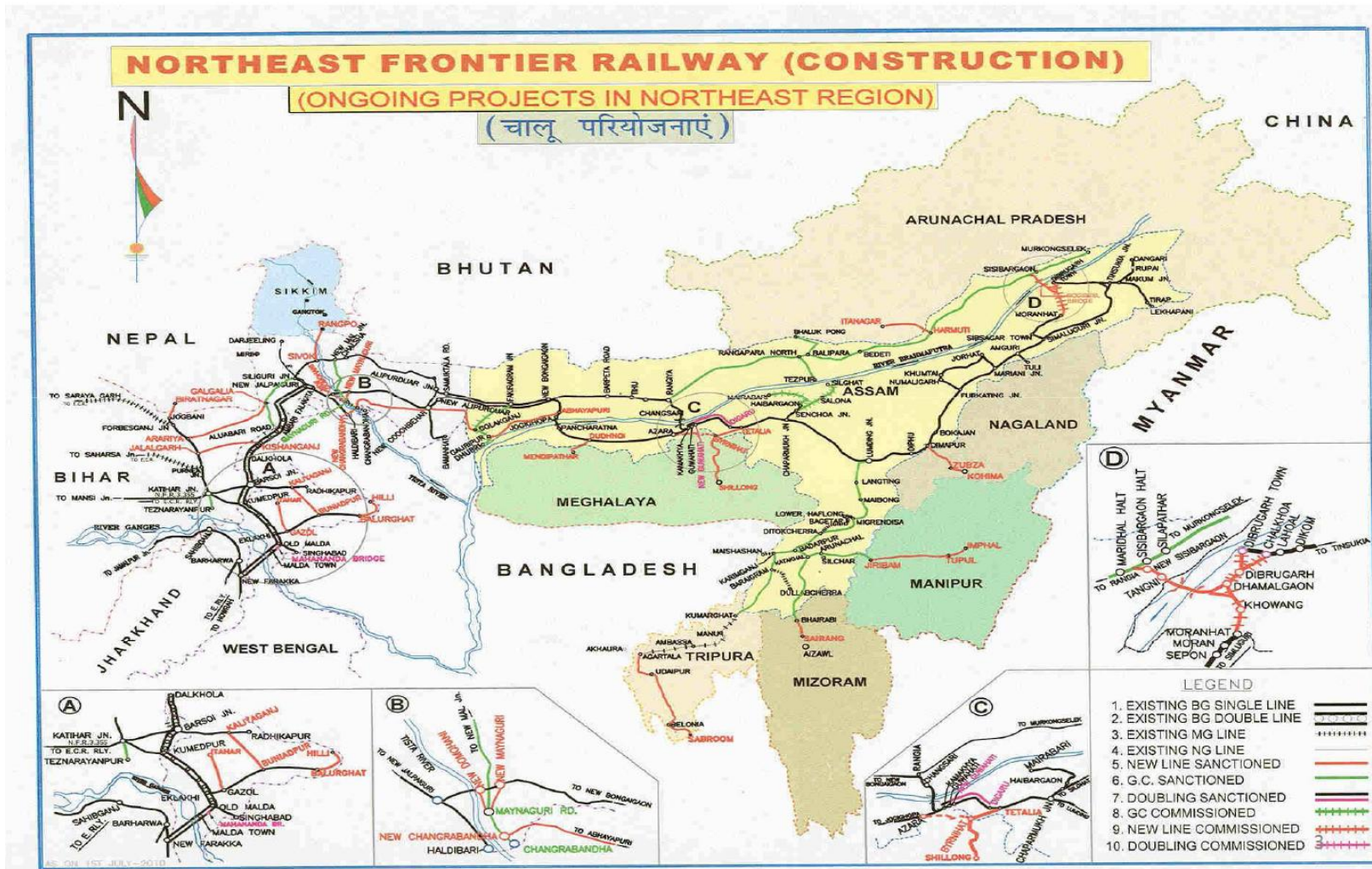
It is proposed that Imphal will become a hub for railway connectivity with Myanmar from two sides and also get Nagaland and Arunachal Pradesh.

- (xii) **Agartala-Akhaura-Dhaka-Chittagong-Sabroom:** A prestigious project has already been taken in by the Government of India by providing funds for connecting Akhaura (Bangladesh) and Agartala (India). This will provide access to Dhaka as well as Chittagong. However, this will remain on metre gauge which would need transshipment at Agartala. Possibility should be explored for mobilising fund for conversion of line from Agartala to Chittagong to have seamless freight operations on this route. When India and Bangladesh finally agree for opening of Chittagong, this seamless connectivity will unlock value for both India & Bangladesh.
- (xiii) **Railway should be able to spend Rs.3500 crore annually:** It is expected that in 2011-12, the North Eastern Region would utilise nearly Rs.2500 crore of funds allotted. It is also expected that 150 kms of new line would be added in this area. Railways will have to gear itself to utilise Rs.3500 crore in the region for achieving the targets by 2030. Adequate funding should continue to be provided.
- (xiv) **Railways should be able to build 150-200 km annually:** In 2011-12, the railways have added 150 km in the NER. Construction capacity and Planning should be strengthened so that the Railways are able to construct 150 to 200 km per year. Of course, financial support for strategic important lines should be provided by the Finance Ministry and from Railway resources regularly.
- (xv) **Resource Mobilisation:** In order to complete all the ongoing projects, Ministry of Railways will require additional funds of about Rs. 20,424 crore. Railway Sector in North East require accelerated development to provide alternative mode of transport in the region. Lack of funds, in spite of projects being declared as 'National Projects' needs to be looked into as Ministry of Railways is unable to tie up source of funding and depend entirely on Planning Commission and Ministry of Finance for additional resources. Accordingly, a comprehensive resource mobilisation plan is required to be prepared at the National Level – so that resource can be made available for achieving the long term plan.

- (xvi) **Railways is basic service for landlocked NER:** It is emphasised that there is a need to relook at the development policy for all the projects in the region as 'provision of basic services' rather than considering them from the angle of viability or rate of return but developed for overall economic up-liftment of the region.
- (xvii) **Strict monitoring:** There is a need to ensure that funds allotted to Rail Projects in the North Eastern Region are spent in a timely manner. Timely completion of the projects needs to be ensured through monitoring mechanism.
- (xviii) **Firming up alignments:** To cut down delays, alignments for rail projects which are once firming up are not to be altered, land acquisition and environment & forest clearances issues sorted out at the beginning of the project and security concerns at project sites addressed by State Government and the Ministry of Home Affairs appropriately.
- (xix) **Rapid updation of surveys:** There should be a provision of rapid up-dation of survey works for various upcoming projects on a continued basis. All the State capitals within the region need to be connected by rail within a time bound mission mode. In cases where the rail links are being terminated short of the capital such as Jiribam to Tupul (Imphal), Dimapur to Zubza (Kohima), Sivok to Rangpo (Gangtok), the Railways should conduct feasibility studies for extending the railway links upto the State capitals.
- (xx) **High speed train between capitals:** Passenger movement should be provided priority in order to provide better integration between the state capitals and accordingly – special high speed trains in the lines of Regional Rapid Transit System to be introduced between pair of capital links.
- (xxi) **Construct more tunnels:** The possibility of constructing new lines through difficult hilly terrain can be possible only if the technology of tunnelling through hills is mastered by the Railways. As sufficient experience has been gained in Jammu & Kashmir, Konkan Railway and the ongoing Silchar-Lumding route, sufficient thrust on tunnelling should be promoted.



ONGOING RAILWAY PROJECTS IN THE NORTH EAST REGION



7.4 INLAND WATER TRANSPORT

Background

- 7.4.1 Northeast India has many large and small rivers providing facilities for water transport, especially in their plains sections. From the ancient period until roads were constructed, the Brahmaputra and Barak rivers were commonly used as the medium of transport. During the period of British rule the Brahmaputra and Barak-Surma rivers were used extensively for transport and trade between northeast India and the port of Calcutta (now Kolkata). 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 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 received a serious blow as a foreign country was born between northeast India and the port of Kolkata.
- 7.4.2 It is estimated that the North Eastern Region has about 1,800 kilometres of river routes that can be used by steamers and large country boats. The inland water transport departments of both the state and central governments have been trying to improve the water transport system in the region. The Brahmaputra now has several small river ports. In addition, there are more than thirty pairs of ferry ghats (crossing points) on the Brahmaputra, transporting both passengers and cargo. The Barak also has small ports at Karimganj, Badarpur, and Silchar and ferry services at several places across it.
- 7.4.3 In Arunachal Pradesh the rivers Lohit, Subansiri, Burhi Dihing, Noa Dihing, and Tirap are used for navigation by small country boats in those stretches where there are no rapids. The rivers Dhaleshwari, Sonai, Tuilianpui, and Chhimtuipui in Mizoram are also used for navigation with small country boats in convenient stretches. Similarly, in Manipur, the Manipur River, along with its three main tributaries, the Iril, Imphal, and Thoubal, is used for transporting small quantities of merchandise by country boats.
- 7.4.4 **INFRASTRUCTURE FOR INFRASTRUCTURE CREATION** : The largest expected cargo movements in the North Eastern Region 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), 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 tons over a period of 20 years. (2.5 - 5.0 million metric tons per year). Accordingly, the infrastructure requirements for the same will be enormous in size. IWT can play the most complementary role in catering to the needs of such large requirements.

7.4.5 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 Ltd.

7.4.6 **KALADAN MULTIMODAL TRANSIT TRANSPORT PROJECT** : Project envisages development of an alternate connectivity to Mizoram through Myanmar. The Project is piloted and funded by Ministry of External Affairs. Following are the various components of the Project:

- (i) Port & IWT : Construction of a Port at Sittwe in Myanmar and development of Inland navigation along river Kaladan from Sittwe to Paletwa (158 kms) including supply of 6 nos. 300 tonne capacity cargo barges. Inland Water Transport (IWT) terminals are to be constructed at Sittwe and Paletwa.
- (ii) Highway (Myanmar) : Construction of a road from Paletwa to Indo-Myanmar border with Mizoram (125 kms).
- (iii) Road section in India : Construction of a road from Indo-Myanmar border till NH-54 at Lunglei in Mizoram (100 kms).

(Please see map at page 95)

7.4.7 **INDO-BANGLADESH INLAND WATERWAYS PROTOCOL** : An Inland water transit and trade protocol exists between India and Bangladesh under which inland vessels of one country can transit through the specified routes of the other country. The existing protocol routes are (i) Kolkata-Pandu-Kolkata, (ii) Kolkata-Karimganj - Kolkata, (iii) Rajshahi-Dhulian-Rajshahi and (iv) Pandu-Karimganj-Pandu. For inter-country trade, four ports of call

have been designated in each country namely; Haldia, Kolkata, Pandu and Karimganj in India and Narayanganj, Khulna, Mongla and Sirajganj in Bangladesh. The recent additions are Silghat in India and Ashuganj in Bangladesh. Under the Protocol, 50:50 cargo sharing by Indian and Bangladeshi vessels is permitted both for transit and inter country trade.

7.4.8 **ISSUES**

- (i) The North East Region being riverine, offers immense scope for development of Inland Water Transport.
- (ii) IWT has not received its due importance in the scheme of transport planning, fund allocation and policy priority after Independence.
- (iii) Why IWT suitable for NER? Feasibility of IWT as a transport option can be optimised with the following issues:
 - a) Plans and investment for IWT has to be anchored within a multi-modal transport plan. As multi-modal transport planning is yet to take off in NER, IWT's full potential has not been leveraged.
 - b) Benefits of IWT in terms of low cost, high volume, low fuel expenditure and shortest land distance between North Eastern Region and rest of the country has to be disseminated amongst policy makers and users.
 - c) Undivided Bengal and the North Eastern Region were an integrated economic market prior to Independence where the riverine transport system was intensively used for movement of cargo and passengers. The present challenge is to recreate those routes by combining investment with multi-modal planning.
 - d) IWT has a natural fit with the bulk commodities that the North Eastern Region imports from and exports to rest of India – tea, oil, cement and coal are exported, food-grains, fertilizers, petroleum products are imported. All these commodities being non-perishable and high volume are suitable for transportation by IWT. It would be cheaper than road or rail but slower. Fast transportation is not required for these commodities.
 - e) Investment on waterways can provide alternative routes for movement of bulk cargo for Nagaland and

Manipur which would be a cheaper option and will not face blockages and similar exigencies.

- f) However, any serious development of IWT requires active and positive participation by Bangladesh. India's relationship with Bangladesh is dependent upon the party in power in that country. Therefore, IWT arrangements should be devised in such a manner that stakeholders, both in India and Bangladesh, derive value from developing and using IWT.
- g) The Inland Waterways Authority of India is mandated to develop and maintain National Waterways-2 on the Brahmaputra between Dhubri and Sadia (*map at page 93*). Reasonably good terminals are now available in NER. More investment are in the pipeline for NW-2. **IWAI is also working to declare Barak river as National Waterways-VI. It is likely to be done in the immediate to near future.** There are well-developed terminals in Barak also. Hence, investments to develop infrastructure of IWT on the National Waterways-2 and National Waterways-6 (proposed) do not pose any serious bottlenecks (*map at page 94*).
- h) As IWT has not received its due importance in policy and investments so far (investment wise things look promising for the future), operators with required fleet size of vessels has not emerged either in private or in public sector. This is the major bottleneck in the promotion of IWT. Brahmaputra and Barak rivers have not been fully commercially exploited for transportation purposes. IWAI is not an operator. The public sector, Central Inland Water Transport Corporation Ltd (CIWTC) is sick and has squandered away the advantages of fleet strength. The private sector, either in India or in Bangladesh, has not emerged due to various policy reasons. Therefore, the challenge here is to create a policy regime that will promote investment in appropriate fleet of vessels in both public and private sectors.
- i) Optimal development of IWT will happen when there is meeting of purposes among:
 - 1) IWAI for creation of infrastructure on the waterways

- 2) Stakeholders such as the Food Corporation of India and the oil companies, tea industry, cement industry.
 - 3) Owners of fleet of vessels of the right size
 - 4) The goodwill of Bangladesh and their participation
 - 5) Multi-modal transport planning
- j) Optimal use of IWT for transportation of bulk commodities will open up the narrow chicken's neck corridor linking North East to rest of India for transportation of passengers through fast moving rail connections, evacuation of power, telecommunication links, etc.
- k) Tourism is also a potential user of IWT.
- l) Transport of Over Dimensional Cargo (ODC) for hydro power development in the North East essentially requires IWT as there are limitations on hill roads.
- (iv) Hence, the objective is to integrate inland water transport within intermodal transport systems to provide door-to-door services for the movement of domestic and international cargo traffic, thereby responding to market demand for convenient and competitive service while optimizing the economic, financial, environmental and social benefits that can be derived from each mode in the entire transport chain in North East.

SUGGESTED STRATEGIES

- (v) **Indo-Bangladesh Protocol on Inland Water Transit and Trade** - There is scope for further analysis of mutually advantageous options for inter-country waterway linkages with the ultimate goal of formalizing agreements as part of a stable trading environment in the region. The Protocol should have a validity of at least 20 years to enable the development of flourishing IW vessels movement. Both Indian and Bangladeshi businesses can be benefited. It is understood that protocol is sometimes extended for three months only. As it is in the mutual interest of India and Bangladesh to keep the Protocol route navigable and fully equipped for smooth and night navigation, India can consider assisting Bangladesh comprehensively.

- (vi) **Promote public awareness of the economic and environmental benefits of IWT in NER** amongst all stakeholders thereby encouraging a modal shift to IWT where appropriate. Targets of movement of bulk commodities should be quantified over agreed time period with appropriate incentives.
- (vii) **Increase the public sector resources allocated to IWT** to reflect its enhanced relative priority.
- (viii) **Encourage partnerships between the public and private sectors** to improve the development, management and operation of inland water transport. Capital investment and expertise for the improvement of the waterway network requires development of a structure for public-private partnerships that attracts the private sector and mitigates their financial risks.
- (ix) The policy should **effectively stimulate investments in ships, ferry services, and transportation enterprises**, in order to encourage private entrepreneurship to make optimal use of the upgraded waterways.
- (x) **Modern material handling facilities on the Brahmaputra e.g. for coal in Jogighopa for the Bongaigaon NTPC Thermal Power Plant.**
- (xi) **Promote containerised traffic movement on the Brahmaputra and Barak with appropriately designed barges.**
- (xii) Creation of multi-modal hub facilities at Badarpur in Assam.
- (xiii) **Creation, Maintenance and repair facilities for vessels in NER -** Creation of vessel repair facility in North East is essential for army also. Presently, vessels have to be sent to Kolkata. IWAI and Assam Government are developing facilities for repair. Repair facility at Pandu near Guwahati should be done by 2015.
- (xiv) **Facilitation of cargo trans-shipment between seagoing ships and inland vessels for onward distribution;**
- (xv) The **utilization of dredged materials**, wherever economically advantageous and socially and environmentally acceptable, to raise and revitalize farmland, strengthen bank protection and reclaim land;
- (xvi) **Development of a GIS based statistical information systems** to support policy, management and operational decision-making.

- (xvii) **Small Scale Inland Water Transport** - Passengers and cargo are moved via inland water transport both in the organized sector and in the unorganized sector. In the unorganized sector, the fleet consists of wooden boats equipped with agricultural pumps. At present, there are no data regarding the transport volumes within this sector. However, this mode of transport is essential to small or remote communities for the transport of agricultural and commercial products to and from regional markets and growth centers, especially during the monsoon and flooding season. Therefore, relatively small investments in transport facilities for private or small-scale transport services would increase the strategic connectivity of rural communities through ferry services and small goods transport. An analysis should be undertaken to identify strategic nodal points through which increased access to markets, education, or health services might bring benefits to the region. Modernise country craft development should be taken in hand to extend services to feeder route.
- (xviii) Visualise the role of the Kaladan Project in the NER upto 2030 and plan suitably.
- (xix) Close liaison is necessary between the Central Water Commission and the Brahmaputra Board on the one hand and IWAI on the other.
- (xx) Policy is required for waterfront development and locations of industries to generate traffic.
- (xxi) IWAI has commissioned a study for identifying suitable waterways in rivers apart from Brahmaputra and Barak. These have to be developed by the State Government. With the development of the smaller waterway and integrated waterway grid can be developed in NER. Capacities of State Government to develop and manage waterways have to be strengthened.
- (xxii) Lastly, we have recommended in earlier section that Badarpur and Dhubri (Assam) both on the waterways should be developed as a multi-modal transport hub for the region (rail + road + IWT). Planning for IWT on the trunk routes should reflect this perspective.

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National Waterway-2 The Brahmaputra

Sadiya – Dhubri(Bangladesh Border) – 891 km

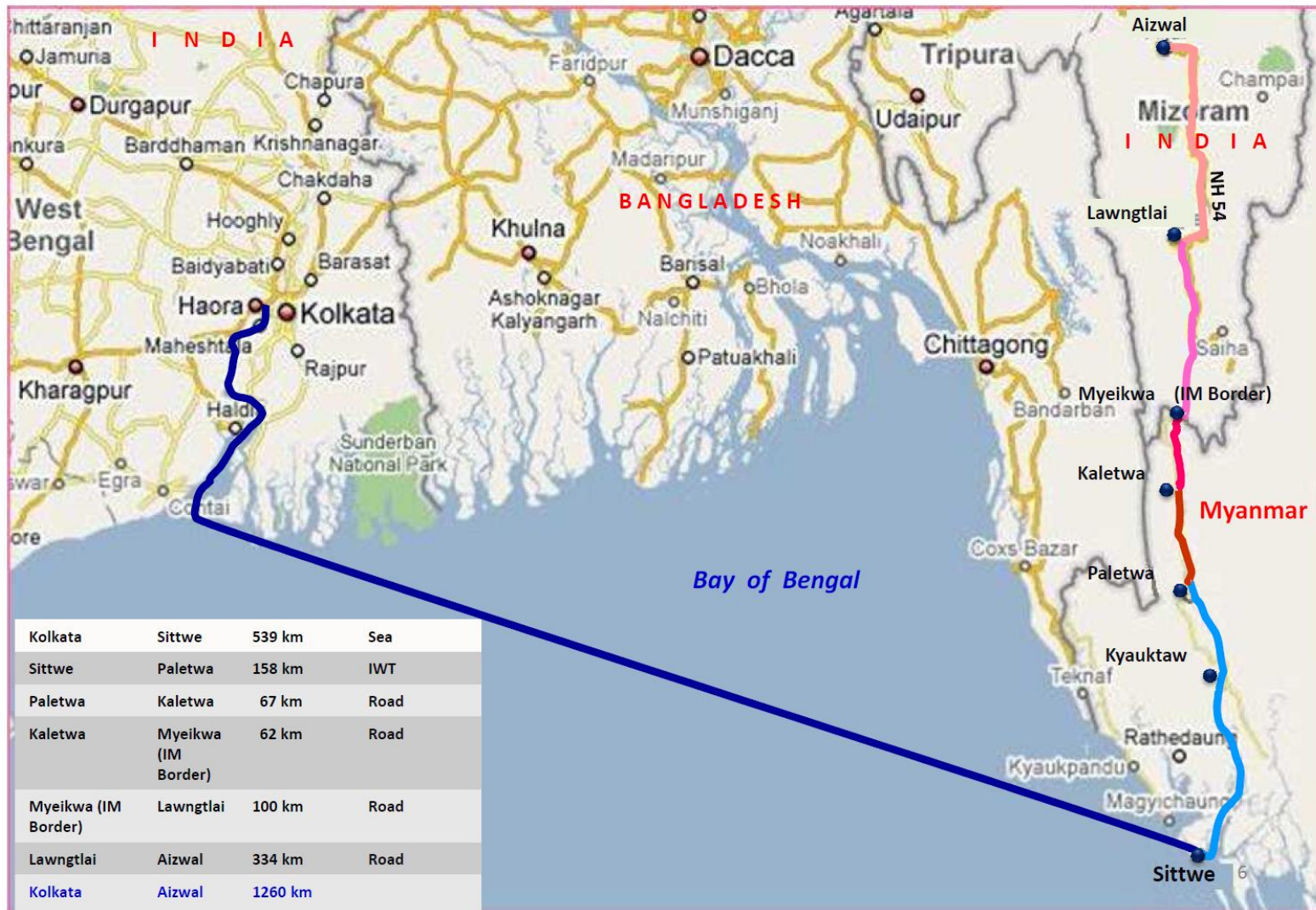


Proposed National Waterway (No 6) River Barak



- Length –121 km
- ❖ Development cost -Rs 123 Cr (at 2011 prices)
- Status: Declaration in process

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VIII. PROJECTED REQUIREMENT OF FUNDS

- 8.1 The projected requirement of funds as discussed in the following paras has been worked out on the basis of the current expenditure of the infrastructure Ministries in the North East. As per extant policy of the Union Government, Ministries (barring a few) have to spend at least 10% of their Gross Budgetary Support for the North Eastern Region. Over and above this amount, the North Eastern States are generously assisted for their State Plans by the Planning Commission.
- 8.2 For Railways and Civil Aviation which are in the Union List of the Constitution, the expenditure has to entirely come from the Union Government. Assistance from the States have to come in the form of providing land, forest and environment clearances and conducive law & order.

Railways

- 8.3 The Railways has spent Rs.2200 crore in 2011-12. For the ongoing projects in NER, the Railways have a throw forward of Rs. 20424.75 crore. The existing projects are on likely to be completed by 2016 if adequate funding and other supporting conditions are conducive.
- 8.4 We are suggesting a requirement of Rs.60,000 crore for the railways (inclusive of Rs. 20424.75 crore mentioned in the para 8.3) for taking up the two projects of linking (i) Sittwe (Myanmar) to Tirap and (ii) Dhubri to Badarpur.

Civil Aviation

- 8.5 In the civil aviation sector, the investments will be required for improvement and expansion of the existing airports and a few Greenfield airports such as for Itanagar presently. For these purposes, we think that Rs.10,000 crore in the 12th & 13th Plan.

Inland Waterways

- 8.6 Plan assistance for the inland waterways sector has been so far much less than the requirement. We have delineated the importance of the inland waterways sector in NER. Sufficient infusion of funds must be ensured for its take off. Here too, we are suggesting Rs.10,000 crore upto the 15th Plan. As it is in the mutual interest of India and Bangladesh to keep the Protocol

route navigable and fully equipped for smooth and night navigation, India can consider assisting Bangladesh comprehensively. The States also have to be assisted to develop their rivers.

Roads

- 8.7 Expenditure on development of roads is undertaken through various agencies vis. NHAI, BRO, PMGSY, State PWDs, CPWD. At present more than Rs.2000 crore is being allocated in the budgets of these agencies every year. This expenditure would go upto more than Rs.3000 crore per year in the 14th & 15th Five Year Plan. The Working Group feels that the total requirement of Rs.75000 crore for the periods from 12th FYP to 15th FYP will have to be provided for the road sector.
- 8.8 It will be seen from the above discussions that the projected requirement of funds for adequate development of transport infrastructure in North Eastern Region would be as under:

(Rs. in crore)

Sector	Proposed Investment
Road	75000
Rail	60000
Civil Aviation	10000
Inland Waterways	10000
Total	155000

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