



DELHI POLICY GROUP

Advancing India's Rise as a Leading Power



DPG Roundtable Reports, Vol. 2, Issue 1 Roundtable on “Advancing the BBIN Sub-Regional Cooperation”

The Lily Hotel | Guwahati | January 30-31, 2017



**DPG Roundtable on
Advancing BBIN Sub regional Cooperation
Guwahati, Assam, 30 – 31 January 2017**

Contents

Abstract of Proceedings and Power Point Presentations

Programme

Roundtable Discussion on BBIN Sub Regional Cooperation

“Summary Note: Advancing BBIN Cooperation”
by Ms. Tanzoom Ahmed, Research Associate, DPG

“BBIN and the North East of India”,
Abstract of Presentation by Dr. Deigracia Nongkynrih
Assistant Professor, Labour economics, North East Hill University
(NEHU)

*“Development Of Rail Infrastructure In The North East: Challenges
Overcome And Future Planning ”*
Abstract and Presentation by Mr. Ajit Pandit
CAO/ Constructions/ Northeast Frontier Railway

Chair’s Opening Remarks by Ambassador V. P. Haran

*“BBIN Sub-Regional (regional) Cooperation: Energy and Water Management
related issues”*
Presentation by Dr. Ainun Nishat,
Professor Emeritus, BRAC University,
Centre for Climate Change and Environmental Research

“Bhutan’s Energy Sector: An Overview A Present Narrative”
Abstract, Recommendations and Presentation by Mr. Kencho Dorji,
Joint Managing Director,
Kholongchu Hydro Energy Limited,
Trashiyangtse, Bhutan

Chair's Note for Security Session – “*Securing Nations, Not Borders*” by
Maj. Gen. A. K. Bardalai and Mr. Jaideep Saikia

“North East Tourism Challenges and Opportunities”
A Presentation by Mr. Biswajit Chakrabarty
Director
FICCI North East Advisory Council

“North East / Guwahati as medical hub for BBNM region”
A Presentation by Dr. Dipak Sarma
MD, MRCP (UK, Ireland),
FRCPE, FRCPI

Abstract of Proceedings and Power Point Presentations

The Delhi Policy Group in collaboration with the Asia Foundation organized a Roundtable Discussion on *Advancing the BBIN Sub-regional Cooperation* in Guwahati, Assam on 30th and 31st of January 2017. The meeting conducted an in-depth analysis of the opportunities and challenges of taking forward this cooperation in the four broader thematic areas of Water, Energy, Trade and Transit. This meeting also conducted additional deliberations on areas of Security, Gender, Healthcare and Tourism.

The main objective of the sessions was to understand the actual potential and roadblocks of this cooperation at the local levels, elucidated through day-to-day experiences of technical experts, civil society representatives and local government officials. The meeting additionally engaged players who are involved directly and have an experience of working within the BBIN and BIMSTEC frameworks. Senior researchers and experts were keen to share their perspectives from the vantage point of Bangladesh, Bhutan and North East India. The local and international perspective amalgamated into interesting recommendations.

The Roundtable was inaugurated by Ambassador H.K. Singh, Director General, DPG. The keynote address was delivered by Mr. Sudhakar Dalela, Joint Secretary (North) at Ministry of External Affairs.

On Day I, Session on Trade looked at trade related issues like NTBs and value chains from the perspective of businesses, investments, trade facilitation and ease of doing business. The discussions resulted in relevant outcomes like recognizing that trade in services, such as tourism, healthcare and energy will add the necessary impetus to the economic integration of the four countries. Promoting banking and financial linkages, creating networks of bankers and SMEs, and enhancing business to business interaction must be looked in. At the level of policy makers, one needs to think of regional dimension in national-level planning and segregating political objectives and policy priorities. A potential and feasible trade in BBIN region that needs to be examined is the silk industry. Considering that in Assam it is plagued with low supply of raw materials and lack of skilled labour and weavers in Myanmar and Bangladesh are more time and cost efficient, these complementarities can manifest in development of regional value chains and be a win-win outcome for all stakeholders.

The discussions on transit were focused on the issues of poor infrastructure, improving existing facilities and potential for North East India to become a transportation hub, especially the Guwahati airport with improved infrastructure. The probable linkages are Guwahati-Dhaka, Guwahati-Thimphu, Guwahati- Kathmandu and Guwahati-Yangon. It's imperative to first connect the whole of Northeast region by rail and road transportation. A seamless rail network in Northeast has seen many hurdles due to land acquisition challenges in Meghalaya and some state governments in the region not being as collaborative as others. But the first priority should be early harvest projects.

The session on Water looked at basin wide management with the focus on connecting inland waterways and maritime links through regional cooperation frameworks. Water issues are multidimensional and multi-sectoral. The unanimous outcome was that the region requires a dynamic and responsive infrastructure system to adapt to the changing nature of rivers such as Brahmaputra. One possible solution can be use of movable steel gates to control floods instead of using permanent porcupines on the dykes. If appropriate barrages are created in the Brahmaputra-Meghna Basin, it is possible to create a water navigation system connecting Bangladesh to India and further to Bhutan. The discourse should also focus on employment and livelihood opportunities created by the riverine systems.

On Day II, session on Energy evaluated the possibility of establishing a BBIN regional power market. The focus must be on tapping energy resources, industrialization of the region and greater economic development. Local refineries such as Numaligarh Refinery Pvt Ltd in Assam has been transporting hydrocarbons to Brazil and countries in East Africa, thereby showing that the infrastructure is already available and hence selling similar products in neighboring countries should not be a challenge. BBIN should move towards diversification of energy resources to strike an optimum balance between various energy sources. The salience of power evacuation cannot be underemphasized and it will need collaboration, where Northeast India needs to collaborate with Bangladesh to evacuate and transmit power to rest of the country and as well as to Nepal. The session acknowledged that in spite of large reservoir of resources in the region, the progress of this sector has been slow mainly because of the lack of political will.

The session on Border Security explored the border security issues that the BBIN integration may entail, and what could be some of the best ways to tackle the security concerns of the four

nations. The session's outcomes included a comprehensive security document that encourages the collaboration between the intelligence agencies of the four BBIN Nations to ensure better collaboration in data and information sharing, which needs to be developed. Installing truck scanners in the Integrated Check Posts to ensure efficient monitoring of goods transferred across borders must be established.

The session on sectoral presentations discussed sectors that are important for BBIN regional cooperation such as health and wellness, hospitality & tourism, education, disaster management and logistics. The session recognized that North East India is a major source of limestone and clinker and has large potential to become a hub for cement production. Given the demand of Bangladesh and resource availability in Northeast India, the potential to develop an efficient value chain is immense. With large amounts of fruits and vegetables getting ruined in the absence of adequate cold storages and lack of efficient ways to transport perishable goods to Bangladesh, Bhutan, and Nepal and also rest of India, food processing industry in Northeast has immense potential. Interestingly, healthcare sector in the NE is well developed and has skilled doctors and paramedical staff but still lacks the connectivity to become the regional hub for healthcare.



DELHI POLICY GROUP



The Asia Foundation

DPG Roundtable on Advancing BBIN Sub regional Cooperation

Venue: The Lily Hotel

Guwahati, Assam

30 – 31 January 2017

Programme

Day I: Monday, 30th January 2017

09.00 – 09.30 **Registration**

09.30 – 10.00 **Opening Session**

09.30 - 09.40 Welcome Address by Ambassador Hemant Krishan Singh, Director General, Delhi Policy Group (DPG) [10 minutes]

09.40 – 09.55 Keynote Speech by Ms. Sripriya Ranganathan, Joint Secretary Bangladesh and Myanmar, Ministry of External Affairs [15 minutes]

10.00 – 10.15 *Coffee Break*

10.15 – 12.30 **Session I: Economic Issues**

[The session will deal with trade, investment, value chain, finance and other related issues.]

Chair: Ambassador Sanjay Singh, Chair, Economic Issues [10 minutes]

Speakers: [10 minutes each]

1. Dr. Mohhamad Jasim Uddin - Senior Research fellow, Bangladesh Institute of International & Strategic Studies
2. Mr. Kencho Dorji, Joint Managing Director, Kholongchu HEP Ltd, Bhutan
3. Mr. Ravi Capoor, Addl. Chief Secretary, Industries and Commerce Dept. Government of Assam (TBC)
4. Mr. V.B. Pyarelal, Addl. Chief Secretary, Finance, Government of Assam
5. Dr. Runu Dutta, Director, Planning and Development, Department of Industries and Commerce, Guwahati
6. Mr. P. Padmanabhan, Managing Director Numaligarh Refinery Limited
7. Mr. Wasbir Hussain - Executive Director, Center for Development and Peace Studies
8. Ms. Indrani Chaudhury, Deputy Director General, FINER (TBC)



DELHI POLICY GROUP



The Asia Foundation

9. Mr. B. Paul Mukhtei, Chairman and Managing Director, NEdFi (TBC)
10. Dr. Deigracia Nongkynrih - Assistant Prof, Labour economics, North East Hill University (NEHU)

12.00 – 12.30 Discussion [30 minutes]

12.30 -13.30 *Lunch Break*

13.30 -15.00 Session II: Transit and Transport Issues

[The session will deal with transit, physical connectivity and other related issues]–

Chair: Professor Prabir De, Chair for Transit and Transport Issues
[10 minutes]

Speakers: [7 minutes each]

1. Dr. Mohhamad Jasim Uddin - Senior Research fellow, Bangladesh Institute of International & Strategic Studies
2. Mr. Ajit Pandit, Chief Administrative Officer, North East Frontier Railway Construction
3. Mr. B.K. Tailong – Airport Director, Guwahati
4. Mr. A.C. Bordoloi, Commissioner PWD/ Secretary National Highway
5. Mr. Raj Chakraborty, Regional Officer Guwahati NHAI

14.20 – 15.00 Discussion [35 minutes]

15.00 – 15.15 *Coffee Break*

15.15 -17.00 Session III: Waterways Connectivity

[The session will deal with waterways connectivity and other related issues.]

Chair: Ambassador Biren Nanda, Chair for Waterways & Connectivity
[10 minutes]

Speakers: [7 minutes each]

1. Prof. Ainun Nishat, Prof. Emeritus, BRAC University, Centre for Climate Change and Environmental Research
2. Mr. A.K. Mitra, Technical Advisory Committee, Water Resource Department, Assam Government
3. Mr. K.K. Mittal, Addl. Chief Secretary, Agriculture
4. Dr. Chandan Mahanta, Professor, Department of Civil engineering, IIT-guwahati



DELHI POLICY GROUP



The Asia Foundation

5. Dr. Partha Jyoti Das, Programme Head, Water, Climate & Hazard Division at Aaranyak
6. Mr. Sabyasachi Dutta, Director, Asian Confluence
7. Mr. Mirza Zulfiqur Rahman, Department of Humanities and Social Science, IIT-guwahati

- 16.30 – 17.00 Discussion [30 minutes]
- 17.00-17.30 Summary and wrapping up the discussion**
- 19.45 – 22.00 **Inaugural Dinner hosted by Shri Sarbananda Sonowol, Hon'ble Chief Minister of Assam**
- 21.00 – 21.10 **Address by Ambassador Hemant Krishan Singh, Director General, Delhi Policy Group (DPG) [10 minutes]**

Day II: Tuesday, 31st January 2017

- 09.30 -09.35 **Welcome Address by Ambassador Biren Nanda, Senior Fellow, Delhi Policy Group (DPG) [5 minutes]**
- 09.35-09.50 Key note Address by Mr. Sudhakar Dalela, Joint Secretary North, Ministry of External Affairs. [15 minutes] (TBC)
- 09.50 -10.00 *Coffee Break*
- 10.00-11.45 **Session IV: Energy Issues**
[The session will deal with energy issues.]
- Chair: Ambassador V.P. Haran, Chair, Energy Session [10 minutes]*
- Speakers: [10 minutes each]
1. Mr. Ainun Nishat, Prof. Emeritus, BRAC University, Centre for Climate Change and Environmental Research
 2. Mr. Kencho Dorji, Joint Managing Director, Kholongchu HEP Ltd, Bhutan
- 11.10 – 11.45 Discussion [35 minutes]
- 11.45 – 12.00 *Coffee break [15 minutes]*



DELHI POLICY GROUP



The Asia Foundation

12.00-13.00

Session V: Border Security

[The session will deal with border security]

Chair: Major General A.K. Bardalai, VSM, Former Chief of Staff, HQ IV Corps and Commandant IMTRAT, Bhutan [10 minutes]

Speaker:

Lead Presentation: Mr. Jaideep Saikia, Security and Terrorism Analyst of the North East Region [15 minutes]

Mr. Krishan Varma, Spl. Secretary (Retd.) Cabinet Secretariat [10 minutes]

12.35 – 13.00

Discussion [25 minutes]

13.00 – 14.00

Lunch Break

14.00 – 16.00

Session VI: Sectoral Presentations

[The session will deal with sectors those are important for BBIN regional cooperation such as health and wellness, hospitality & tourism, education, disaster management, logistics, etc.] –

Chair: Professor Prabir De, Perspectives from sectors of Northeast on BBIN Framework. [10 minutes]

Speakers: [10 minutes each]

1. Mr. K.K. Dwivedi, Commissioner Secretary IT
2. Mr. B.K. Tailong – Airport Director, Guwahati
3. Mr. Isaac R. Kharkongar- Deputy Commissioner of Customs - N.E. region
4. Mr. Biswajit Chakrabarty, FICCI, North-East Regional Advisory Council
5. Dr. Dipak Sarma, Cardiologist, MD MRCP (Edinburgh and London)
6. Mr. Monirul Hussain - Professor, Department of Political Science, Guwahati University
7. Ms. Mita Nath Bora, Project Officer, Indian Institute of Entrepreneurship
8. Ms. Haseena Kharbhih, Gender in BBIN, Impulse

15.30 – 16.00

Discussion [30 minutes]

16.00 – 16.15

Coffee Break



DELHI POLICY GROUP



The Asia Foundation

16.15 - 16.30 Concluding Remarks

16.30 – 17.00 Vote of Thanks



DELHI POLICY GROUP

ADVANCING BBIN SUB-REGIONAL COOPERATION

GUWAHATI, ASSAM

30th-31st January 2017

Summary Note and Recommendations by Tanzoom Ahmed: -

Session 1: Economic Issue

Description: The session on Economic Issues conducted an insightful analysis of the issues on ground. The purpose was to delve deeper and deliberate on the topics of NTBs, trade liberalization, trade bottlenecks, ease of doing business and to come up with practical recommendations to resolve some of these impediments. The participants of this session represented the local North East business community, government, civil society and experts from energy sector. This session concluded with some interesting recommendations, mainly when the local perspective amalgamated with the more international perspective of participants from Bhutan and Bangladesh.

Outcomes:

- It is necessary to involve the Central Government and the State Government of India's North Eastern States while establishing international trade cooperation with Bangladesh, Bhutan and Nepal
- The BBIN Countries should think of a BBIN FTA, which will encourage trade liberalization and help to remove Non-Tariff Barriers.
- Trade in services; such as tourism, healthcare and energy will add the necessary impetus to the economic integration of the four countries.
- Setting up of BBIN trade facilitation body, increasing investment from India to the other BBIN members to increase programs on trade-capacity building
- Relaxing visa regimes, increasing automation of the BBIN countries' customs clearance procedure and creating networks of customs institutions
- Promoting banking and financial linkages, creating networks of bankers and SMEs, and enhancing business to business interaction
- Increasing the role of Border Haats and their numbers in bordering areas

- Policy makers need to think of regional dimension in national-level planning and segregating political objectives and policy priorities.
- The Silk Industry in North East has huge potential for growth and can be one of the medium sized industries at the nexus of BBIN Trade integration. There is high demand for Assam Silk across the region; however the industry is plagued with low supply of raw materials and lack of skilled labour. Local entrepreneurs have recognized that the weavers in Myanmar and Bangladesh are faster, more productive and are more professional as compared to weavers in NE India. Hence, knowledge exchange in this sector should be encouraged and an effective value chain can be created where this industry is developed using resources across borders.

Session 2: Transit & Transport Issues

Description: This session focused on transit and connectivity issues across the region. The discussion highlighted suggestions and ideas to improve the existing facilities of road, rail and air transport. Participants deliberated on the possibility of NE India in becoming a transportation hub for the region.

Outcomes:

- The Guwahati airport with improved infrastructure can be the regional hub of connectivity for the entire BBIN region: Guwahati-Dhaka linkages, Guwahati-Thimphu linkages, Guwahati- Kathmandu linkages and finally Guwahati-Yangon linkages are essential to develop connectivity in this region.
- It is also important to first connect the whole of Northeast region by rail and road transportation, however, establishing a seamless rail network has been an issue in the Northeast as some State governments in the region are not as collaborative as others and land acquisition in States like Meghalaya has been a challenge for rail and road development.
- Ratifying MVA by all the BBIN Nations
- Concluding a comprehensive transport agreement (including transit and vehicle agreements, shipping and air transport agreements)
- Identifying routes (e.g. by having cargo trial run from Bhutan or Nepal to Bangladesh and to India) and mutual consent on the routes by all
- Harmonising fees, charges and taxes
- Immediately undertaking some early harvest projects



DELHI POLICY GROUP

- Upgrading sections to provide landlocked countries immediate access to nearest seaports and improving substandard sections
- Improving roadside amenities and warehouses
- Some road stretches to have concurrent development on both sides of the border
- Introducing electronic data management system and screening
- Introducing GPS-enabled transport vehicles and biometrics for transport licenses

Session 3: Waterways Connectivity

Description: This session discussed overall water management with a major focus on waterways connectivity. Basin wide management was one of the main emphases of this discussion. New Port development in Bangladesh while linking them with inland water transportation was a key take away from this session. The participants in this session included senior researchers and experts on water issues from Bangladesh, Bhutan and North East India.

Outcomes:

- BBIN needs to recognize that water issues are multidimensional and multi-sectoral .
- In order to efficiently manage the water systems a dynamic and responsive infrastructure system is required, which can be changed according to the changing nature of rivers such as Brahmaputra. One example can be using movable steel gates to control floods instead of using permanent porcupines on the dykes.
- River Basin-wide management with proper attention to environment concerns is necessary to develop an efficient system of waterways connectivity.
- Support from Indian government can help in escalating projects in Bangladesh, as most ports and water systems in Bangladesh carry goods from India and if an appropriate tariff is agreed upon then such development can be a win-win situation for both the countries, similar arrangements can be worked for the landlocked countries those are of Bhutan and Nepal. As river systems from Bhutan and Nepal flow into India and to Bangladesh.

- If appropriate barrages are created in the Brahmaputra-Meghana Basin, it is possible to create a water navigation system connecting Bangladesh to India and further to Bhutan. A similar system of barrages can be worked upon in the Koshi Basin.
- The need of the hour is a holistic approach in planning of these water systems
- Alternate ports need to be developed and existing facilities need to be used more efficiently, for an instance- on one hand Chittagong port in Bangladesh is saturated, while on the other hand warehouses in Payra Port remain unused.
- Greatest weaknesses are in the institutional frameworks and in lack of collaboration among various government departments in Bangladesh and India.
- In the past few decades the connectivity discourse in this region has been dominated by land and air connectivity, and waterways connectivity has been neglected to a great extent.
- The discourse should also focus on employment and livelihood opportunities created by the riverine systems. People to people connectivity can also be enhanced by focusing on music, languages and cultures of the river networks, and can be used as a potential tourism destinations development idea.
- Joint research on water issues by the BBIN nations will add to the capacity building and knowledge transfer, hence countries should initiate more joint research projects

Session 4: Energy Issues

Description: The session focused on Energy issues, development of clean energy, setting up of energy grids and ensuring smooth generation and transfer of power between the BBIN Nations.

Outcomes:

- North East Vision Document for the Energy sector strives to revive the Energy sector of NE India, and also combine the basic framework of the Government's Look East Policy and work towards achieving the broader developmental goals.
- The Northeast's Energy Sector has high potential sector, and therefore developing this sector in the region will raise the opportunities of energy trade for the BBIN nations.
- Development of the Energy sector in the BBIN Region must focus on three aspects: tapping energy resources, industrialization of the region and greater economic development.



DELHI POLICY GROUP

- Local refineries such as Numaligarh Refinery Pvt Ltd in Assam have been transporting hydrocarbons to Brazil and countries in East Africa. Therefore it is clear that the infrastructure is already available and hence selling similar products in neighboring countries should not be a challenge.
- Diversification of energy resources is needed to strike an optimum balance between various energy sources.
- An efficient power evacuation system needs to be developed, and such a project will need collaboration of more than one BBIN Nation. For an instance, NE India needs to collaborate with Bangladesh to evacuate and transmit power to rest of the country and as well as to Nepal
- Although the current focus of the BBIN Energy trade has been electricity but there is large potential in the hydrocarbon sector, particularly exploration of hydrocarbons in the Bay of Bengal, provided the maritime issues between India and Bangladesh are settled.
- In spite of large reservoir of resources in the region, the progress of this sector has been slow mainly because of the lack of political will.
- The BBIN Nations need to collaborate to design a comprehensive power transmission plan

Session 5: Border Security

Description: The session discussed and explored the border security issues that the BBIN integration may entail, and what could be some of the best ways to tackle the security concerns of the four nations.

Outcomes:

- A comprehensive security document that encourages the collaboration between the intelligence agencies of the four BBIN Nations and ensures better collaboration in data and information sharing which needs to be developed.
- Installing truck scanners in the Integrated Check Posts to ensure efficient monitoring of goods transferred across borders must be established
- India-Bangladesh migration issue also needs to be addressed at a bilateral level
- Joint interrogation mechanism between the security agencies need to be devised to ensure a standardized data collection system

Session 6: Presentations from different sectors: Services, Tourism, Healthcare and Gender

Description: The session brought together perspectives of local representatives from different sectors across the North Eastern States of India.

Outcomes:

- The Service sector in the BBIN region needs to be further developed. Capacity building and enhancing skill sets should be a focus and value chains in the service sector needs to be tapped.
- North East India is a major source of limestone and clinker and has large potential to become a hub for cement production. Given the demand of Bangladesh and resource availability in NE India, the potential to develop an efficient value chain is immense
- Food processing industry in NE has huge potential, as surplus amounts of fruits and vegetables are produced; however there are challenges due to lack of cold storages and lack of efficient ways to transport perishable goods to Bangladesh, Bhutan, Nepal and also rest of India. Absence of food processing industry in NE India and poor access to international and domestic markets add to the problems.
- Healthcare sector in the NE is well developed and has skilled doctors and paramedical staff. However, NE still lacks the connectivity to become the hub for healthcare. It has been observed that a large flow of patients from Bangladesh, Bhutan and Nepal still prefer to travel to southern parts of India.
- Tourism has vast potential in the region, however there is a need to develop and invest on facilities to keep tourists engaged and retain
- Gender and Human Trafficking is an area that has been neglected, the countries in the region has priorities connectivity and infrastructure but also needs to focus on factors that affect humans. There are large number of victims of human trafficking who are forced into slavery and illegal sex trade. Lack of data and proper monitoring mechanisms has added to the plight of these victims.

Abstract of Presentation
by
Dr. Deigracia Nongkynrih
(Assistant Professor, Labour Economic, NEHU)

BBIN and the North East of India

Deigracia Nongkynrih
Department of Economics
North Eastern Hill University (NEHU)
Shillong

Abstract

The BBIN is aimed at promoting deeper integration among Bangladesh, Bhutan, India and Nepal along the sidelines of the SAARC. Cross-border cooperation aimed at developing the states in the North East of India (NEI) is one of the pillars on which the BBIN regional grouping rests. Given this framework, it thus, becomes imperative to understand where the NEI stands in the context of BBIN. To do so, we must first understand the weaknesses and strength of the region at large and secondly, exploring the cross-country ties that binds the NEI with India's east.

Suggestions:

1. Mapping resources of the region, viz., forest, water, mineral resources.
2. Build and develop sectors in the region on the basis of the above, concurrently addressing the concerns of the environment.
3. Eco-tourism can emerge as one of the key sectors for furthering cooperation among BBIN members.
4. The importance of Bangladesh and Bhutan needs to be emphasized given the NEI's geographic proximity to these countries.
5. Security concerns needs to be addressed but should not undermine the development mantra of the region at large.

Abstract and Presentation

On

**“Development Of Rail Infrastructure In The North East:
Challenges Overcome And Future Planning”**

By Mr. Ajit Pandit

CAO/ Constructions/ Northeast Frontier Railway

Sub : Development of Railway infrastructure in the North East –
Challenges overcome and future Plan.

The Presentation has attempted to give a bird's eye view of the construction activities of the N.F.Railway, Construction Organisation for development of Railway infrastructure in the North East. It has briefly given the achievement of the Organisation of the past several years to improve the Rail network in the North Eastern States by way of construction of new lines, Gauge Conversion and Doublings. Very significant progress has been achieved in each of these fields so much so that the entire Meter Gauge network will be completely converted to Broad Gauge by the end of the financial year (2016-17). In addition by 2020-21 all the 8(eight) State Capitals of the North Eastern Region are likely to be connected by Broad Gauge Network to the rest of the country. The presentation has also highlighted some of the technical challenges overcome while executing these extremely difficult projects in fragile geological conditions and insurgency affected States of Assam, Nagaland and Manipur. The author has been working in the North East for more than 7(seven) years and has been actively associated with several Projects now completed and in progress.

**DEVELOPMENT OF RAIL INFRASTRUCTURE
IN THE NORTH EAST
CHALLENGES OVERCOME AND
FUTURE PLANNING**

**By Ajit Pandit,
CAO/Construction/N.F.Railway**

On 30th January, 2017

RAIL CONNECTIVITY ENHANCEMENT IN NORTH EASTERN STATES



INDIAN RAILWAYS

Life line to the nation

VISION

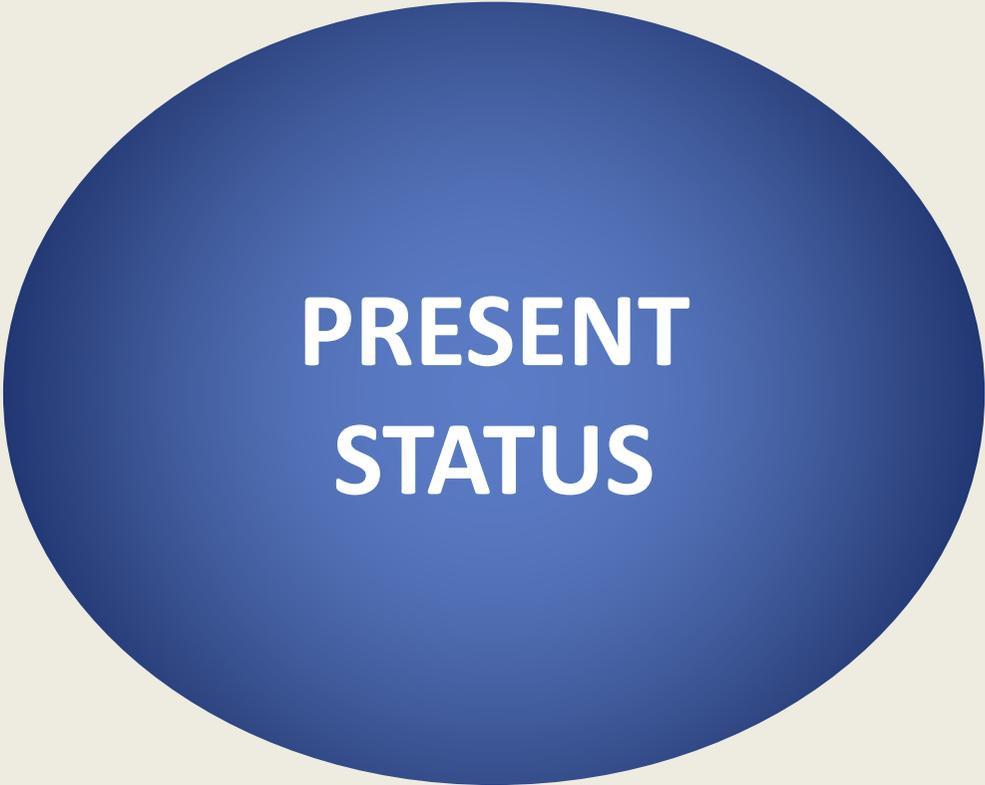
**As per Indian Railways Vision document,
all Northeast State Capitals**

(8 States Namely Assam, Arunachal Pradesh, Tripura, Manipur, Mizoram, Meghalaya, Nagaland and Sikkim)

**are to be connected by BG Rail Link by
2020.**

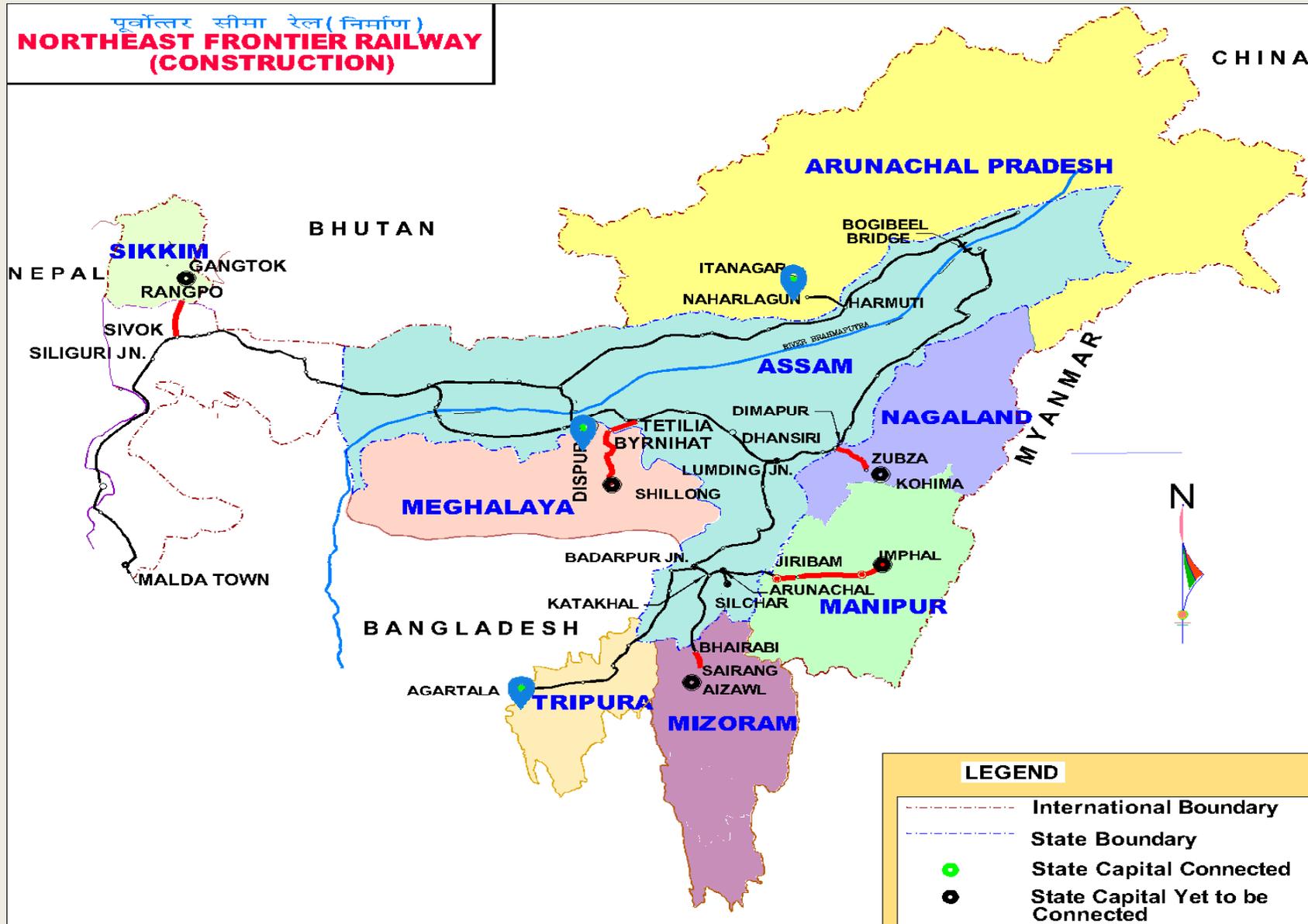
OTHER GOALS

- ❑ Conversion of entire MG to BG in NE region.
- ❑ To provide faster connectivity to NE by Doubling of Railway line from New Jalpaiguri to Lumding.
- ❑ Working out long term strategic requirements of railway network and lay a road map.
- ❑ Avenues for international connectivity particularly to Myanmar, Bangladesh and Nepal.



**PRESENT
STATUS**

Rail Connectivity to Capitals of NE States



STATE CAPITAL CONNECTIVITY IN NE REGION

S N	State	Capitals	Project	Target	Present BG head
1	Arunachal Pradesh	Naharlagun (Itanagar)	Harmuti -Naharlagun	Commissioned	Naharlagun (Itanagar)
2	Tripura	Agartala	LMG - SCL GC	Commissioned	Agartala
			Kumarghat-Agartala	Commissioned	
3	Manipur	Imphal	Jiribam - Imphal	2019-20	Jiribam
4	Mizoram	Aizawl	Bhairabi - Sairang (Aizawl)	2019-20	Bairabi
5	Nagaland	Kohima	Dimapur - Zubza (Kohima)	2020-21* (Dec' 20)	Dimapur
6	Meghalaya	Shillong	Tetelia - Byrnihat	2018-19	Mendipathar
			Byrnihat - Shillong	2020-21** (Dec' 20)	
7	Sikkim	Gangtok (Rangpo)	Sivok - Rangpo	2019-20***	-

* Land acquisition problem in Karbi Anglong Autonomous District council of Assam. Target is subject to solution of this problem.

** Progress of work affected due to obstructions from Khasi Students Union (KSU). NOC for land acquisition is not given so far from Khasi Hills Autonomous District Council (KHADC).

*** Mahananda wild life clearance awaited from MoEF.

GAUGE CONVERSION

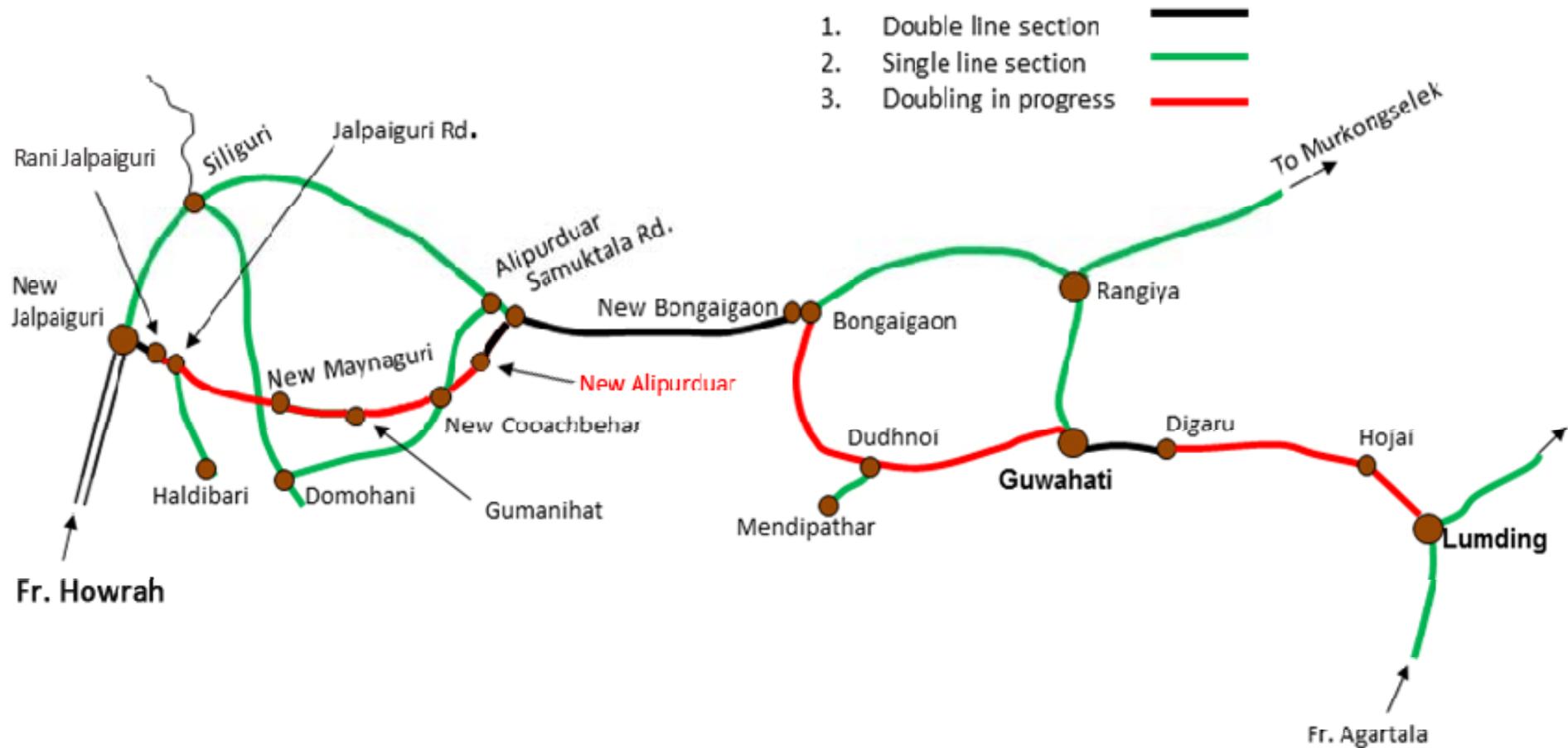
- ❑ With around 910 km of MG track converted into BG on NF railway in last 2 ½ years, there are **no MG operations in entire NE region at present.**
- ❑ Only 32.90 km MG track (Baraigram - Dullabcherra) is remaining, which is planned during this financial year.
- ❑ Thus, there will be **no MG section after 31.03.2017** in the entire NE region.

DOUBLING

- ❑ Double line exists only on 166 km on busy section of New Jalpaiguri to Lumding.
- ❑ Work on 451 km is in progress and planned for commissioning in phases.

DOUBLING

NEW JALPAIGURI-GUWAHATI-LUMDING SECTION



SUMMARY OF ON GOING PROJECTS IN N. E. REGION

Plan Head	New Line	Gauge Conversion	Doubling	Traffic Facility & Others	Total
Projects in progress (Nos.)	15	5	5	4	29
Total anticipated Cost (Crore)	48061	14866	5480	1347	69754
Expenditure as on 31.3.2016 (Crore)	16214	12304	154	28	28700
Balance as on 1.04.2016 (Crore)	31847	2562	5326	1319	41054
Budget grant in 2016-17 (Crore)	4538	858	178	15	5589
National Projects (Nos.)	9	2	-		

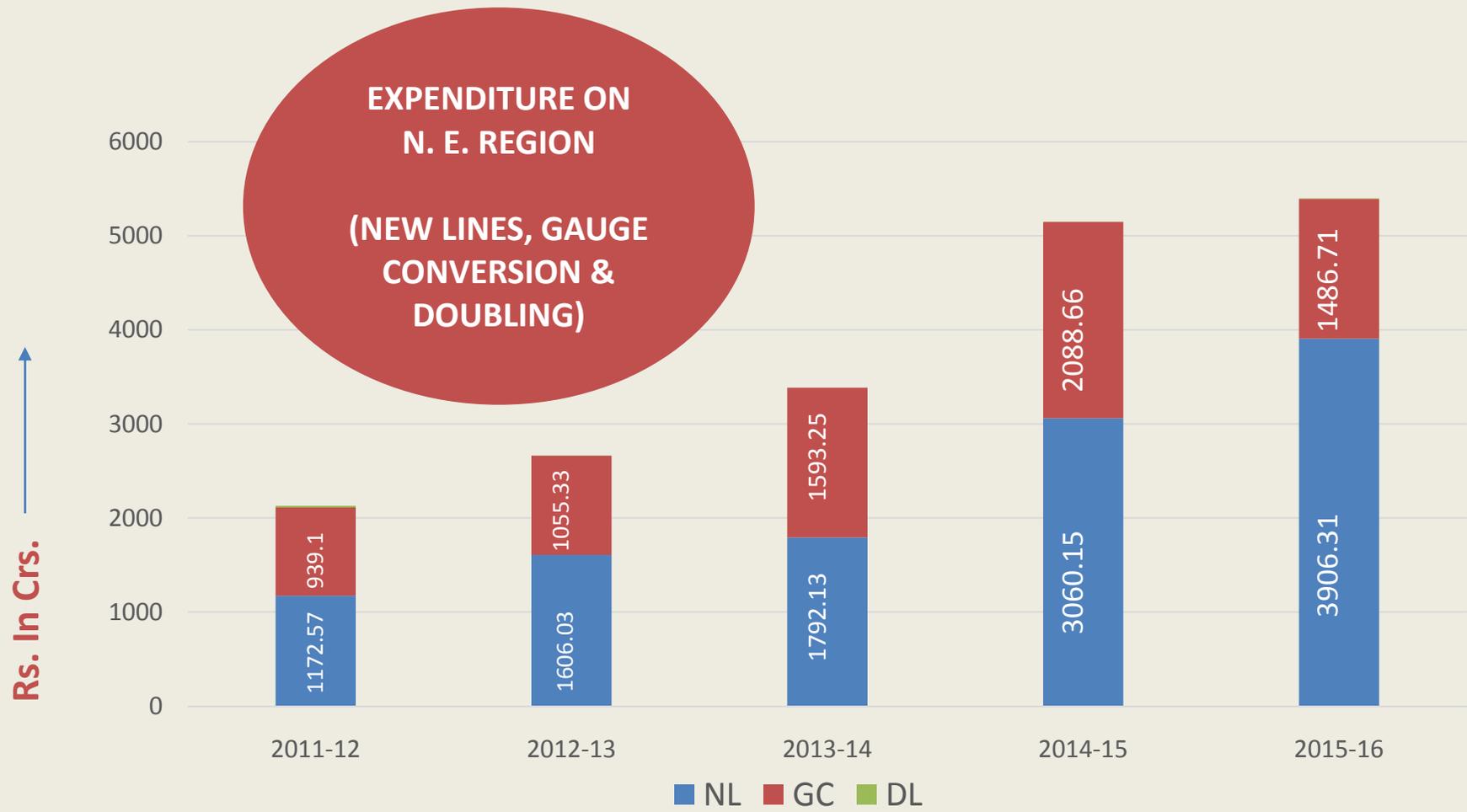
SUMMARY OF ON GOING PROJECTS IN N. E. REGION

Plan Head	National Projects	Others Projects	Traffic Facility & Others	Total
Projects in progress (Nos.)	11	14	4	29
Total anticipated Cost (Crore)	49951	18456	13446	69754
Expenditure as on 31.03.2016 (Crore)	23276	5396	28	28700
Balance as on 01.04.2016 (Crore)	26675	13060	1319	41054
Budget grant in 2016-17 (Crore)	4714	860	15	5589

SUMMARY OF ALL ON GOING PROJECTS IN N.E. REGION

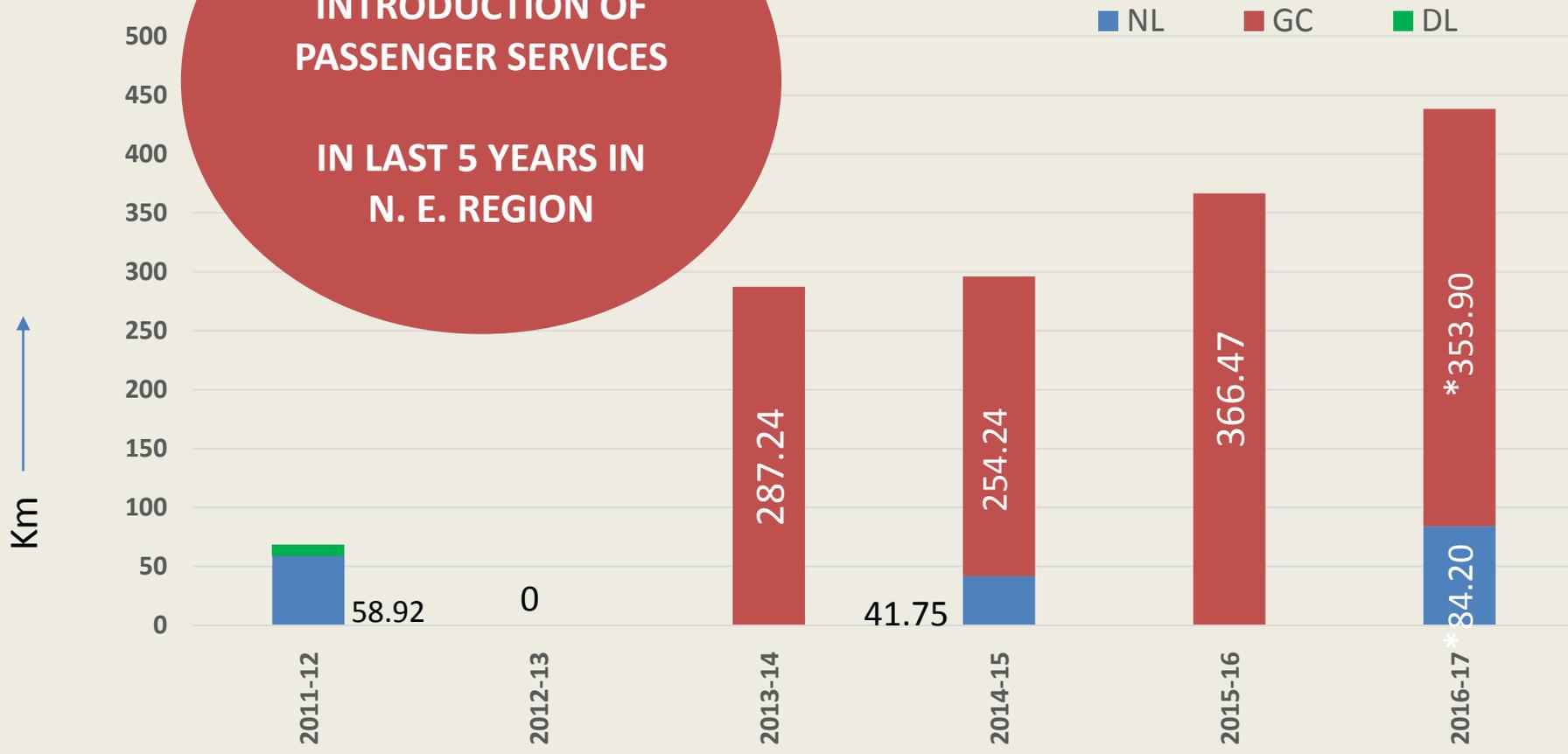
Project Head	No. of projects	Total length	Already commissioned (Nov'16)	Planning for commissioning up to 2020-21				
				2016-17 (Dec-Mar)	2017-18	2018-19	2019-20	2020-21
NL	15	1352.83	405.95	77.70	111.43	150.89	152.89	184.15
GC	5	2162.00	2129.10	32.90	-	-	-	-
DL	5	494.66	30.18	0	17.00	62.91	102.05	140.52
Total	25	4038.81	2565.23	110.60	128.43	213.80	254.89	324.67





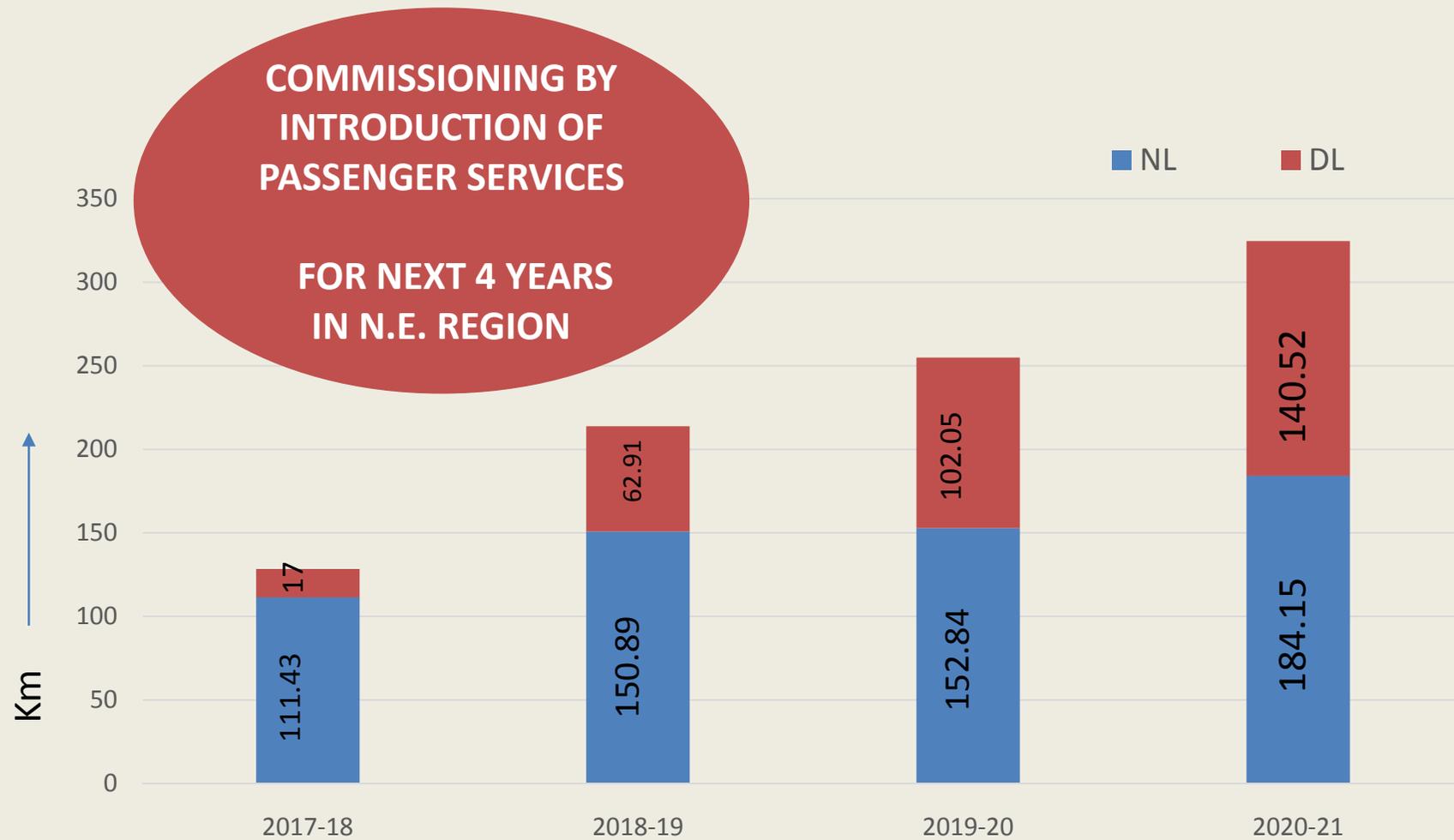
Year	NL	GC	DL	Total
2011-12	1172.57	939.1	17.93	2129.6
2012-13	1606.03	1055.33	3.32	2664.68
2013-14	1792.13	1593.25	0.42	3385.8
2014-15	3060.15	2088.66	1.09	5149.9
2015-16	3906.31	1486.71	5.58	5398.6
2016-17	4538.00	857.65	178.01	5573.66

**COMMISSIONING BY
INTRODUCTION OF
PASSENGER SERVICES
IN LAST 5 YEARS IN
N. E. REGION**



Year	NL	GC	DL	Total
2011-12	58.92	0	9.76	68.68
2012-13	0	0	0	0
2013-14	0	287.24	0	287.24
2014-15	41.75	254.24	0	295.99
2015-16	0	366.47	0	366.47
2016-17	84.20	353.90	0	438.10

*Balance 33.70 km of NL & 32.90 km of GC will be commissioned in FY 2016-17.



YEAR	NL	DL	TOTAL
2017-18	111.43	17	128.43
2018-19	150.89	62.91	213.80
2019-20	152.84	102.05	254.89
2020-21	184.15	140.52	324.67

No scope remaining for GC

PROJECTS COMMISSIONED IN 2016-17 (N.E. REGION)(UPTO 30/11/16)

Plan Head	Name of Project	Section	Length (Km)	Introduction of passenger services
NL	New Maynaguri (WB) to Jogighopa (Assam) (288.88 km)	Y- Connection	6.50	Commissioned on 28.06.2016
GC	Kumarghat-Agartala(109 km)	Kumarghat-Agartala	109.00	Commissioned on 02.05.2016
GC	Katakhal-Bhairabi(84 km)	Katakhal-Bhairabi	84.00	Commissioned on 27.05.2016
GC	Lumding - Badarpur - Silchar and Finger Lines (Assam, Manipur & Tripura) (420.90 Km)	Karimganj - Maishashan	10.00	Commissioned on 10.11.2016
		Badarpur-Kumarghat	118.00	Commissioned on 02.05.2016
	Total (NL + GC+ DL)		327.50	

**TARGETED FOR BALANCE COMMISSIONING IN 2016 -17
(N.E. REGION)**

Plan Head	Name of Project	Targeted Section	Targeted Length (Km)	Target Month
NL	Jiribam – Tupul – Imphal (Manipur) (110.625 km)	Jiribam – Dholakhal	12.50	Jan’ 2017
NL	Agartala-Sabroom (112 Km)	Agartala-Udaipur	44.00	Dec’ 2016
		Udaipur-Garjee	9.20	Mar’2017
NL	New Maynaguri (WB) to Jogighopa (Assam) (288.88 km)	Gauripur-Alamganj	12.00	Mar’2017
GC	Lumding - Badarpur - Silchar and Finger Lines (Assam, Manipur & Tripura) (420.90 Km)	Baraigram – Dullabcherra and Bye pass	32.90	Mar’2017
	Total (NL + GC+ DL)		110.60	



**MAJOR
ACHIEVEMENTS**

**LAST 2-1/2 YEAR ACHIEVEMENTS OF
RAILWAYS IN N. E. REGION**

1. All states of NE Region except Sikkim brought on BG network of Indian Railway.

2. State capitals of Arunachal Pradesh and Tripura connected to BG.

3. Barak Valley of Assam connected to Major cities of the country through BG connectivity.

4. Conversion of entire MG network to BG in N E Region except 32.9 Km.

LAST 2 -1/2 YEAR ACHIEVEMENTS OF RAILWAYS IN N. E. REGION

5. **Average annual commissioning** of BG line in N E Region in last 2- 1/2 years, **4 times** the average annual commissioning in **previous five years.**

6. **Average annual expenditure** of last two years, **2.2 times** the average annual expenditure of **previous five years.**

7. **28 Girders** out of **41 launched** at Bogibeel Bridge.

8. **Planning world class passenger terminal started** at Agthori (Guwahati) after sanction of the project.

NAHARLAGUN-ITANAGAR NEW LINE PROJECT



AC EXPRESS FLAGGED OFF FROM NAHARLAGUN TO NEW DELHI (29.11.14)

KATAKHAL-BAIRABI GC PROJECT



FIRST PASSENGER TRAIN FROM
SILCHAR TO BHAI RABI (**Mizoram**) FLAGGED OFF ON 27.5.16 FROM SHILLONG

KUMARGHAT – AGARTALA NEW LINE PROJECT



BG TRAIN CONNECTING DELHI TO AGARTALA FLAGGED OFF ON 31.07.2016

BOGIBEEL RAIL CUM ROAD BRIDGE



SUPER-STRUCTURE WORKS IN PROGRESS



RAIL CUM ROAD BOGIBEEL BRIDGE PROJECT

- **Longest (4940 m) rail-cum-road bridge in India.**
- **All welded steel girders with no riveting, used for the first time in India and maintenance free with reduction in weight by about 20%**

JIRIBAM – TUPUL – IMPHAL NEW LINE PROJECT

N. F. railway is doing about 170 km tunneling against various sanctioned works in very challenging geological conditions of NE region.



JIRIBAM – TUPUL – IMPHAL NEW LINE PROJECT



- Tunneling by **State of Art NATM** (New Austrian Tunneling Method) used world wide.
- **Cost Effective** for hard rock as well as soft rock tunneling.
- **Flexible** and **Speedy Construction** for all rock type.

IMPROVED TUNNELING METHODOLOGY



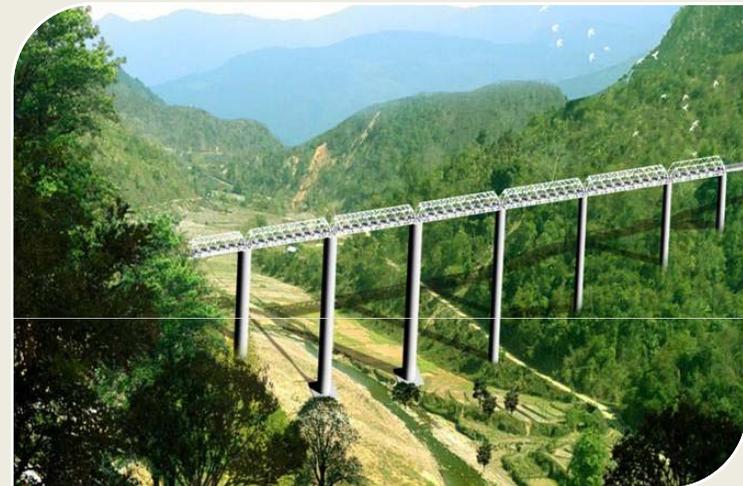
JIRIBAM-IMPHAL NEW LINE PROJECT

WORLD'S TALLEST RAIL BRIDGE PIER UNDER CONSTRUCTION

- Br. No. 164 with Pier height of **141m** will be the **tallest** girder rail bridge in the **World**. (Existing tallest bridge is 139m high, Mala-Rijeka viaduct in Montenegro, Europe)



Mala-Rijeka viaduct (139m), Montenegro



Bridge No. 164 (141m)

VIEW OF- P1 &A1 (Br. No. 164,JIRIBAM-IMPHAL NEW LINE PROJECT)



DEPICTION OF LOCAL ARCHITECTURE & CULTURE

**WE ARE TRYING TO INCORPORATE LOCAL
ART AND CULTURE IN OUR STATION
BUILDING DESIGN AND OTHER
STRUCTURES.**

STATIONS DEPICTING LOCAL ARCHITECTURE



AGARTALA RAILWAY STATION

AGARTALA STATION DURING NIGHT



STATIONS DEPICTING LOCAL ARCHITECTURE



AMBASSA STATION BUILDING

STATIONS PREMISES WITH LOCAL ART FORMS



AGARTALA RAILWAY STATION

STATIONS PREMISES WITH LOCAL ART FORMS



AMBASSA STATION BUILDING

STATIONS PREMISES WITH LOCAL ART FORMS



JIRANIA STATION BUILDING

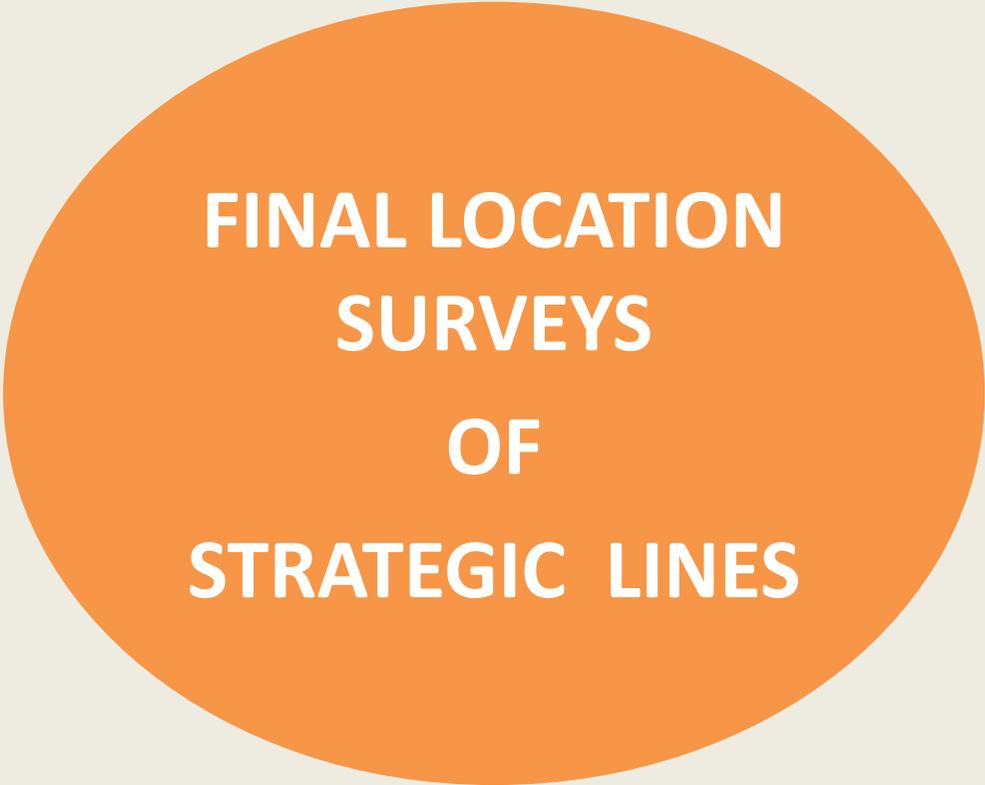


SURVEYS

SURVEYS

- **19 surveys are in progress.**
 - 15 for new lines
 - 3 for doubling
 - 1 for bridge across river Brahmaputra
- **Out of above 4 surveys have been completed recently.**
 - 3 for new lines
 - 1 for bridge across river Brahmaputra at Saraighat



A large orange oval is centered on a light beige background. Inside the oval, the text "FINAL LOCATION SURVEYS OF STRATEGIC LINES" is written in white, bold, uppercase letters, arranged in four lines.

**FINAL LOCATION
SURVEYS
OF
STRATEGIC LINES**

STRATEGIC LINES & STATUS OF FLS

Total 3 Strategic lines are proposed in NE region. Approximate length & Approx. cost of Final Location Survey of these lines is as under-

S/NO	LINE	APPROX. LENGTH (KM)	Approximate Cost of FLS (Cr.)
1	Misamari (Bhalukpong) – Tenga-Tawang	378 (Arunachal Pradesh)	100.73
2	North Lakhimpur-Bame (Along) –Silapathar	248 (32 Km in Assam & 216 Km in Arunachal Pradesh)	51.30
3	Pasighat-Tezu- Parsuramkund- Rupai	227 (26 Km in Assam & 201 Km in Arunachal Pradesh)	35.11
	Total	853 (58 Km in Assam & 795 Km in Arunachal Pradesh)	187.14

INDEX MAP OF STRATEGIC LINES



STRATEGIC LINES & STATUS OF FLS

Cost of these surveys is being borne by Ministry of defence. Rs 47.18 Cr has been received from MOD in August 2016

Regular coordination meetings are held with Eastern Command to incorporate the defence requirements. Eastern Command has already nominated co-ordinating officers for each of the Survey.

Government of Arunachal Pradesh has also nominated the coordinating officer for the survey. The state Government has been requested vide letter dated 26-09-2016 to advise their requirement.

STRATEGIC LINES & STATUS OF FLS

Present Status

A. Misamari (Bhalukpong) –Tenga-Tawang: In view of the difficult and challenging terrain, survey planned in two stages. Preliminary study with satellite imageries with limited field checks is being done to establish feasibility with different sets of technical Parameters. This report is expected by Jan'17. Based on this report, terms of reference for detailed survey will be decided in consultation with MOD. Detailed survey shall be taken accordingly.

B. North Lakhimpur-Bame (Along) – Silapathar: In view of the difficult and challenging terrain, survey has planned in two stages. Preliminary study with satellite imageries with limited field checks is being done to establish feasibility with different sets of technical Parameters. This report is expected by Mar'17. Based on this report terms of reference for detailed survey will be decided in consultation with MOD. Detailed survey shall be taken accordingly.

C. Pasighat-Tezu- Parsuramkund- Rupai : Project is relatively in easier terrain. Terms of reference for survey has been decided. Detailed survey is in Progress.

Adoption of Advance Survey Techniques

- ✓ Satellite Imagery
- ✓ Global Mapper
- ✓ Digital Elevation Model
- ✓ Use of Drones
- ✓ Use of Advance Analytical Softwares like Quantam and CIVIL 3D

STRATEGIC LINES & STATUS OF FLS

Targets :

SN	Name of Survey	Section	Target date of Completion
1	Misamari (Bhalukpong) – Tenga-Tawang	i) Misamari (Bhalukpong)-Tenga	Oct' 2019
		ii) Tenga-Tawang	Oct' 2020
2	North Lakhimpur-Bame (Along) –Silapathar	i) Silapathar- Along	Oct' 2019
		ii) North Lakhimpur –Along-	Oct' 2020
3	Pasighat-Tezu- Parsuramkund- Rupai-	-	Dec' 2018

A large red oval is centered on a light beige background. Inside the oval, the text "STATUS OF INTERNATIONAL CONNECTIVITY PROJECTS" is written in white, bold, uppercase letters, arranged in four lines.

**STATUS OF
INTERNATIONAL
CONNECTIVITY
PROJECTS**

CONNECTIVITY WITH BANGLADESH

Rail connectivity with Bangladesh exists between-

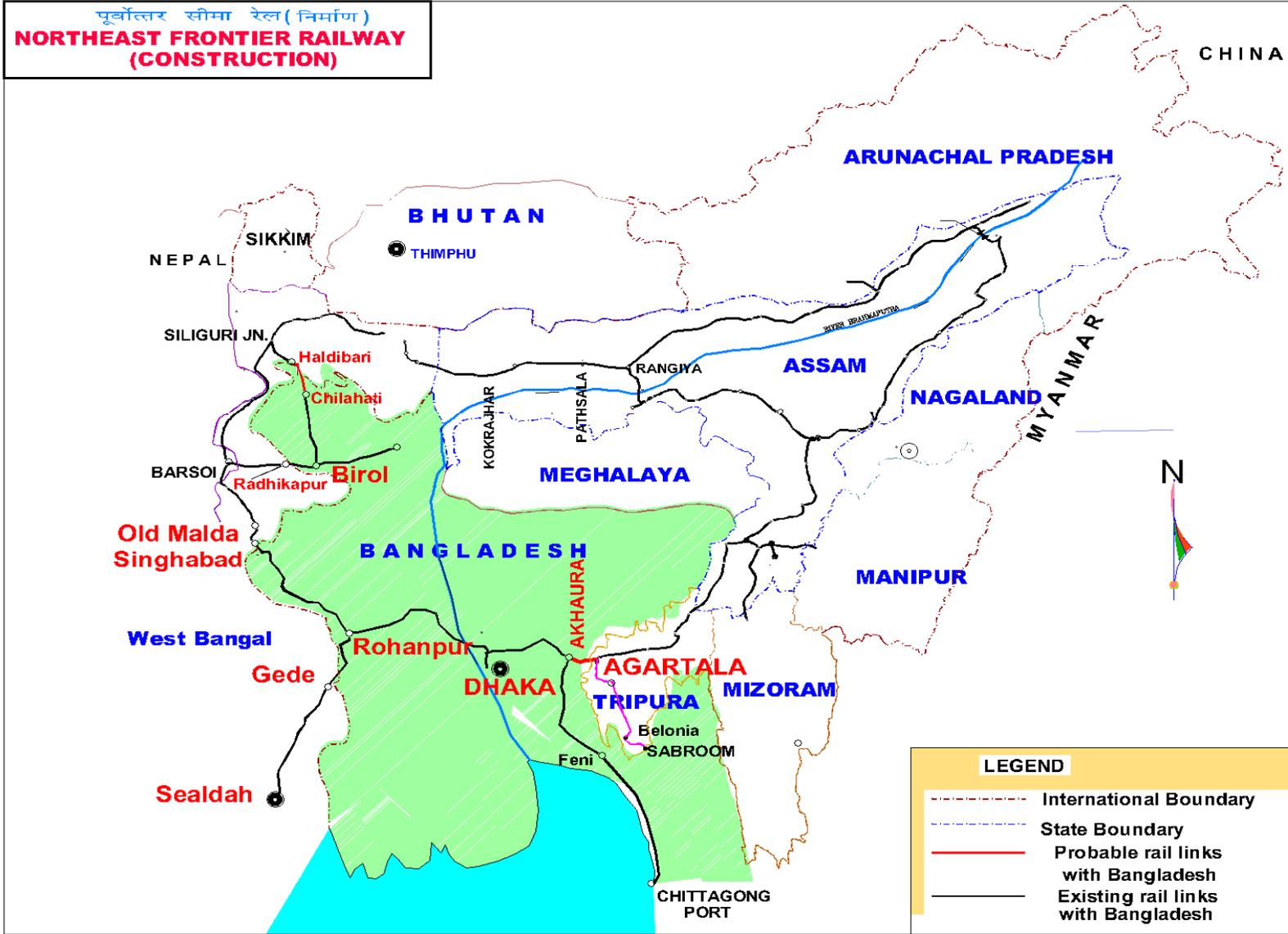
- i) Sealdah and Dhaka through Gede
- ii) Old Malda and Rohanpur through Singhabad.
- iii) Radhikapur and Birol - restoration completed

Additional connectivity is in progress –

- i) New line from Agartala to Akhaura (15 km) sanctioned.
- ii) Restoration of Haldibari to Chilati in progress

CONNECTIVITY WITH BANGLADESH

पूर्वोत्तर सीमा रेल(निर्माण)
**NORTHEAST FRONTIER RAILWAY
(CONSTRUCTION)**



CONNECTIVITY WITH BHUTAN

Currently no rail link with Bhutan.

Feasibility studies have been carried out for extending Rail Head to Bhutan at 5 locations-

Kokrajhar (Assam) to Gelephu (Bhutan)-57.70 Km.

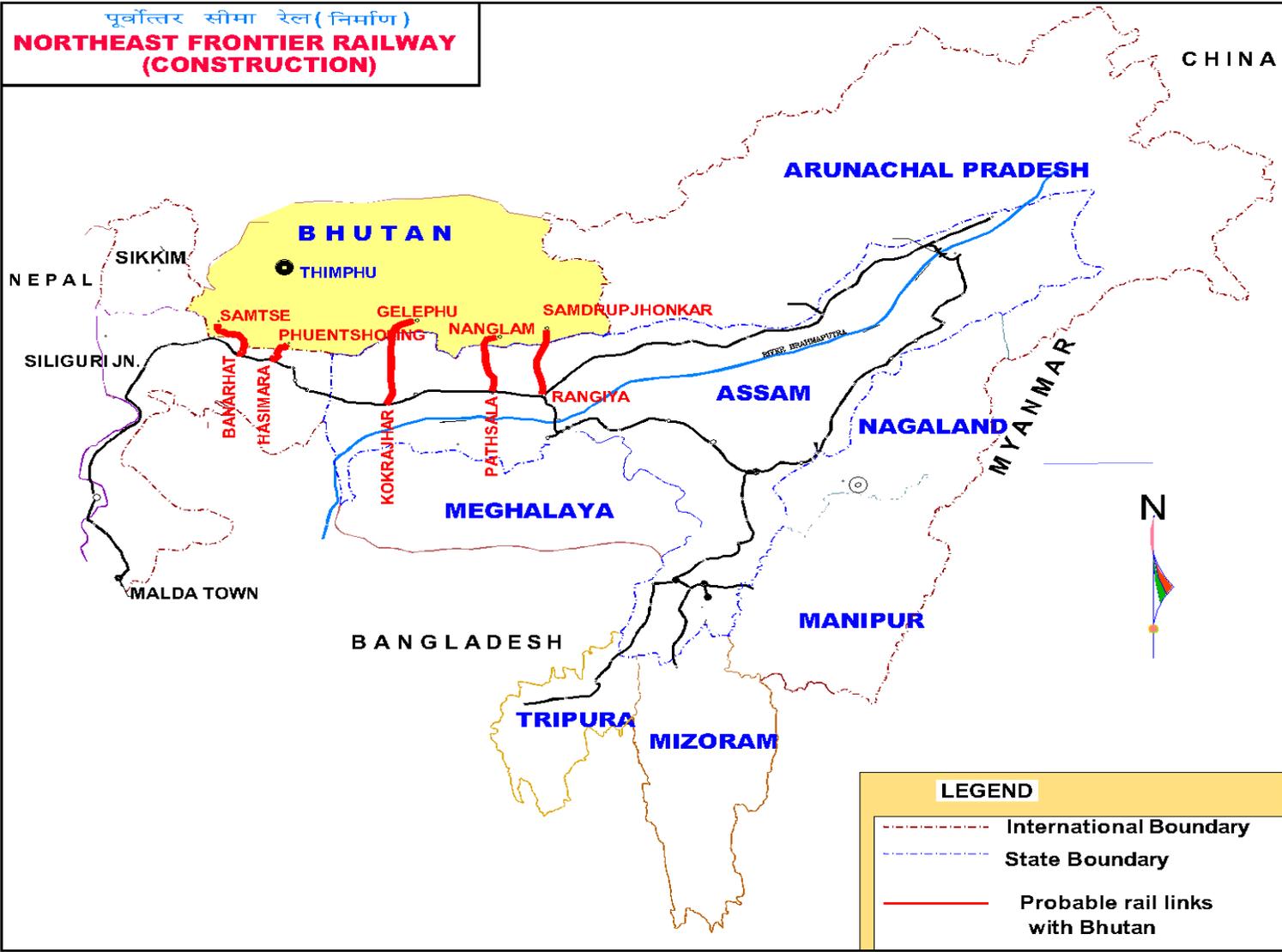
Pathsala (Assam) to Nanglam (Bhutan)-51.15 Km

Rangiya (Assam) to Samdrupjongkhar (Bhutan)-48.04 Km

Banarhat (West Bengal) to Samtse (Bhutan) – 23.15 km

Hasimara (West Bengal) to Phuentsholing (Bhutan) -17.52 Km

CONNECTIVITY WITH BHUTAN

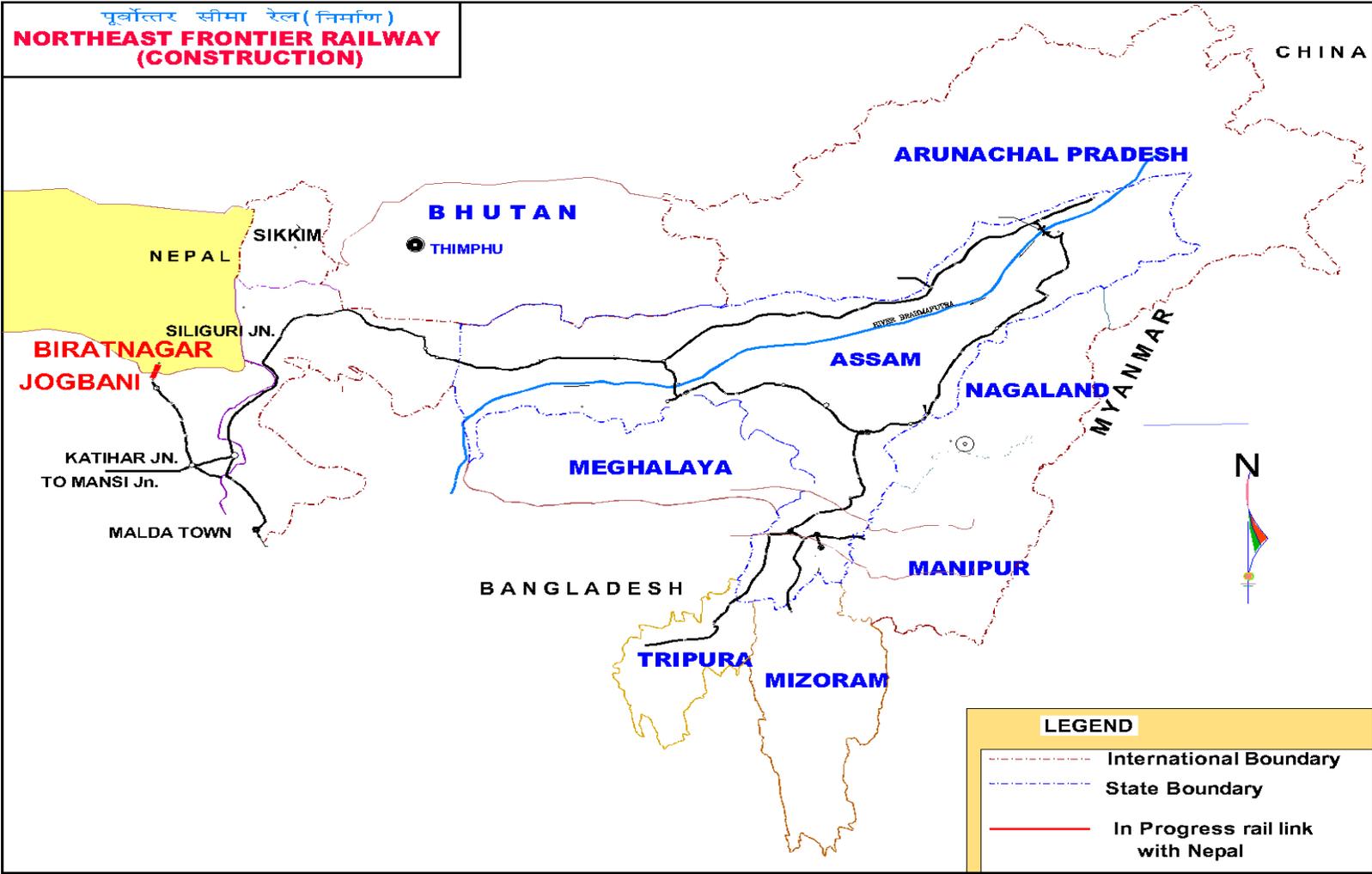


CONNECTIVITY WITH NEPAL

Jogbani and Biratnagar (18.60 km)-

- 5.45 Km falls in Indian Portion & 13.15 Km falls in Nepal
- Estimated Cost - Rs. 373.81 Crs. (2016)
- Work entrusted to IRCON. Work is in progress.
- Land acquisition in Indian portion completed
- Land acquisition held up in Nepal
- Target -Mar' 2018 (subject to availability of land in Nepal).

CONNECTIVITY WITH NEPAL





**TRANS-ASIAN
RAILWAY
NETWORK**

TRANS ASIAN RAILWAY

- Agreement signed on 29 June 2007 and ratified by the President on 13 Sept, 2007.
- Agreement came in to force on 11 June 2009 – 22 countries signed and 8 ratified.
- **Southern Corridor** – Kunming in China to Kapikule in Bulgaria (11462 km) – Passes through China, Thailand, Myanmar, Bangladesh, India, Pakistan, Iran and Turkey
- **On Eastern side**, TAR link enters India at Tamu (Myanmar) – Moreh (India) and again enters Bangladesh Shabazpur – Gede (India point)
- **On Western side**, it enters Pakistan at Attari (India) – Wagah (Pakistan)

TRANS-ASIAN RAILWAY NETWORK



MISSING LINKS IN TAR

■ In India - Missing Link is

Jiribam - Imphal – Moreh-Tamu (Myanmar)

- Jiribam to Imphal new railway line (110 km) work is in progress . Latest anticipated cost is Rs. 9047 cr.
- Railway has undertaken RET survey for new BG line from Imphal to Moreh (111 km). Anticipated cost is Rs 5378 crore.

■ On Myanmar side -Missing Link is

- Tamu to Kale (135 km). Governments of India & Myanmar have agreed to co-operate for preparation of a DPR for establishing the missing link.
- Indian railway has offered the services of M/s RITES to conduct the survey. Proposal to carry out the survey submitted to MEA. Further action after approval is received from MEA.



HINDRANCES

HINDRANCES

1. Delay in acquisition of land
2. Poor condition of State / National Highways at places.
3. Hilly terrain , no approach road to work sites.
4. Longer monsoon periods, heavy rainfall. Working season limited to only 4-5 months.
5. Weak geology, frequent land slides, unstable hills.
6. Militancy, frequent kidnapping, threatening and demand for ransom.

THANK
YOU



DELAY IN LAND ACQUISITION(FOREST LAND)

SN	PROJECT	AREA IN HECTARE	STATE	STATUS
1	Agartala-Sabroom	9.94 Ha. Trishna Wild Life Sanctuary Forest Land	Tripura	<p>NOC for 9.94 Hectare Trishna Wild Life Sanctuary given by Supreme Court on 31/07/2015. "In principle approval" given by MoEF/Delhi on 11.02.2016.</p> <p>Formal clearance from MoEF is awaited. Latest reminder to MoEF sent on 21.09.2016.</p>
2	Tetelia-Byrnihat	21.307 Ha. Forest Land	Assam	<p>i) "In principle approval" received from MoEF on 06.10.2016 with certain observations. Demand for additional compensation complied.</p> <p>ii) All boundary pillars erected in consultation with Forest Department. Verification done.</p> <p>iii). All necessary funds/amounts deposited.</p> <p>Iv) Observations of MoEF complied on 22.11.2016 and final clearance awaited.</p>

DELAY IN LAND ACQUISITION(FOREST LAND)

SN	PROJECT	AREA IN HECTARE	STATE	STATUS
3	Sivok-Rangpo	98.50Ha (Including 8.85 Ha. Mahananda Wild Life Sanctuary Forest Land)	West Bengal	<p>(i) Forest land acquisition in Mahananda Wild life forest of about 8.85 Ha. in West Bengal : Supreme Court has granted NOC and clearance from MoEF is awaited.</p> <p>(ii) Forest land acquisition in Kurseong (12.34 Ha), Kalimpong (48.83 Ha) and Darjeeling (18.60 Ha) Divisions in West Bengal :- Ministry of Tribal Affairs (MOTA) has issued instructions, to form Sub divisional level and District level committees by Govt. of West Bengal to resolve the issue.</p> <p>iii) Normal Forest Land in Sikkim:- Forest land of 11.88 Ha. falling in Sikkim State has been handed over to N. F. Railway on 18.02.2016.</p>
4	New Maynaguri -Jogighopa	29.855 Ha	Assam	<p>i) Proposal cleared by State Board of Wild Life, Assam on 19.09.2015. Clearance from National Board of Wild Life (NBWL), New Delhi is awaited.</p> <p>ii) Joint survey verification of Forest Land boundary under Dhubri, Parvatjhora and Aie Valley Forest Divisions completed and report submitted to concern DFOs for approval of MoEF/Shillong.</p>

DELAY IN LAND ACQUISITION(PATTA LAND)

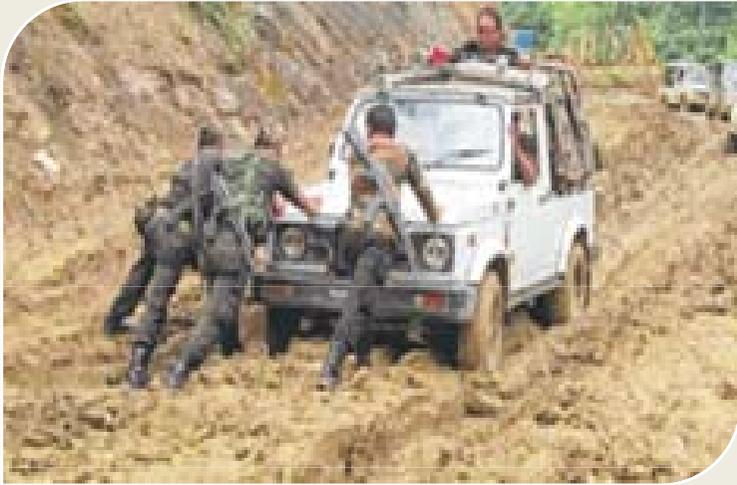
SN	PROJECT	AREA IN HECTARE	STATE	STATUS
5	New BG line from Byrnihat to Shillong (108 Km) (National Project)	626	Meghalaya	<p>i) Land Plan of 182.386 hectares from 0.00km to 17.14 Kms has been submitted to DC/Ri-bhoi on 16.07.2015 after joint survey with Horticulture, PWD & Forest Departments of State Govt.</p> <p>ii) There is opposition from Khasi Students Union/Local people. Regular meeting are being conducted with State Govt. officials to sort out security and other issues.</p> <p>iii) Land acquisition process is held up for non-issuance of NOC by Khasi Hills Autonomous District Council (KHADC).</p> <p>iv) However matter is being regularly chased /pursued with State authorities and KHADC. Last meeting held by Additional Chief Secretary Meghalaya on 02-09-2016 .</p>

DELAY IN LAND ACQUISITION(PATTA LAND)

SN	PROJECT	AREA IN HECTARE	STATE	STATUS
6	New BG line from Dimapur (Dhansiri)-Kohima (Zubza)(90 Km) (National Project)	10.50	Assam & Nagaland	<ol style="list-style-type: none"> 1. Abnormally high land rates given by Karbi Anglong Autonomous Council (KAAC) (Rs. 150/- per Sq ft) have been disagreed by the Railways. Issue is pending for the past six months. 2. Further KAAC informed on 18.11.2016 that the basic rate of land decided at Rs. 75/- per sqft is reasonable. Matter has been brought to the notice of Chief Secretary, Govt. of Assam and further being referred to Railway Board for PMO's intervention in the matter. 3. The adjacent land in Nagaland across river Dhansiri has already been made available to this project @ Rs.25 per sq.ft. In fact, highest land rate paid in Nagaland is Rs 60/- per sq. ft, to be increased by 15% for compulsory nature of acquisition



POOR ROAD CONDITIONS (JIRIBAM – TUPUL – IMPHAL NL PROJECT)



NH-37

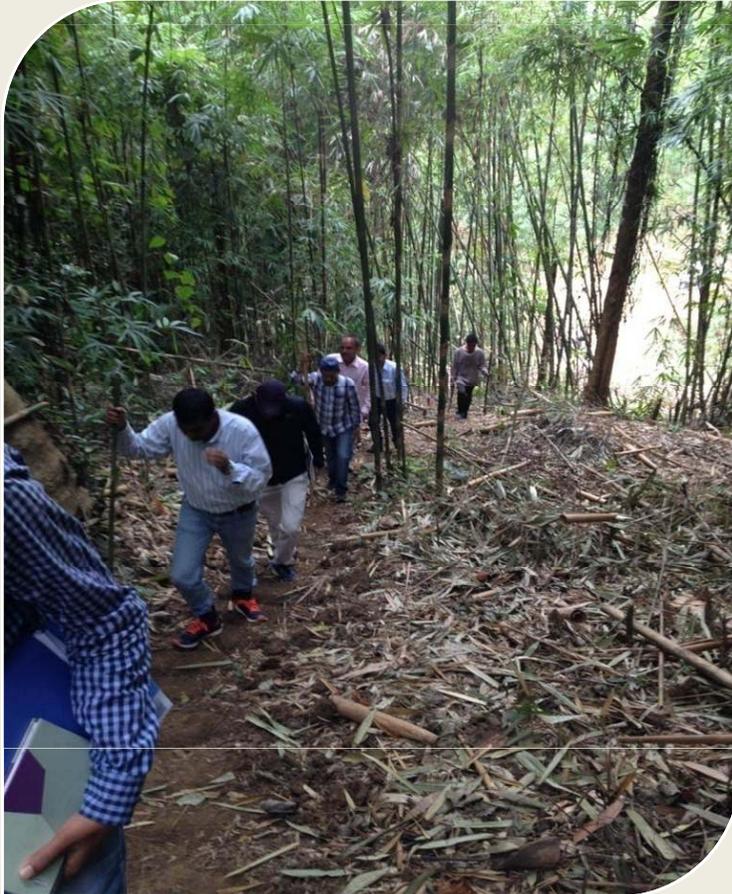
BHAIRABI-SAIRANG NEW LINE PROJECT



NH-154 in Mizoram



DIFFICULT APPROACH TO WORK SITES



Site survey for fixing alignment of tunnel - BAIRABI –SAIRANG NL PROJECT

JIRIBAM – TUPUL – IMPHAL SECTION



No Road, No Habitation

JIRIBAM – TUPUL – IMPHAL SECTION

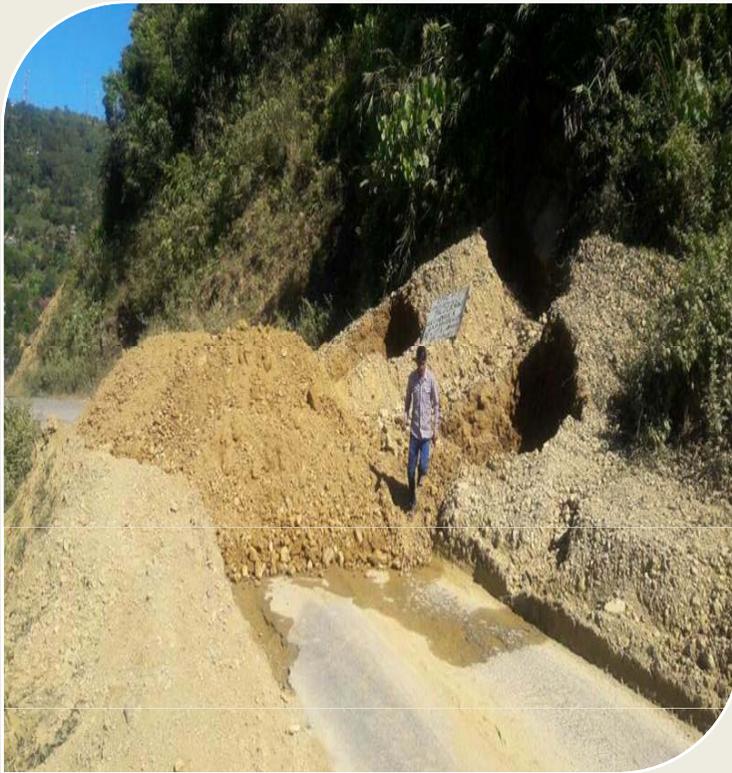


Making Service Roads: Any Slip – Fall of 2000 Feet

हम अपने रास्ते खुद बनाते हैं, मंजिल को अपने करीब लाते हैं;
काम मुश्किल है तो क्या हुआ, असम्भव को सम्भव कर दिखाते हैं



JIRIBAM-TUPUL-IMPHAL SECTION



ECONOMIC BLOCKADE



DETAILS OF SURVEYS

S N	Name of survey	State	Progress %	Present status	Target
(A) NEW LINE					
1	RET (Updating) survey for new line from Silghat to Tezpur (27.05km)	Assam	100%	COMPLETED	-
2	PET survey for 2 nd Rail Bridge at Saraighat. (7.062km)	Assam	100%	COMPLETED	-
3	RET (Updating) survey for new line from Jorhat to Sivsagar (61.60Km)	Assam	100%	COMPLETED	-
4	RET (Updating) survey for new line from Salona to Khumtai (98.56Km)	Assam	100%	COMPLETED	-

DETAILS OF SURVEYS

SN	Name of survey	State	Progress %	Present status	Target
(A) NEW LINE					
5	RET survey for new line from Sairang to Hbichhuah rail link for port connectivity on Colodyne River. (223 km)	Mizoram	95%	Report under preparation	Jan' 2017
6	PET survey for new line from Dhubri to Mendipathar double line bridge over Brahmaputra at Duhbri. (120 km)	Assam & Meghalaya	20%	Field work is in progress.	July' 2017
7	RET survey for new line from Pencharthal to Dharmanagar via Kailahahar.(45 km)	Tripura	8%	Bid document under preparation	Jan' 2018

DETAILS OF SURVEYS

8	RET survey for new line from Margherita (Assam) to Deomali (Arunachal Pradesh).(31 km)	Assam & Arunachal Pradesh	12%	Agency for survey under finalization. Bid opened.	Feb' 2018
9	RET survey for new line from Lekhapani (Assam) to Kharsang (Arunachal Pradesh). (25km)	Assam & Arunachal Pradesh	12%	Agency for survey under finalization. Bid opened.	Mar' 2018
10	RET survey for new line from Moirabari to Jagiroad. (50km)	Assam	12%	Agency for survey under finalization. Bid opened.	Apr' 2018
11	RET survey for new line from Tetelia to Moirabari via Komapur - - patekibori. (80km)	Assam	8%	Bid document under preparation.	Oct' 2018

DETAILS OF SURVEYS IN PROGRESS

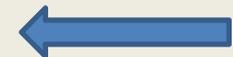
12	FLS for new BG line from Dimapur to Tizit (257km)	Assam & Nagaland	-----	Survey estimate under preparation.	June '19.
13	RETS for Construction of new line from Rangiya to Dekargaon via Bezera, Dumnichowki, Sipajhar, Mangaldoi, Kharupetia, Dalgaon, Orang. (140 Km)	Assam	8%	Bid document under preparation.	Oct'18.
14	RETS for Construction of new line from Tinsukia (Longpatia) – Pasighat via Kanubari, Deomali, Lekhapani, Jairampur, Kharsang, Miao, Diyun, Tezu, Bhismaknagar, Roing, Dambuk. (300 Km)	Assam & Arunachal Pradesh	5%	Survey estimate under vetting /sanction.	Dec'18.

DETAILS OF SURVEYS IN PROGRESS

15	RETS for Construction of new line from Bongaigaon – Agthori via Barpeta, Hajo, Sarthebari (130 Km)	Assam	8%	Bid document under preparation.	Oct'18.
16	RETS for Construction of new line to extend linkage with Chittagong & Belonia to connect with Bangladesh Railway. (125 km)	Tripura (India) Chittagong (Bangladesh)	10%	Survey for 30 Km from Belonia (India) to Feni in Bangladesh is planned. Work will be taken up after signing of MOU with Bangladesh.	Yet to be fixed.

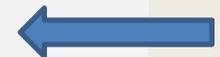
DETAILS OF SURVEYS

(B) : DOUBLE LINE SURVEYS					
17	PET survey for Doubling between Radhikapur and Barsoi (52km)	West Bengal & Bihar	12%	Agency for survey under finalization. Bid opened.	Oct' 2017
18	PET survey for Doubling between Lumding and Dibrugarh (343km)	Assam & Nagaland	10%	Bid document under preparation.	Dec' 2017
(C) : FINAL LOCATION SURVEY OF DOUBLE LINE					
19	Final location survey for Doubling New Bongaigaon to Agthori via Rangiya (142.97km)	Assam	-----	Agency for survey under finalization. Bid opened.	Dec'17.



SUMMARY OF ALL ON GOING PROJECTS IN N.E. REGION

- Doubling – *New Bongaigaon – Rangiya – Kamakhya (142 Km)* , CCEA clearance not received. Target will be set once CCEA clearance is received.
- New Line- *Dimapur – Tizit (257 Km)* - CCEA clearance not received. Target will be set once CCEA clearance is received..
- New Line – *Sivok – Rangpo (44.96 Km)*- Target is subject to availability of forest land. Presently, targeted for completion in year 2019-20
- New Line- *Byrnihat-Shillong (108.4 Km)* - FLS is stopped by KSU (Khasi Student Union). Target is kept in year 2020-21



LUMDING SILCHAR GC



LUMDING SILCHAR GC



LUMDING SILCHAR GC



JAYNAGAR (INDIA) TO BARDIBAS (NEPAL)

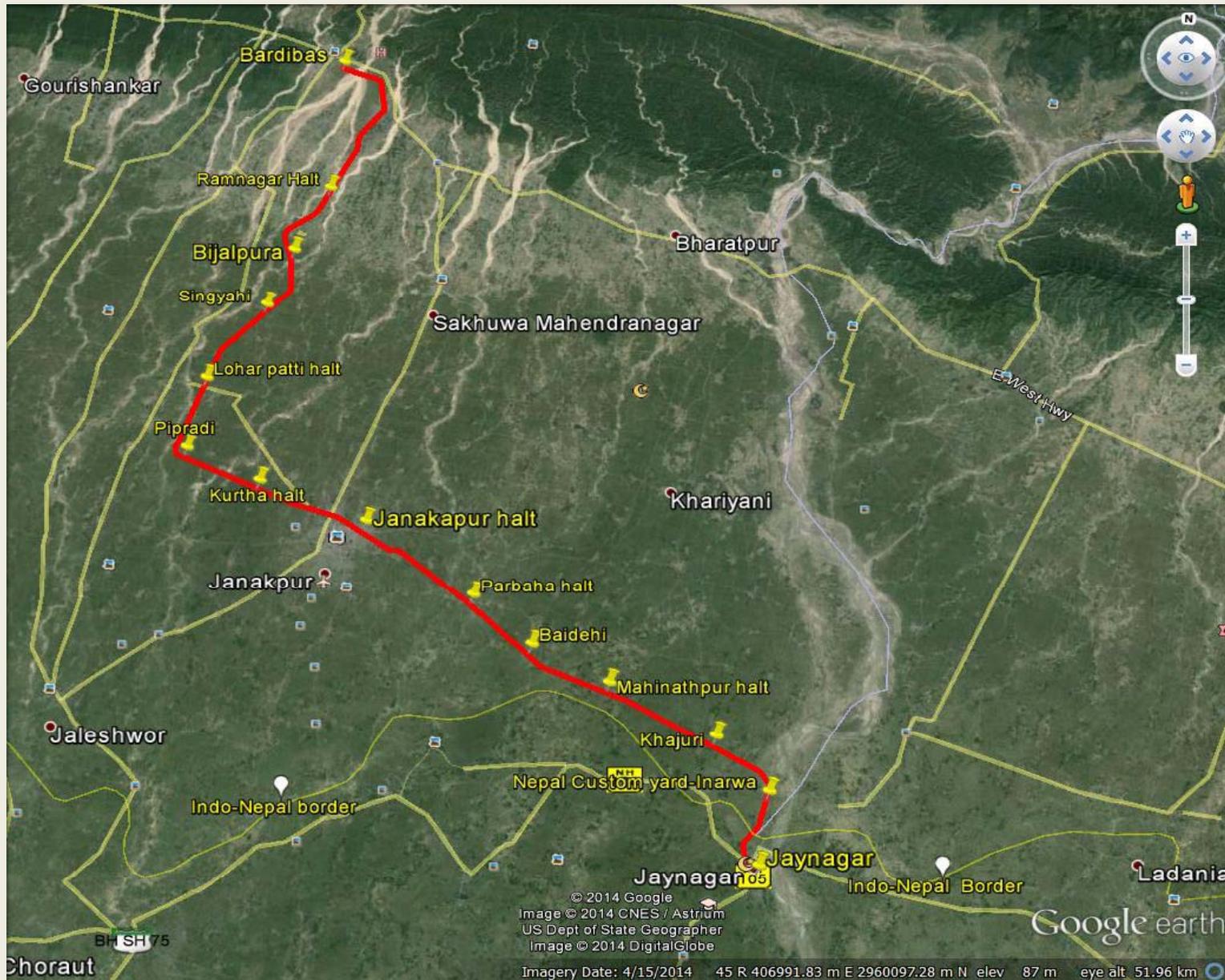
NEW B.G. RAIL LINE PROJECT

JAYNAGAR –BIJALPURA- BARDIBAS NEW RAIL LINE

PROJECT BREIF

- **GOI & GON signed MOU for development of five cross-border Rail Links.**
- **Project was sanctioned in 2010-11 and funded by MEA.**
- **Project involves ::**
 - **Jayanagar - Bijalpura (52.336 Km) - Gauge Conversion**
 - **Bijalpura - Bardibas (16.383 Km) - New Line**
- **Implemented by Ircon International Ltd.**
- **Estimated cost Rs. 548 Cr.**
- **Work is in Progress between Jayanagar – Bijalpura section where Land has been handed over by GON.**

JAYNAGAR –BIJALPURA- BARDIBAS NEW RAIL LINE LOCATION MAP



JAYNAGAR –BIJALPURA- BARDIBAS NEW RAIL LINE

STATUS OF PROGRESS

- **INDIAN PORTION (0.0 – 2.99 Km)**
 - **Earthwork - Completed in available land.**
 - **Bridges - 2 Nos. completed (100%)**
 - **Station Bldg. - 1 (Jayanagar) – Completed.**

- **Nepal Portion (2.99 to 52.33 Km)**
 - **Earthwork - 1.30 Lakh Cum completed (75%)**
 - **Bridges - 68 out of 108 completed (62%)**
 - **Station Bldgs. – 11 Nos. – Works in progress.**

JAYNAGAR-BIJALPURA-BARDIBAS PROJECT

PENDING ISSUES

- 1. Acquisition of Land 2.67 Hect. In Jayanagar by Govt. of Bihar.**
- 2. Acquisition of Land by GON**
 - 2.12 Hect. in Leauri Village (Km 39.20 to Km 40.20)**
 - 65 Hect. Between Bijalpura – Bardibas (Km 52.3 to Km 68.72)**
- 3. Removal/shifting of encroachments, electric crossings & poles, old station buildings and cutting of tress between Km 2.99 to Km 52.3 (Jayanagar – Bijalpura) by GON**
- 4. Delay in approvals by GON for import of custom exempted material from India affects Project execution.**

DPG Roundtable on Advancing BBIN Sub Regional Cooperation, Guwahati

January 30-31, 2017

Session III- Energy Session

Chair's Opening Remarks by Ambassador V. P. Haran

BBIN region is endowed with enormous potential in energy. India has fossil fuels and hydro and nuclear power. Bhutan and Nepal have hydro resources and Bangladesh has Gas and its offshore offers prospect for hydrocarbons. Despite the enormous potential, BBIN region is energy deficient. Energy being critical for rapid development, regional cooperation would optimize its utilization and benefit the region. It will reduce investment required and cost, help balance demand and supply and facilitate more efficient use of available energy. There is also need to diversify and optimize energy sources to meet fluctuating demand. There are immense opportunities for harnessing Hydro power potential of the region. There is need to focus on power evacuation and the infrastructure required for power trade. Presently energy accounts for about 5% of trade among BBIN countries. Given the market for energy and the potential for power generation, there is scope for steep increase in power trade provided there is a developed market for power.

Mr. Sudhakar Dalela JS, MEA, said that cooperation in BBIN framework will complement ongoing cooperation in SAARC and BIMSTEC. He recalled Indian PM's vision of shared prosperity and growth in South Asia. Sub regional cooperation should result in tangible economic benefit to all and be seen as equitable and fair by all partner countries. There should be value addition over existing arrangements. The aim should be not to create new structures but to come up with an approach for fostering cooperation in a practical manner, he said. He gave an overview of work done so far by the BBIN Working Group on energy cooperation. He noted the ongoing work on evolving an understanding on identification of broad principles of sub-regional cooperation, ways to bring in transparency and predictability in power trading and development of stable inter-grid connection and sub-regional transmission networks. He referred to the guidelines for cross border trade in electricity announced recently by GoI. There is considerable potential to forge greater energy cooperation among BBIN members, he said and added that there is need for exploring ways to deepen BBIN cooperation through increased people to people contacts.

Prof. Ainun Nishat, participant from Bangladesh said that energy security is important for sustainable development. Waters of Ganges, Brahmaputra and Barak/Meghna are the key resource of this region and need to be harnessed optimally, giving due attention to social and environmental issues. Flow in these rivers is uneven. Bangladesh has limited hydropower potential. India has tapped only 2% of potential for hydropower in the North East and Nepal has

developed less than 1% of its hydropower potential of around 83,000MW, of which it is feasible to harness over 50%. Bangladesh has successfully extended solar home system to rural areas but it is expensive. Current production in Bangladesh is 7,000MW, which is expected to be doubled in 5 years. By 2030, requirement will be 40,000MW. Bangladesh supports regional hydropower generation and transmission. Bangladesh is planning to invest \$1Billion in power plants in Nepal and Bhutan. It is planning several transmission lines to help evacuate power from North East India to central India across Bangladesh. Transmission line across Padma river is already progressing. He said it is now time to plan for high dams. If hydropower stations aim only at evening peak loads, it will generate pulsating flow downstream, which is harmful for the river's eco-system. He suggested a BBIN energy grid and harmonization of Environmental Quality Standards and EIA procedures.

Mr. Kencho Dorji, participant from Bhutan said it is viable to harness over 80% of Bhutan's hydropower potential of 30,000MW. Only about 5% of this [1615MW] has been harnessed so far. The target of setting up additional generating capacity of 10,000MW by 2020, with India's involvement has fallen behind. There is need to expand market for Bhutan's power for which he suggested free trade in power among BBIN countries. He suggested that while designing hydro projects, there is need to factor in environmental mitigation steps, effect of climate change on water flows and projected change in hydrological discharge and also ensure that adequate benefits accrue to those affected by the project. He said the projects in Bhutan so far have been run of the river projects and suggested some high dam projects as well. The projects executed so far have contributed enormously to the socio-economic development and industrialization of Bhutan. Hydropower sector contributes 14% of Bhutan's GDP and 27% of its direct internal revenues, he said. He informed that Bhutan is implementing National Transmission Grid Master plan to evacuate power from all the projects coming up in different regions of Bhutan. He suggested that all new market products and facilities should be freely available to all BBIN countries.

In the presentations and the discussions that followed it was clear that the region {BBIN region} can achieve energy security which is essential for sustainable development through cooperation in energy sector. There was general agreement that BBIN, given the area and population should be called a region and not sub-region. The region has enormous potential for hydropower which if harnessed can meet the region's entire shortfall in power supply. Such cooperation needs to be approached carefully in view of the sensitivities involved and perceived transgression on sovereignty. Cooperation should be demonstrably to the benefit of all the countries so as to win the people over. Possibility of involving the private sector in generation of power needs to be explored. The suggestion on high dams needs to be considered carefully, keeping in view environmental and social effects, Himalayan geology, likely reaction of the people, etc. An essential requirement for cooperation in the energy sector is political will. At this stage, political atmosphere seems to be conducive for energy cooperation. Feasibility and desirability of cross

country projects need to be gone into. Relevance of Bhutan model of development of hydropower sector for other countries in the region needs careful study. There is a lot that can be learnt from each other's experience.

Recommendations:

-Current conducive political atmosphere provides a good opportunity to move forward on cooperation in energy sector, including through cross country projects. Mutual advantage of all the Members is the key to success.

-While political atmosphere is conducive, it is necessary to win over the support of the people. Joint efforts would be necessary to change the perceptions among some sections of the civil society.

-Cross country projects need to be encouraged. Benefits of such projects should factor in the costs to the concerned countries. Involvement of private sector would be necessary, given the enormous funds required for development of hydro projects.

-There is a strong case for free energy trade in the region. For this a suitable regulatory mechanism needs to be agreed upon and put in place. The region should move towards an energy grid. Infrastructure required for energy trade needs to be established.

-While designing hydro projects, social and environmental costs should be evaluated carefully. The effect of climate change on flows in the rivers should be taken into account.

-Ease of transmission of power at a reasonable cost is necessary for power trade. Plans of members on establishing internal transmission grids need to be shared with other members, to facilitate establishment of a grid at the regional level.

-Suggestion regarding high dams merits careful consideration.

-It will be useful to harmonize EIA procedures and Environmental Quality Standards.

Presentation
by
Dr. Ainut Nishat
(Prof. Emeritus BRAC University, Bangladesh
Centre for Climate Change and Environmental Research)

BBIN Sub-Regional (regional) Cooperation:
Energy and Water Management related issues

Ainun Nishat
BRAC University, Bangladesh

Introductory remarks

- Initial thrust of the BBIN sub-regional (or, Regional) initiative is on regional transport connectivity.
- Regional programs, as appropriate, on issues related to Food security, Energy security, Water security, Livelihood security and Health security may be supported and the process of **sustainable development** may be ensured.
- Due focus should be given to social and environmental issues, right from beginning.

Sustainable Development

- Any development process that will fulfill the requirement of sustainable development must ensure five conditions. It should:
 - i) support economic betterment for the nation,
 - ii) support social betterment of lives of its citizens;
 - iii) ensure equity among generation,
 - iv) also, ensure equity between generation,
 - v) encourage conservation of natural resources base and ensure protection of biological diversity.

- Focus of the presentation will be on:
 - Some general observation on potential hydro-energy development in the BBIN sub-region (or, Region),
 - Transmission of electricity and regional grid, and
 - Management of Trans-boundary Rivers

Development of Hydro-power and Water Resources

- The area was once termed as “poverty triangle” by the World Bank. Then, they changed the term to “growth triangle” based on the rich potential of the area in terms of natural resources (mainly Water and hydro-power) and human resources.
- Key resource of this area is waters of the three the Brahmaputra, the Meghna/Barak and the Ganges .
- BBIN suffers from too much water at certain time, and, too little water at another time of the year.
- The huge monsoon water may be stored through reservoirs; both major river floods and droughts may be addressed; and, thus, inland navigational facilities may be improved; and, huge amount of hydro-power may be generated .

On hydro power

- India is endowed with huge hydropower potential in the northeast that remains largely untapped.
- Nepal is endowed with huge hydropower potential that remains largely untapped, though the country suffers from energy shortage.
- Bhutan is endowed with hydropower potential that is being tapped but huge potential remains to be tapped.
- Bangladesh has very limited potential, that has already been exploited.

On hydro power ... India

- Northeastern India (excluding Sikkim) has potential of about 60,000MW of which about 2% has been tapped and another 6% is in the process to be tapped.
- Hydro-power potential of Nepal is estimated at 83,000 MW, of which half i.e. 40,000 MW is considered to be technically and economically viable. However, Nepal till date has been developed approximately 600/700 MW of hydropower.

On hydro power ... Bhutan

- Hydro-power potential of Bhutan is estimated at 30,000 MW, of which half i.e. 24,000 MW is considered to be technically and economically viable. Bhutan has developed 1,400MW of hydropower (another 10,000MW is planned).
- Hydro power is back-bone of Bhutan's economy.

Power generation in Bangladesh

- For Bangladesh there is no potential of hydro power (only the Karnafully produces 230MW)
- Solar Home System is growing at a rapid rate. But remains expensive. Theses are at watt-level not MW-level that is necessary for industrial growth.
- Current production is 7,000MW (Installed capacity is 12,000 plus 2,000MW captive capacity); target for next 5years is another 7,000MW. By 2030 requirement will be 40,000MW.
- The country is pushing for imported coal-based power stations (imported LNG based power (9,000 MW), Nuclear (4,000MW), Coal-local 8,000MW), Coal-Imported (11,000MW),Regional sources (3,500MW) and others including renewable (4,500MW)
- Thus Bangladesh would keen supporting regional hydro-power generation and its transmission.

On transmission line

- Evacuation of energy from hydro-power rich areas will need construction of inter-country transmission line. From, Northeastern India, transfer of energy to central India will require transmission line through Bangladesh. Several transmission lines are planned in the country that will facilitate the process.
- In Bangladesh, we hear that Bhutan-India-Bangladesh as well as Nepal-India-Bangladesh power plants in Bhutan and Nepal, respectively, are being seriously processed. Bangladesh is planning to invest \$1billion for such projects.

Construction of Dams in Sustainable Manner

- Any proposal for construction of dams and reservoirs is bound to receive serious opposition from activists.
- The World Commission of Dams, in 2000, identified 7 strategic priorities to resolve the debates over construction of dams.
- These strategic priorities are:
 - gaining public acceptance, comprehensive options assessment, addressing existing dams, sustaining rivers and livelihoods, recognizing entitlements and sharing benefits, ensuring compliance, and sharing the rivers for peace, development and security.
- With these strategies, the emerging social issues arising from resettlement requirements may be ensured, and ecological issues may be addressed; thus, water resources of the region may be tapped.

Current approach on hydro-power

- Currently, focus is on development of run-of the river type projects, or Dams with small reservoirs.
- If the hydropower stations are aimed at meeting of evening 'peak load', then, it could be harmful to ecosystem as it will generate a pulsating flow.
- Time to plan for high dams for overall water management.

Issues in trans-boundary water management

- Management of Surface water
- Flood management
- Hydro-power generation and distribution
- Management of navigation
- Management of fisheries
- Management of water quality issues
- Salinity in the coastal belt
- Industrial water supply
- Domestic water supply and sanitation
- Management of Ground water
- Erosion Control in Border Rivers
- Ecosystem, Watershed and Forest management
- Impact of Climate Change and Climate variability

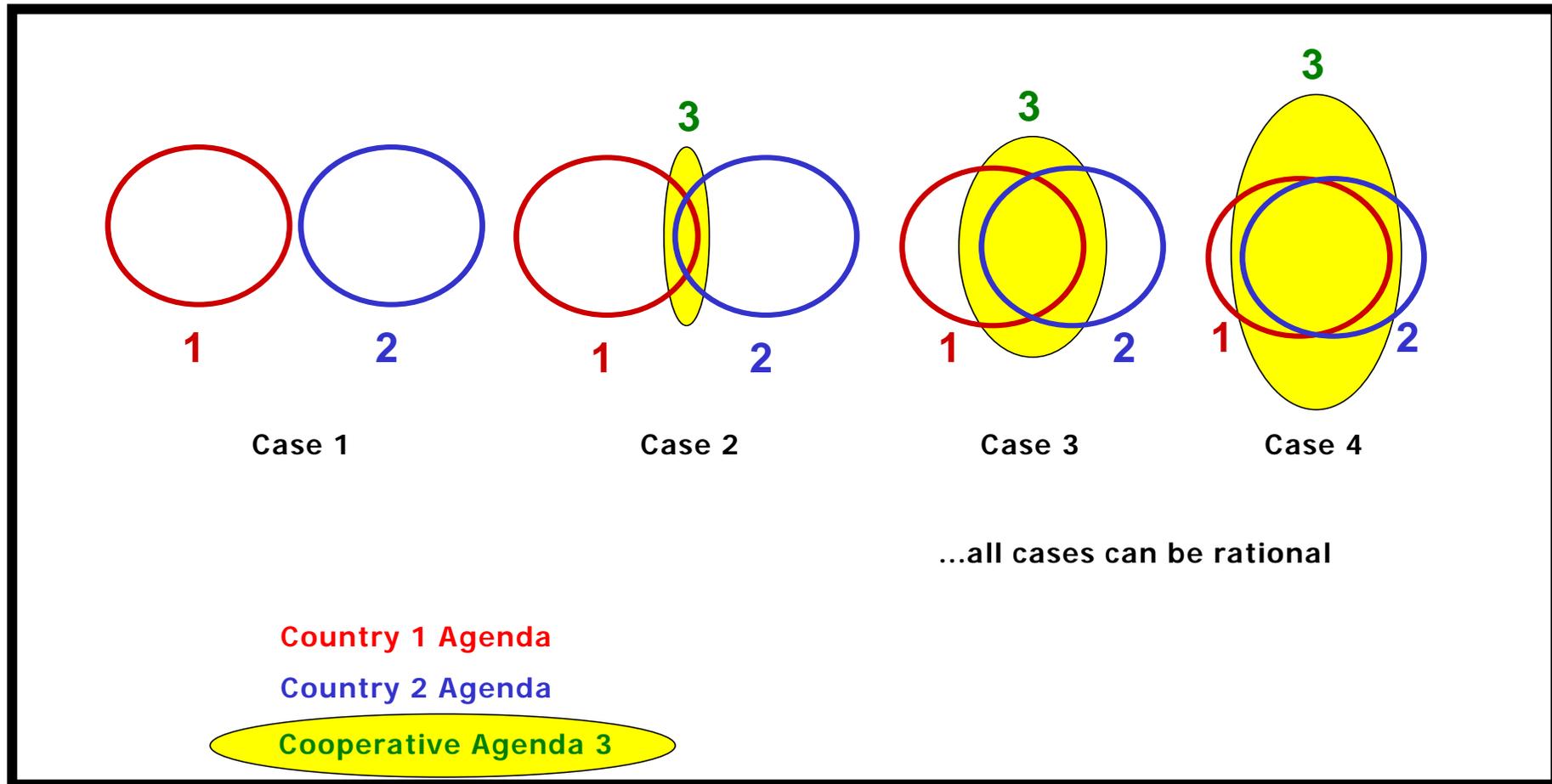
Management of Environmental and Social Issues

- All countries of the Region have national law wherein Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) are compulsory for all interventions.
- All the countries also have Environmental Quality Standards (EQS).
- It may be useful to harmonize on EQS and EIA procedures of the countries. Requirement of resettlement and rehabilitation of displaced people must be met.
- BBIN countries should push for energy grid, the environmental considerations in laying out the transmission system, must also be seriously integrated during planning process through appropriate EIA and SIA.

Basic considerations.....

- Co-riparians should move away from the current approach of **sharing the flow available at the border**;
- Development of **'basin-wise'** and **'basin-wide'** water management plans/ options/ scenarios should be the goal of the professional/ technical units;

Converge different agenda for cooperation



Summing up

- BBIN initiatives should be a mechanism not only to develop better connectivity among in the region the but also to be a catalyst in ensuring sustainable development.
- An effective institutional mechanism must be set up to ensure environmental and social considerations are duly covered and EIA and SIA are duly prepared during project planning and implement stages..
- A common monitoring mechanism, to carry out the 'environment management plan (EMP)' be set up.
- Environmental Quality Standards and the EIA procedures may be reviewed and updated, and harmonized.
- Rich potentials of hydro-power generation need to be harvested.

Abstract Recommendation and Presentation
by
Mr. Kencho Dorj
(Joint Managing Director,
Kholongchhu Hydro Energy Lt, Jrashiyangtse, Bhutan)

Bhutan's Energy Sector: An Overview, a Present Narrative

Kencho Dorji,
Joint Managing Director,
Kholongchhu Hydro Energy Limited, Trashiyangtse, Bhutan

Abstracts: Energy is the foundation of all modern economic activities, especially for the prosperity of society and predominantly for poverty alleviation of poverty. The energy sources in the BBIN region consists of all types of energy – fossil-fuels, nuclear and renewable sources such as hydropower, wind, geothermal and solar energy sources. In Bhutan, abundant source of hydropower potential, because of its terrains, exists. Out of the 30,000 MW hydropower potential, only 5% remains harnessed so far. Efforts are being made to harness the remaining hydropower potential in different modes of development, mainly through intergovernmental arrangements with the assistance of the Government of India.

Hydropower is one of the most sustainable options. But development of hydropower is capital-intensive with long gestation period and often prone to geological uncertainties, especially in some parts of the Himalayas. Due to the seasonal nature and the projects in operation or under construction being run of the river schemes, some shortage of power in the dry seasons is experienced especially for industrial development. Therefore building some reservoir schemes in future could mitigate the shortage in dry seasons.

Hydropower development must also develop strong policies that seek to address the environmental and social concerns. Adequately funded environmental management plans and provision of monetary and other benefits to the affected communities should be built into the hydropower development policies and this should be fully implemented.

Other renewable energy projects (especially wind and solar) in BBIN countries are being developed. These energy sources are incidental or intermittent and severely modulated by the vagaries of nature and do not serve the society at the time it wants. Hydropower, because of higher predictability of availability, is available at such a time and therefore has high value. Policies should be framed to monetize this important value addition.

Also in trading of electricity, in order that excess energy in one region is used in deficit regions, the emerging energy market in the BBIN region needs to allow unrestricted access for import and export of energy across the borders.

The presentation recommends that the above constraints are considered during formulation of policies and plans for development of hydropower and trading of electricity.

Recommendations

- There is regional shortage of power in some BBIN countries. In Bhutan, during the non-monsoon seasons, the plants run at very low PLF due to shortage of water. The projects under operation and those in construction are all run of the river schemes. Excess water during monsoon could be used to make power available through the constructions of some reservoirs. It is recommended that in future discussions, some more reservoirs could be planned and developed in Bhutan.
- Other renewable energy projects (especially wind and solar) in BBIN countries are being developed. These energy sources are incidental or intermittent and severely modulated by the vagaries of nature and do not serve the society at the time it wants. Hydropower, because of higher predictability of availability, is available at such time and therefore has high value. Efforts should be made to monetize this important value addition.
- While developing hydropower or other energy projects, the BBIN countries must ensure that adequate environmental mitigation measures and benefits to the communities are not only provided for in the policies but also actually implemented with larger emphasis on those directly affected by project development.
- Since hydropower is an important resource of Bhutan and as more projects are being developed with the assistance of India, export of power to the Indian markets and also to those of other BBIN countries should be made easy and without restrictions. Presently, the electricity is only traded bilaterally. This trade zone could be extended to trilateral or pan-BBIN networks.
- New market products in electricity business are coming up in the BBIN region and these market mechanisms should be made freely available to exporters of electricity by providing unrestricted access to the infrastructures and the markets.

Bhutan's Energy Sector: An Overview

A Present Narrative

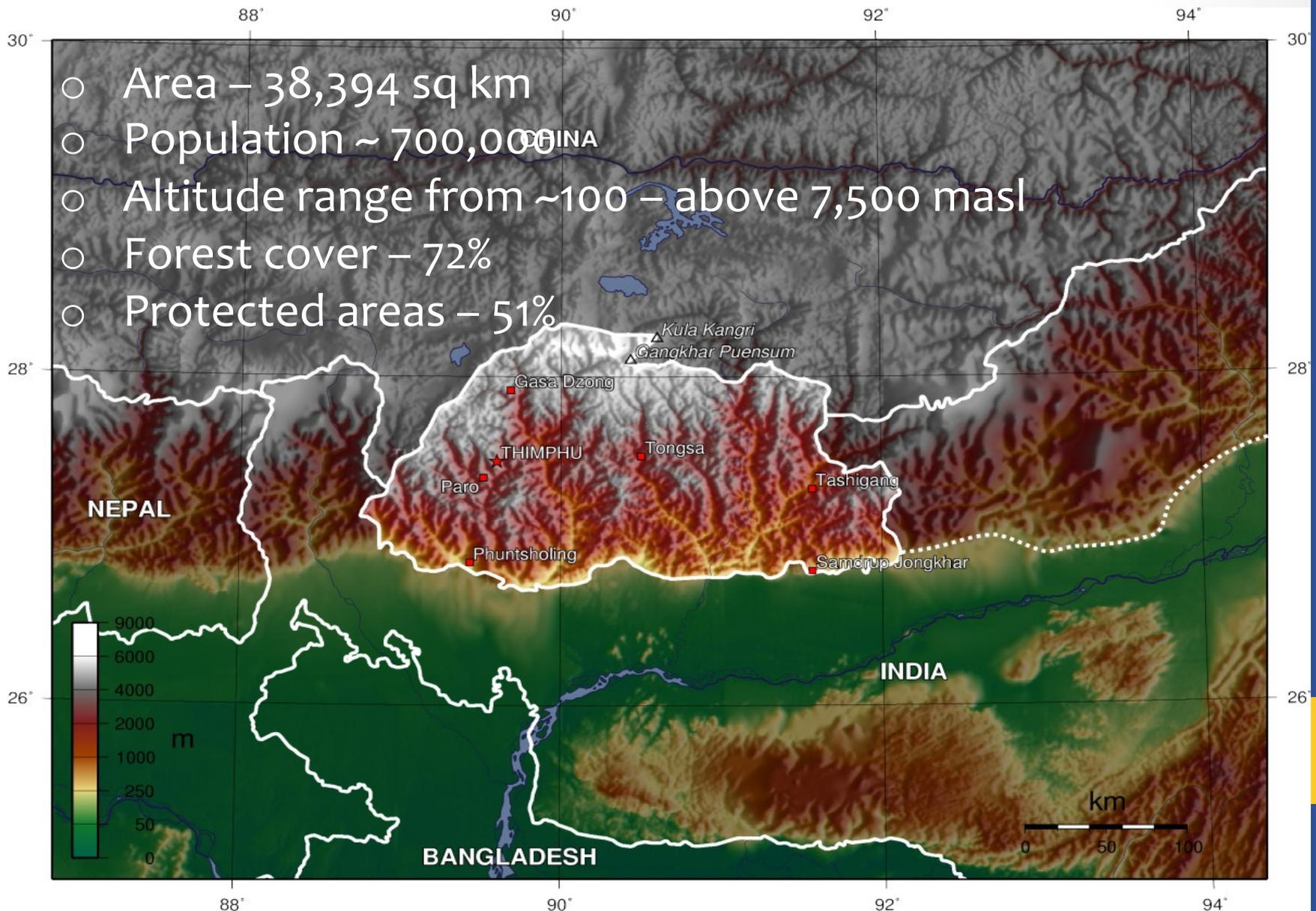
Conference on BBIN Co-operation

Guwahati, Assam

Jan 31, 2017

Bhutan – Natural Features for Hydropower Potential

- Area – 38,394 sq km
- Population ~ 700,000
- Altitude range from ~100 – above 7,500 masl
- Forest cover – 72%
- Protected areas – 51%



Potential for Hydropower Development

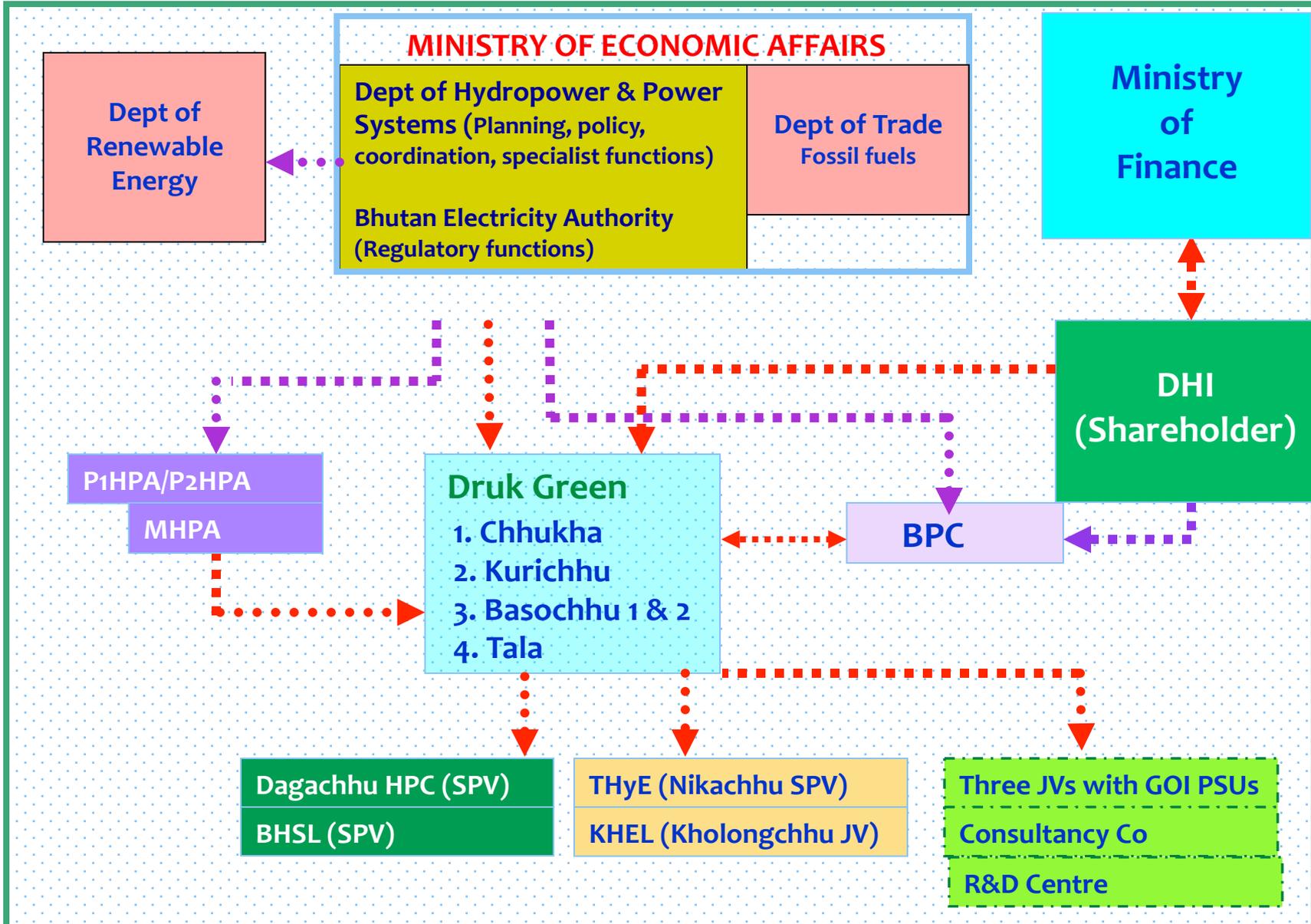
Bhutan has rich hydropower potential

As per **Power System Master Plan:**

- ❑ 30,000 MW potential
- ❑ 23,760 MW comprising of 76 sites of >10 MW techno-economically viable



Energy Sector Structure



Bhutan's Energy/Fuel Mix

Total Energy Supply in Bhutan and the Fuel Mix (2014)

Total Domestic Energy Supply: 650,220 TOE

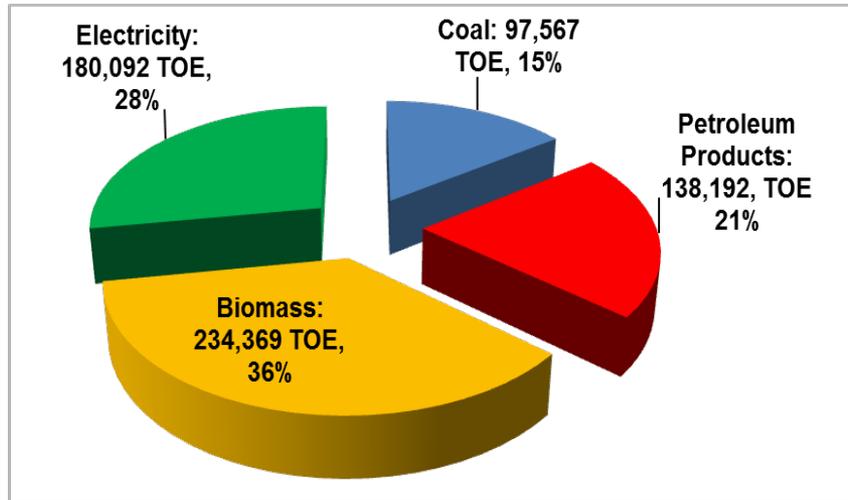
Thermal: 72% (470,128 TOE)

Electrical: 28% (180,092 TOE)

Coal and Derivatives: 15% (97,567 TOE)

Petroleum Products: 21% (138,192 TOE)

Biomass: 36% (234,369 TOE)



- ❑ Electricity 28%
- ❑ Domestic 7%
- ❑ Industries 21%



Other Renewable Energy Resources

- Solar and biogas initiated in the 80's (schools, hospitals, Lhakhangs)
- Also a windmill for pumping irrigation water for Bajo farm



Two Pilot Windmills at Wangdue
(2x300 kW capacity)

Brand Bhutan

A Carbon Sink and a Policy to remain Carbon Negative!

Hydropower (A Success Story)

❑ Developed Potential

Hydropower Plant	Capacity (MW)
Dagachhu (2016)	126
Tala (2006-2007)	1,020
Basochhu (2001-2004)	64
Kurichhu (2001-2002)	60
Chhukha (1986-1988)	336
Micro/Mini (24)	9
Total	1,615

- ❑ Installed hydropower capacity of 1,616 MW constitutes ~5% of total hydropower potential

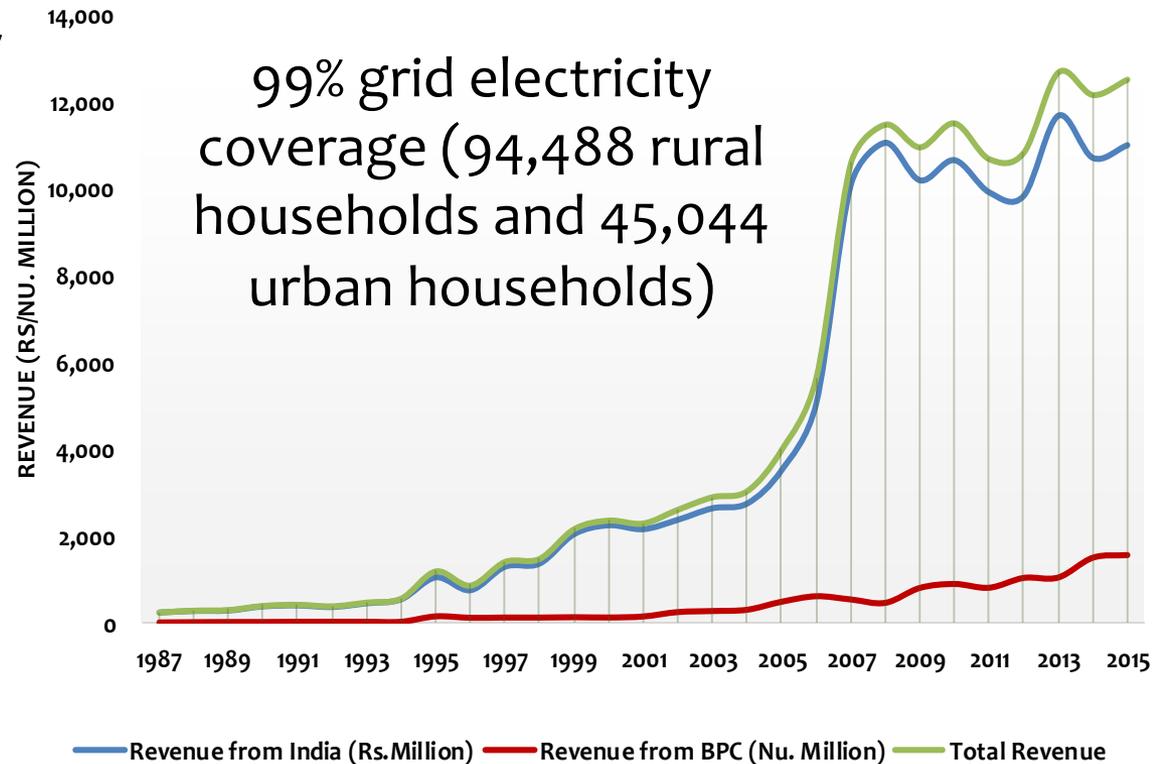
Benefits of Hydropower i

Impact of Hydropower on the Socio-Economic Development of Bhutan

With only 5% hydropower potential developed, the energy sector constitutes:

- ❑ 27% of direct internal revenues
- ❑ 14% of GDP
- ❑ Per capita energy consumption highest in South Asia (2,370 kWh),

Revenue: Export and Domestic (MBTN)

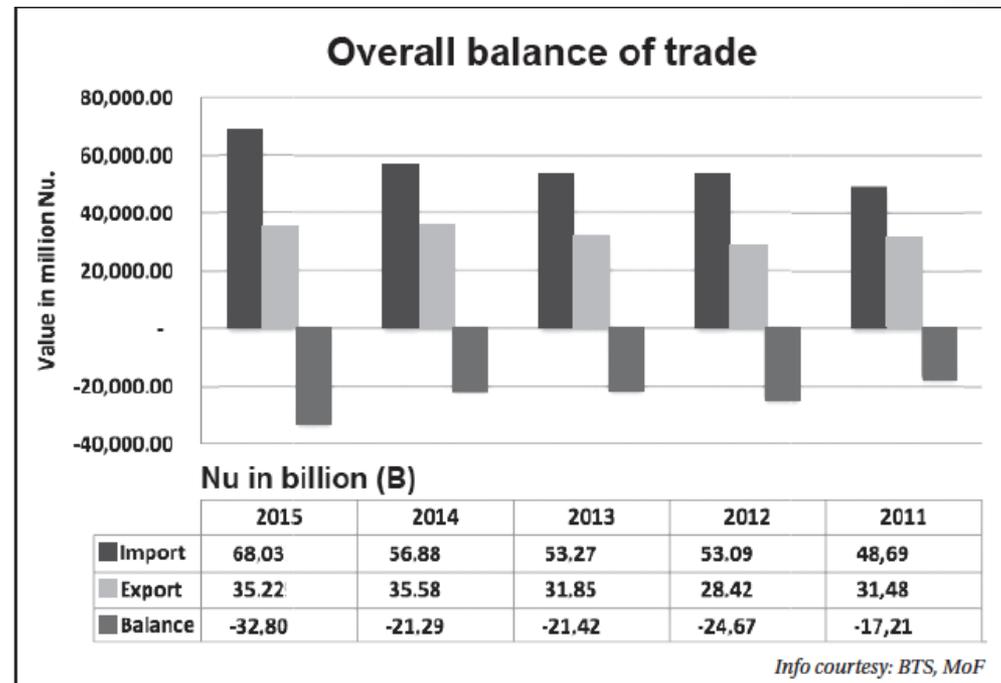


GDP growth tends to follow the per capita consumption of energy patterns

Impact of Hydropower on the Socio-Economic Development of Bhutan

FEBRUARY 18, 2016

- ❑ Domestic consumption slowing down to 5% due to limited availability of firm power generation
- ❑ Domestic consumption (26%) to exports to India (74%)
- ❑ Revenues from export to India offset balance of payments to a large extent after servicing loans

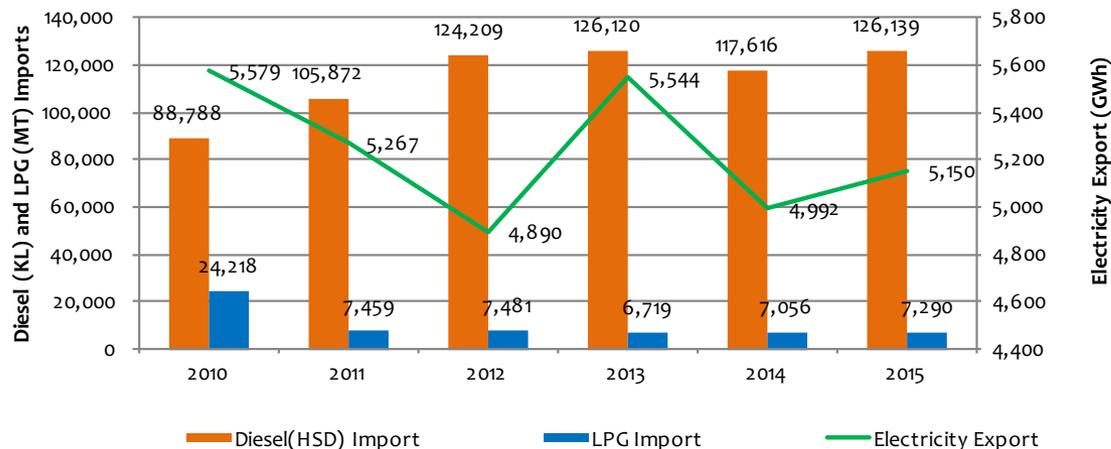


Trade deficit widens to Nu 32.8B last year

Excluding trade in electricity, the deficit would have been Nu 44.6B

Impact of Hydropower on the Socio-Economic Development of Bhutan

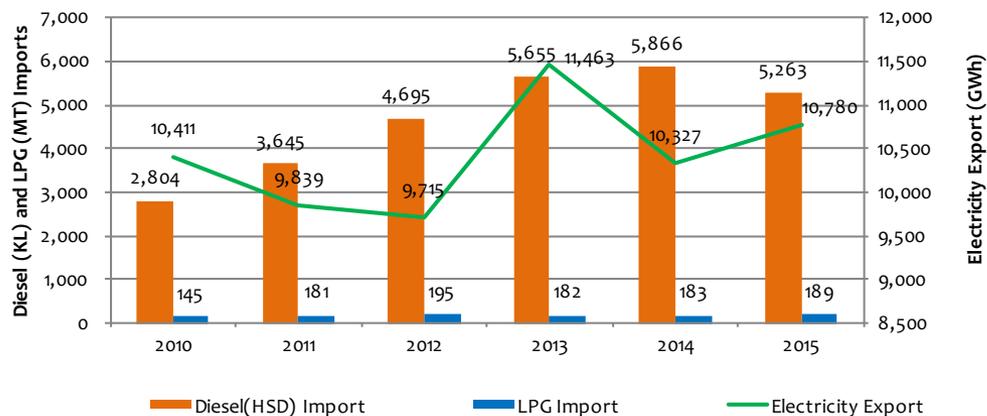
Energy Import & Export Volume Trends



As Bhutan imports more cars, import of fuels increases

Hydropower construction also requires large quantum of POL imports from India

Energy Import and Export Value (MBTN) Trends



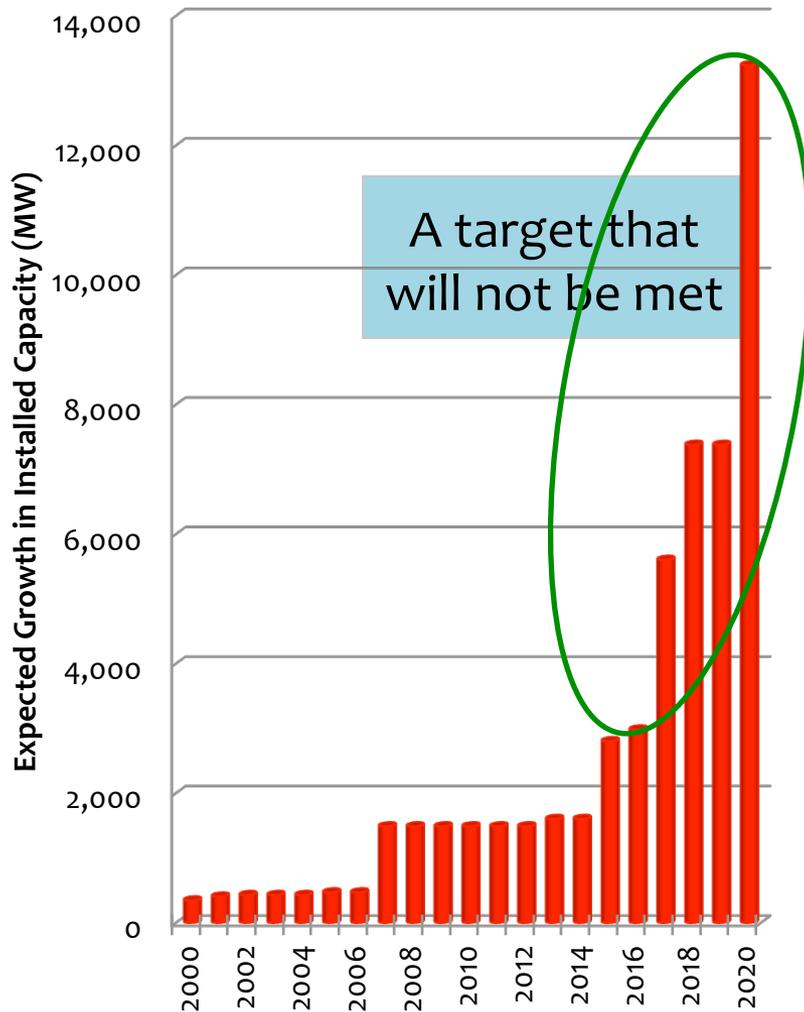
Impact of Hydropower on the Socio-Economic Development of Bhutan

- ❑ Availability of power stimulates:
 - ❑ major energy intensive industries
 - ❑ creating jobs

- ❑ Over 70% of energy consumed within Bhutan used by HV industries

- ❑ Jigmeling and Damdum (Samtse) Industrial Estates awaiting Punatshangchhu and Mangdechhu power

Projects under 10,000 MW by 2020 with Gol



IG Model Projects - Construction

1	Punatsangchhu I	1,200
2	Punatsangchhu II	1,020
3	Mangdechhu	720

Joint Venture Projects

4	Kholongchhu	600
5	Chamkharchhu I	770
6	Bunakha Reservoir	180
7	Wangchhu	570

Other IG Projects?

8	Sankosh Reservoir	2,560
9	Kuri-Gongri DPR	2,640
10	Amochhu	540
Total		10,800

Hydropower Development by Druk Green – the Generation Utility

❑ Druk Green Projects

Commissioned

1	Dagachhu	126 MW
---	----------	--------

Under Implementation

2	Nikachhu	118 MW
---	----------	--------

Under Investigation (DPRs/PFSs)

3	Dorjilung DPR completed	1,125 MW
4	Nyera Amari (1+2) DPR	442 MW
5	Druk Bindu DPR	18+8 MW
6	Gamri (1+2) PFR	45+85 MW
	Total	1,717 MW

Hydropower Development – Work in Progress with the Government

PFRs		
1	Chamkharchhu 2	599 MW
2	Chamkharchhu 4	382 MW
3	Manas RS	2,800 MW
4	Dhansari (Jomori)	73 MW
5	Shongarchhu	107 MW
6	Dangchhu 1	168 MW
7	Dagachhu 2	140 MW
	Total	4,269 MW

Social & Environmental Concerns

Global Warming, Climate Change and Receding Glaciers – Differing Views

Kuensel - 10 November 2014

This year, an Inter-government Panel on Climate Change (IPCC) Assessment Report V said the Himalayan region is still data-poor, as it was found in 2007 by the same panel.



Monsoonal Precipitation Critical to Bhutan's Hydropower

Hindustan Times : 16 September 2014

REVISED FINDING

Asian monsoon about 40 million years old: Study

Press Trust of India
letters@hindustantimes.com

WASHINGTON: Asian monsoon, one of the largest and crucial climate system in the world, existed 40 million years ago — much earlier than previous estimates, according to a new study.

Scientists believed the climate pattern known as the Asian monsoon began 22-25 million years ago as a result of the uplift of the Tibetan Plateau and the Himalaya Mountains.

THIS FINDING HAS MAJOR CONSEQUENCES FOR GLOBAL WARMING. IT IMPLIES INCREASING ATMOSPHERIC CO2 WILL INCREASE THE MONSOONAL PRECIPITATION.

ALEXIS LICHT, research associate, University of Arizona

PAGE 8 KUENSEL | Saturday, November 8, 2014

Throwing cold water on notions of CDM status

Environmentalists take exception to certifying hydropower projects in Bhutan as run-of-the-river

Banking on rain

Less rain this summer is taking its toll not only on rice growing farmers, but on the exchequer as well.

With hydropower projects falling short of power generation targets, it is obvious the government's spending power, especially on current expenses, will be affected. The last time it rained heavily in the capital was when the Indian Prime Minister visited the country, and the recent one, when a furniture business literally drowned in water from an excessive, if brief, downpour.

Similarly, throughout the country, the hydromet has recorded low rainfall and dry spells. This does not bode well for the hydropower and agricultural sectors. The overall rainfall prediction for the year is low.

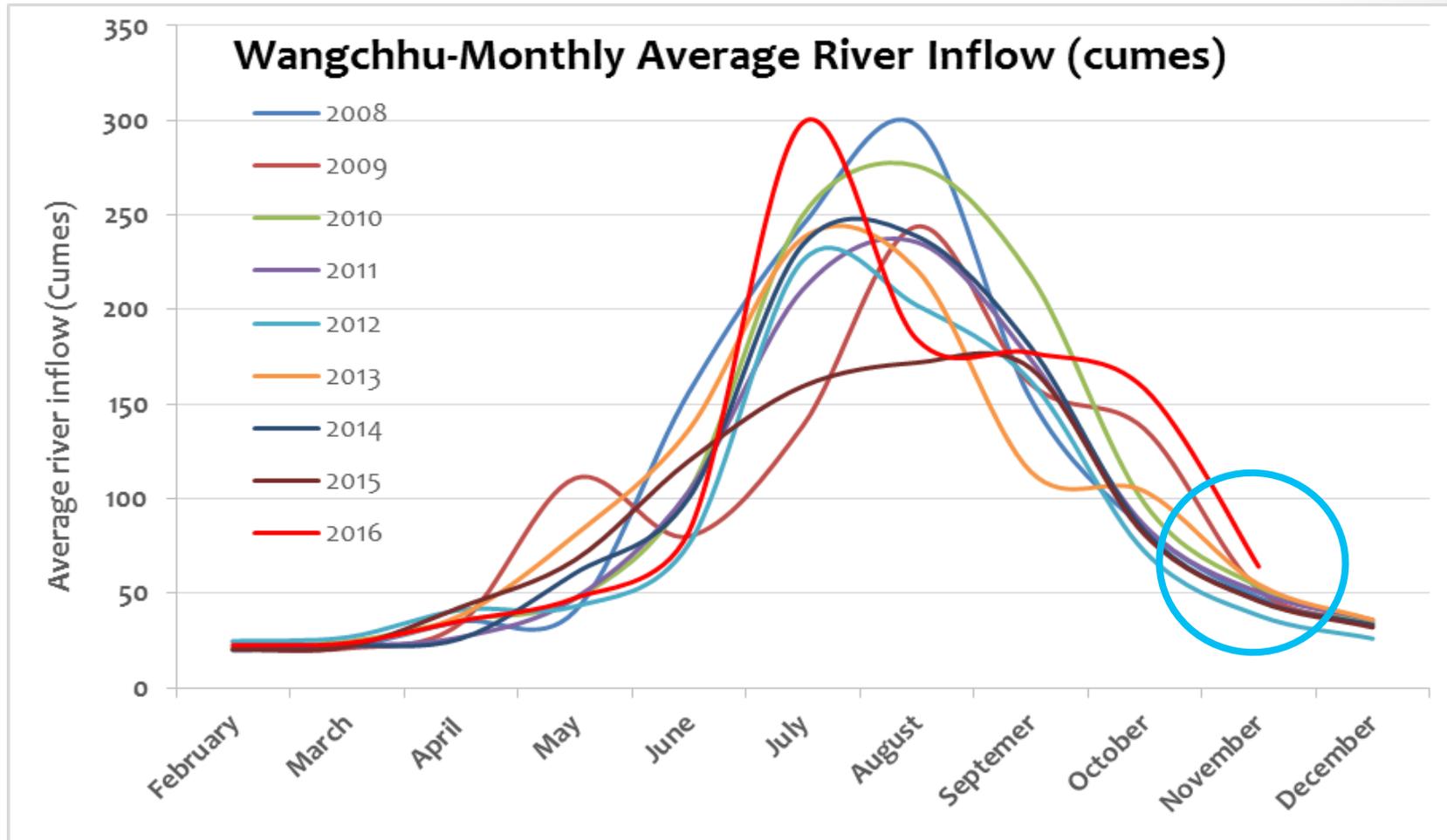
Environmental Concerns

Climate Change Impacts on the Flow Regimes of Rivers in Bhutan and Possible Consequences for Hydropower Development

- 7.5% of the total land area of Bhutan under glacier/snow cover (1,300 km² of glacier cover out of ~ 40,000 km²)
- For most catchments, stream flow is not changing much from 1981-2010 to 2021-2050, with mean annual discharges available for hydropower generation ranging between -9% to +6% based on one model and -13% to +7% based on another model
- Due to melting of Glaciers, higher declines in discharges are likely in the lean months

To be on safer side, we could either design as per projected changes in hydrological discharges or build reservoirs

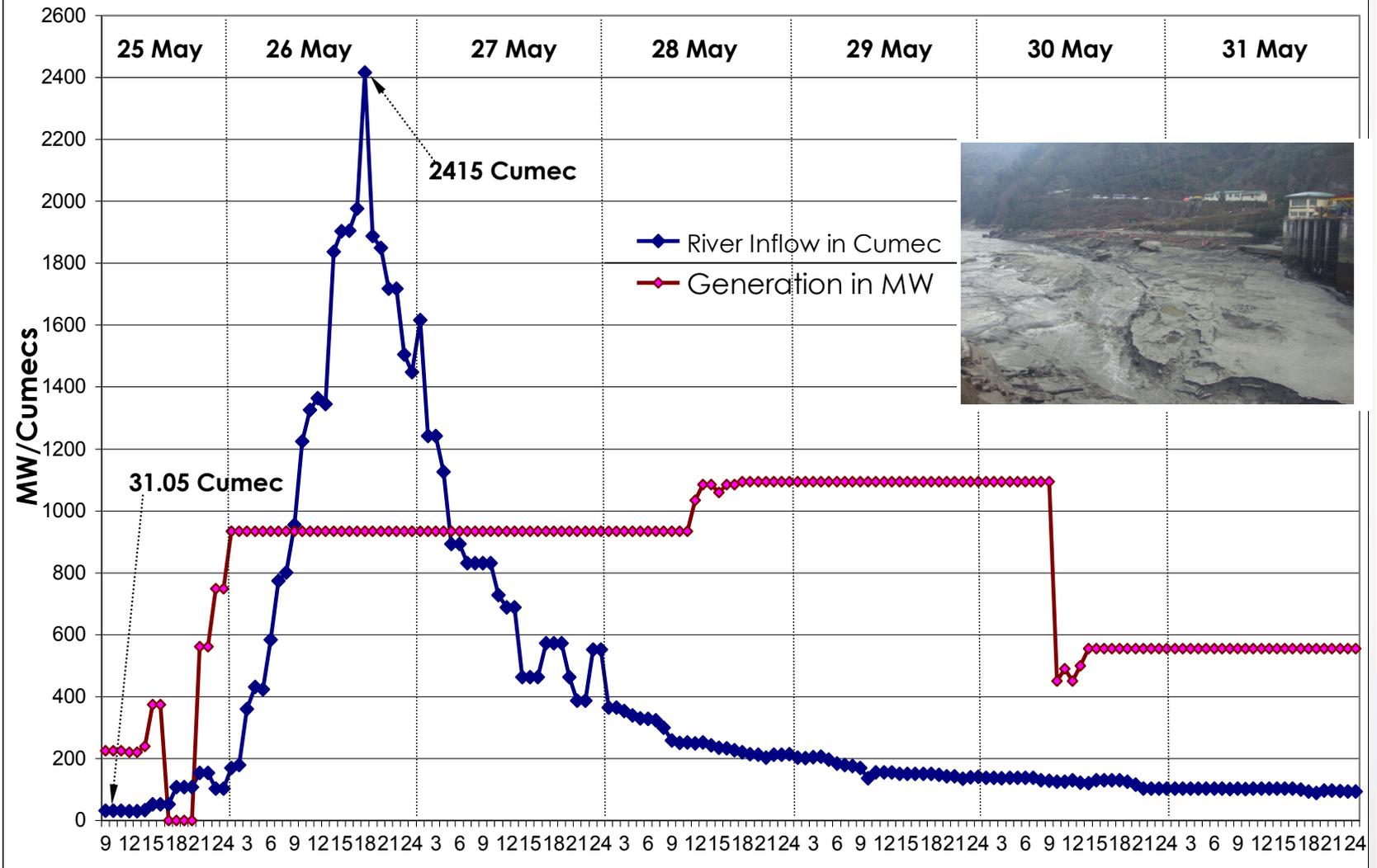
Wangchhu – Monthly Average River Inflow (Chhukha Dam)



No real change patterns but Bhutan has very limited number of years of reliable hydrological data

Bigger Problem : Erratic Monsoons (with frequent floods and sedimentation)

Performance of Tala Hydropower Plant (25-31) May 2009



Only glaciers melting should not be the decider; we need to consider energy, energy security, poverty alleviation and several other issues

Recognizing the adverse impacts, investment should be made to mitigate the impacts in a scientific manner;

Electricity Market Value and Evolution

Other renewable energy projects (especially wind and solar) in BBIN countries are being developed.

These energy sources are incidental or intermittent and severely modulated by the vagaries of nature and do not serve the society at the time it wants.

Hydropower because of higher predictability of availability is available at such time and therefore has high value.

Policies should be made to monetize this important value addition.

Electricity Market Value and Evolution

- The GoI has come up a recent guideline on the cross-border transaction of energy;
- Hydro is very important for Bhutan and our impression on the recent CBTE is restrictive in the long run.
- Bhutan aspires to benefit from the opening up of the Indian energy market and our aspiration is for a robust, unrestricted energy market to benefit the region
- Bhutan is hopeful that GoI will consider the views favourably.

Hydropower

- Will always be clean and green – ourselves and the posterity
- Create Balances between other forms of energy
- Will rejuvenate the face of this part of the blue planet

The Success of Hydropower Development in Bhutan is a Shared Success

-

Chair's Note for Security Sessions
by
Maj. Gen A.K. Bardalai and Mr. Jaideep Saikia

Securing Nations, Not Borders

By

Maj Gen. A.K. Bardalai & Jaideep Saikia

The connotation of the term “Border Security” has changed considerably over the years. Nations that do not face threat of aggression from their immediate neighbours, secure their nations’ sovereignty by taking on the distant enemy by military intervention. Such interventions may be by way of a pre-emptive strike. However, for a person such as US President Donald Trump, constructing a high rise wall worth more than 1.2 billion US dollars is securing the border with Mexico. For Israel, threat from Lebanon is through Hezbollah’s guerrilla tactics and the thousands of rockets that can be launched from pads in South Lebanon. Israel secures their northern border by an aggressive posture by regularly violating the Lebanese air space with its fighter aircrafts and is ever ready to invade Lebanon at the slightest provocation. Essentially, the concept of security itself depends on the manner in which the enemy perceives threat from its enemies.

In olden times, fortification of an entire kingdom was the only way to prevent an external aggression. For a country like India with China to its north and Pakistan to the west, security of the border means protecting the geographical border by physical barriers, whether by means of natural obstacles or combination of high-rise wall and obstacles.

The present threat to a nation’s sovereignty however is internal and what spills over from across the border. Despite the rhetoric of threats and counter threats, full-fledged wars between two sovereign nations seem rare for a number of reasons. And if there were to be one, it would be set-off by internally motivated reasons triggered by transmission of ideologies across a nations’ geographical boundary. Time of the secure world when one had to wait for a long time to learn what was happening at a distant place, relying on local radio news, letters that had to be written well in advance, pre booked telephone calls or for that matter cryptic telegrams are a thing of the past. The feeling of security provided by the insulated world has now become a world of virtual reality. As the world makes tremendous progress in technology, time and distance have reduced and physical boundaries have become transparent. Physical boundaries will gradually become irrelevant unless threats that do not need to travel physically are obliterated. To that end, in this age of globalization the meaning

of border security needs re-examination. Some of the questions that trouble the North East of India are:

- What is the threat? Is it external, internal or combination of both?
- How do we secure the border and ensure India's sovereignty?
- Have the physical boundaries become totally irrelevant?
- Do we still need to have alternatives to physical barrier between nations?
- Do we need to reinforce our physical boundaries with means other than physical ones?

In the context of North East, it will be a geo political and military challenge for any country to mount a conventional aggression on India. A huge security force is already deployed guarding our frontier against a big and few small neighbours. Even for a neighbour like China, it will not be a cake walk. Our other neighbour – Pakistan lost out on that opportunity in 1971. Therefore, both China and Pakistan who cannot countenance India's growth, are now trying to break us by strategically encircling India with either infrastructure development or supporting forces that are inimical to India. Such threats, although palpable cannot be physically countered. Therefore, the threat that looms is very different.

After the liberation of Bangladesh in 1971, India's relationship with Bangladesh was not as good as expected. The relationship between the liberator and the liberated was possibly taken for granted. After the death of Sheikh Mujibur Rahman, Bangladesh fell prey to the nefarious design of Pakistan and became the staging ground for terrorist activities. India suffered the most until the present dispensation in Bangladesh came to power. There is now a marked improvement in Indo-Bangladesh relationship. A large number of senior ULFA members were handed over by Sheikh Hasina's regime. But Bangladesh has its own share of problem. It has now become the target of Islamist activities. The attack by the ISIS on 1 July 2016 on a cafe in Dhaka and the recent incident of suicide bombing by a Bangladesh housewife should be an eye opener for both India and Bangladesh. ISIS did not lose the opportunity and was quick to claim the responsibility without having to physically travel to the region.

In Myanmar, the core challenge is the geographically fractured and ethnically diverse border areas. Since independence in 1948, insurgent groups have been pushed out of the Irrawaddy valley towards Bangladesh, India, China and Thailand. The ethnic group comprises 30

percent population – both armed and unarmed. There are over 20 ethnic groups and the United Wa State Army (UWSA), which has 30,000 active and 10,000 reservists is the biggest and is presently based in northern Myanmar. UWSA is known to be supported by China for use as leverage over Myanmar as it opens up to the West. Even though Myanmar has signed an agreement with eight insurgent groups, a lot will depend how it manages its relationship with other groups. More than 1.4 million Rohingya Muslims have now sprung up as a new insurgency challenge to the Myanmar democratic set up. Attack on the border guards last year and later killing of a police officer is perhaps just the beginning. The members of the team leading the insurgent groups are well trained and are being funded by some Arab countries. They are finding legitimacy with support of domestic and international fatwa. International terrorist groups have already indicated their solidarity with the Rohingyas. It appears that the proclamation of ISIS made in November 2015 to “Revive Jihad in Bengal” is coming out to be true.

The problem of Nagaland and Manipur does not need underlining. Today, Manipur is in flames. And it is all because of our myopic approach to solve the problem by signing a framework of agreement with one group and abrogating the ceasefire agreement with the other. When problems are interconnected, the solution also must be inclusive addressing the problem in its entirety. India’s policy of divide and rule has already cost us much with emergence of new group in Myanmar –United National Liberation Front for East South East Asia (UNLFESEA) with NSCN (Khaplang), ULFA (anti talk), NDFB(Songbijit) and KLO working together for new strategy against India. The killing of more than 20 security force personnel in the hands of this new group is a sign of the emerging threat coming from our neighbours. The security dynamics in our border nations therefore should be assessed in the context of what is happening inside our border states.

To our north, even without stating that we have lost out in Nepal, our relationship could have been better. Feedback from interaction with cross section of people is much different than our official line and the feeling of exasperation can be easily sensed. Bhutan is our friendliest neighbour. Our biggest challenge is how to keep China away from this beautiful land. Failing in number of ways, China now is trying its best to get an inroad inside Bhutan indirectly. What surprises is the recent visit of the Pakistani Ambassador to Thimphu on the heels of the Chinese Ambassador’s visit from 17 to 21 January 2017. While the ambassadors keep visiting to present their credentials, overlapping of both the ambassadors’ visit on 20 January

2017 certainly raises eyebrows. This is a clear sign of convergence of strategy of China and Pakistan to dislodge India from its age old friendly relationship with the Himalayan kingdom. At this stage, it is important to assuage our good neighbour not to fall into their (China and Pakistan) trap. For this, we will have to nurture our present relationship and not take it for granted. Onus for this however lies on the shoulders of the big brother, India and not the other way round.

Therefore, the threat that challenges us at our door steps is not military but a combination of radical ideas and physical messengers of such ideas that has the capability to transform into a bigger physical danger and finds an inroad into our country through North East. And to address this threat, while we must continue to guard our border physically we need to have a mechanism to fight this menace. This approach must be a regionally structured one, the essential constituent of which should comprise:

- Inclusive of all connected issues
- Policy on negotiation
- Policy on proactive measures
- Policy on surrender
- Post surrender rehabilitation
- Defined guidelines for a dialogue – for instance no dialogue outside the purview of the Constitution of India
- Punitive action against sympathisers
- Policy on psychological warfare
- Distinction between terror perpetrated by religious groups and others
- Policy on counter radicalisation

Most important will be to formulate a strategy targeting the minds of the rogue elements (terrorists) and destroy their operational capability simultaneously. While military operations to degrade the operational capability of the terrorist organisations will have to be continued, de-motivating its members and the potential candidates will be equally important. There is however an inherent danger in this strategy. For, as and when attempts are made to de-motivating the terrorists, terrorist organisations will step up their destructive activities with greater vigour. On the other hand, whenever there is a success in destruction of its (terrorists) operational capability, it acts as an incentive to attract more exasperated youths to join the

global Salafi movement. Even though it is extremely difficult to clearly identify or draw the line dividing these two important elements and strike a balance, it is worth the attempt to save the world from the scourge of terrorism.

Six pointed recommendations pertaining to sub-regional cooperation are provided below for consideration:

1. A new decentralised India-Bangladesh-Bhutan-Nepal-Myanmar security architecture that would provide for direct cooperation between intelligence branches of at least the North Eastern states with its neighbours is the need of the hour. This would ensure real-time cooperation and intelligence flow for combating both fundamentalists and insurgent groups.
2. It is recommended that a joint task force comprising all the above nations to define, plan and undertake joint operation against belligerents be created.
3. The non-monitored migration to India from Bangladesh has to be addressed in a bilateral manner. The work permit idea that Jaideep Saikia had first mooted in his article, “Exodus Detour”, in *North East Sun*, New Delhi, May-June 1995 may form the basis of the discussion.
4. Operation Sampriti—the joint army special forces exercise between India and Bangladesh that has achieved considerable momentum—could form the model of the above mentioned cooperation and can be translated into real-time military cooperation. For instance, security agencies, police and even the armies (if necessary) can engage terror modules in the border areas and even in Assam’s lower districts such as Dhubri, Barpeta and Karimganj. Counter Insurgency & Jungle Warfare School, Vairengte and Counter Terrorism Schools in Harchura and the Commando Battalion in Mandakata can induct security agencies of our neighbours for coordinated training alongside Indian counterparts. Also, there should be regular visits by domain specialists to train and impart training to each other’s institutions. This would aid test and calibrate the joint counter terrorism idiom. In this context, the need for a **joint interrogation mechanism** which allows for officials and experts from the neighbouring countries to visit each other’s interrogation facilities that can

be especially erected in the border areas, where wanted terrorists and criminals can be questioned. This has become a very important operational requirement.

5. There is also a need to set up a joint triad command comprising countries such as Myanmar, Bangladesh, Bhutan and Nepal and states of the North East (that border these countries) with a mandate to counter terrorism and extra-regional threats.
6. The most important recommendation pertains to more people-to-people contact between the two countries. Cross Pollination of ideas and peoples. Law-enforcers, intelligence officials, intellectuals and even journalists must regularly sit down as we have today and have candid discussions.

Presentation
by
Mr. B. Chakrabarty BBIN
(Director, FICCI North East Advisory Council)



North East Tourism Challenges and Opportunities

Delhi Policy Group
30th January 2017

Biswajit Chakrabarty
Director
FICCI North East Advisory Council

In this presentation



<i>Slide 3 – 4</i>	Tourism Resources
<i>Slide 5</i>	SWOT Analysis
<i>Slide 6 -7</i>	Current Status
<i>Slide 8 – 16</i>	Challenges in Infrastructure Development
<i>Slide 17 – 26</i>	Building Connectivity
<i>Slide 27 - 34</i>	Developing Circuits
<i>Slide 35-40</i>	Financing Tourism Projects
<i>Slide 41:</i>	Addressing Ecological Concerns
<i>Slide 42 – 44:</i>	Marketing The North East Destination
<i>Slide 45 :</i>	Conclusion



Rich Tourism Resources

Tourism Resources

Rich natural resources & biodiversity

- Largest Perennial water system
- Snow Peaked Mountains
- Extensive Cave Systems
- Thick forests
- Rare Flora and Fauna
- Monsoon

Cultural

- 220 tribal cultures
- Unique handloom and handicrafts
- Fairs and Festivals
- Unique Dance and Music

Melting pot of religious heritage

- important pilgrimage sites for
 - Hindus
 - Muslims
 - Buddhists
 - Christians
 - Sikhs



Most of the opportunities remain under exploited till date

2 world heritage Sites in North east

Special Interest

- Golf courses
- Tea Tourism
- War History (War Graves)
- Sports like Polo, Foot Ball etc

Adventure Tourism

- Trekking
- Mountaineering
- White water Rafting
- Caving

Heritage

- Paleolithic and Neolithic sites
- Megalithic Cultures existing till date
- Ancient ruins
- Interaction between Indo Aryan and Far Eastern Cultures

Slide: 4

SURROUNDING MARKETS



- 156 Million People
- GDP Growth Rate 5 – 6 %
- Growing Tourism Sector
- Opportunity for integrated tourism circuits

- Small population of 0.75 million
- Opportunity for integrated tourism circuits
- Attracts large number of high value tourists



- 28 million people
- GDP Growth Rate – around 5%
- Attracts tourists from all over the world
- Opportunity for integrated tourism circuits



Tourism in the in North East : SWOT



Strengths

- Rich Natural Resources,
- Rich cultural heritage
- Potential for Adventure tourism across sub regions
- Potential for Adventure tourism across sub regions
- Close Proximity to SE Asian Tourism Hub

Weakness

- Accessibility & Connectivity
- Security Threats/Perceptions
- Regional spread of resources is not uniform
- Very poor brand recall
- Poor Brand Positioning and Marketing
- Limited tourism infrastructure facilities
- Scarcity of skilled as well as unskilled labour
- Travel Permit Procedures

Threats

- Instability in the region and neighbouring regions
- Circuits in neighbouring countries have better infrastructure
- Unplanned urban Growth
- Overuse and commercialisation of sensitive eco zones

Opportunities

- relatively unexplored
- Opportunity for creating regional and international circuits
- Opportunity to get private sector in a major way
- Regional positioning beyond India- South East Asia focus

Current Status



Contribution of Tourism to Countries' GDP

Country	GDP Contribution in 2014
Malaysia	14.9%
Mauritius	25.5%
Singapore	10.1%
Australia	10.1%

Contribution to GDP
India – 6.7%
World Average -9.5%

Current Status



There is huge untapped tourism Potential in the North East

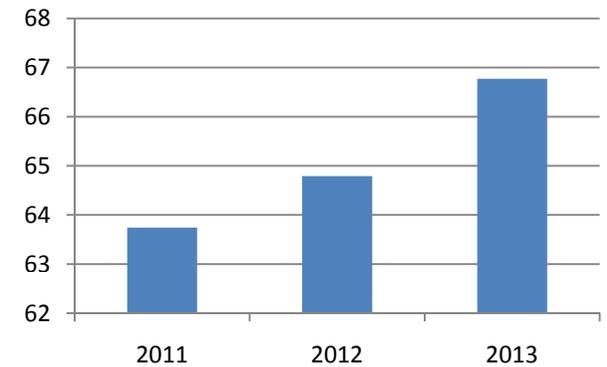
Tourism

- Tourist arrivals in the north east constitutes less than 1% of national tourist arrivals
- Domestic Tourism constitutes the majority of arrivals
- Foreign tourists arrivals is growing, but at a slow pace
- Sikkim is the only state that has evolved as a attractive destination for foreign and domestic tourists

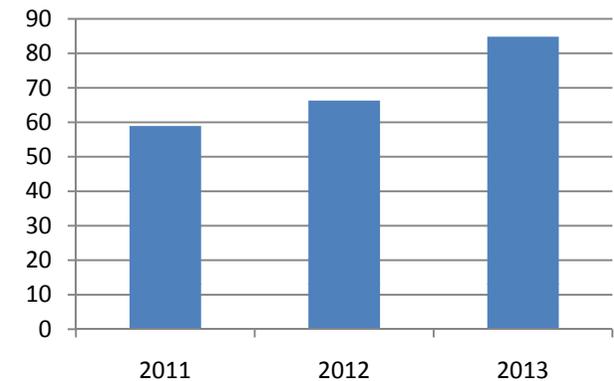
Bottlenecks & Challenges

- ✓ Poor connectivity within the region and with tourism hubs
- ✓ Poor hospitality infrastructure
- ✓ Inadequate destination infrastructure
- ✓ Poor Marketing of the region
- ✓ Security Situation

Domestic Tourist Arrivals (lacs)



Foreign Tourist Arrivals ('000)



Challenges in Infrastructure Development

And the Way Forward

Challenges in Infrastructure Development

Tourism Infrastructure & Gaps



Tourism Infrastructure

- Accessibility,
- Accommodation,
- Restaurants,
- Tourist information centres,
- Tour and travel services,
- Tourist guides,
- Shopping facilities,
- Banking and money exchange,
- Tourism police,
- Other facilities and services

Gaps in Tourism Infra in NER

- **Circuit Development**
- Hotels & Restaurants, Accommodation Facilities
- Tourist Information Centres
- Wayside Amenities
- Destination Amenities
- Complete Circuit Development
- Accessibility and Seamless Travel
- Tour and Travel Services
- Tourism Police / Safety
- Banking and Money Services
- Tourism Experiential Facilities

Challenges in Infrastructure Development

Destination Development



Destination Development

There is no planned destination development in the North East with respect to Tourism

Ways to Address

- Planned Destination Development
- Recreation Facilities
- Healthcare Facilities
- Other Tourism Amenities

Challenges in Infrastructure Development

Hotels & Restaurants



Hotels & Restaurants

Several tourist destinations in the region suffer from an inadequacy of accommodation facilities

- Most accommodation facilities concentrated in Assam
- Need more accommodation facilities in other states
- Need 5 star category rooms, eco resorts, community involvement.
- Need upgradation of existing facilities in terms of
- Infrastructure, Quality of service, eco friendliness etc

States	Rooms
Arunachal Pradesh	900
Manipur	750
Meghalaya	900+
Mizoram	300
Nagaland	low
Sikkim	1700
Tripura	750

Ways to forward

- Develop more tourist lodges, restaurants, hotels, resorts throughout NER
- Train manpower for better service quality
- Promote eco friendly facilities
- Upgrade existing facilities to international standards
- May promote Homestays, Eco lodges , Camps etc

Challenges in Infrastructure Development

Tourist Information Centers



Tourist Information Centres

Many states have tourist information centres in major metros

- Lack of tourist information centres with the North East States
- No information in existing centres on NE as a whole
- More information centres in Metros and other major states
- Need Better equipped Tourist Information Centres

Ways to Address

- Develop more information centres in the Metros and major states
- Provide information on the region as a whole

Challenges in Infrastructure Development

Wayside Amenities



Wayside amenities

There are hardly any wayside amenities while travelling to tourist destinations

Wayside Amenities may include

- Travel amenities at par with international standards
- The nucleus for upscaling economic activities in the area
- An environment for economic development by the creation of multiple planned urban centres with modern amenities

Ways Forward

- Develop wayside amenities centre in the major connecting roads, tourist destinations
- 50 locations identified by FICCI for development of such amenities

Infrastructure Challenges

Wayside Amenities



Challenges in Infrastructure Development

Destination Amenities



Destination amenities

The region lack destination amenities in the major Tourist spots and destinations

Destination amenities include

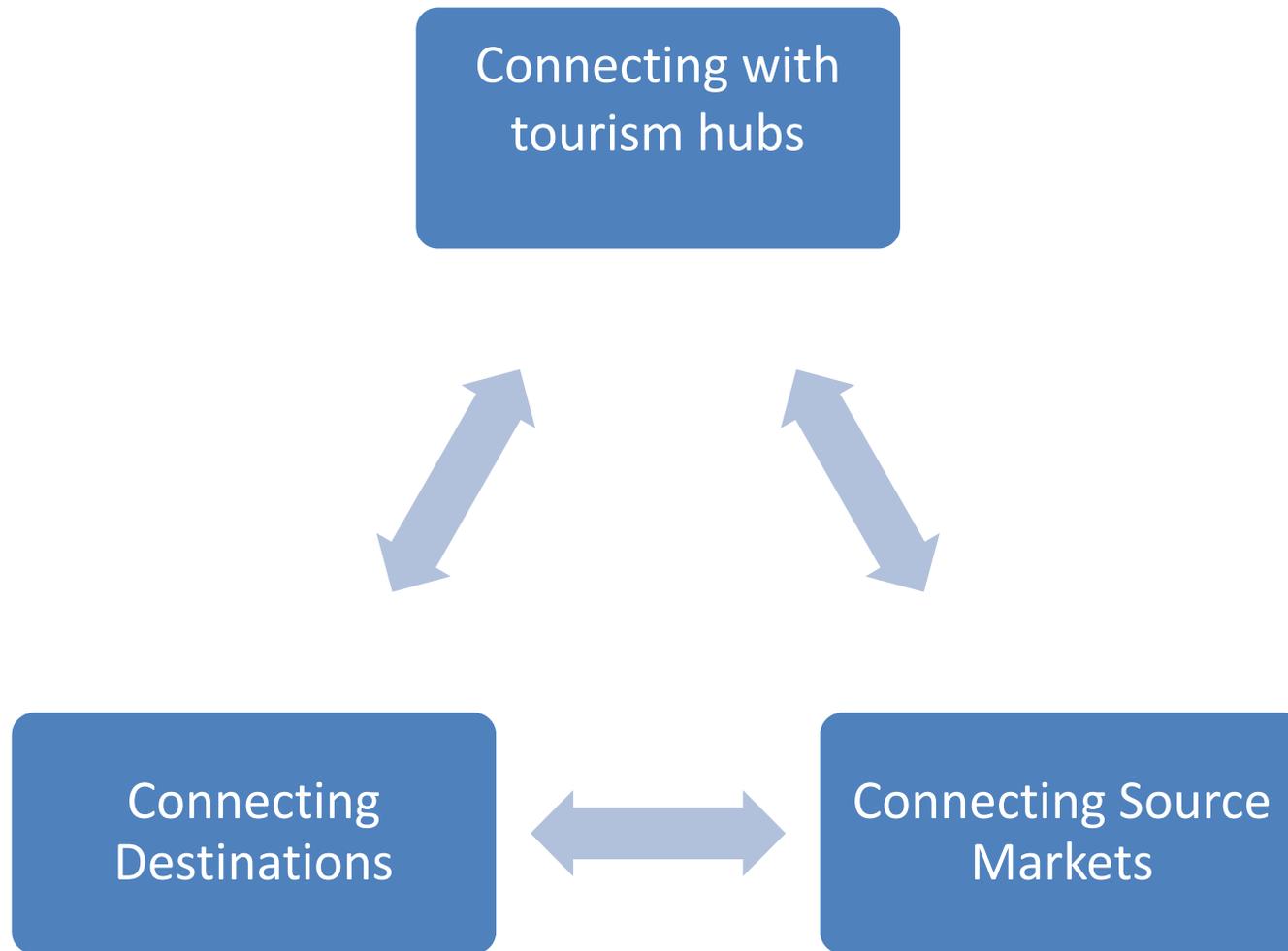
- Souvenir shops, restaurants, recreation facilities, etc.
- Accommodation Facilities
- Other facilities like banking and money exchange facilities also need to be put in place.

Ways to Address

- Develop major Tourist Destinations through out the region

Challenges in Infrastructure Development

Connectivity for Tourism



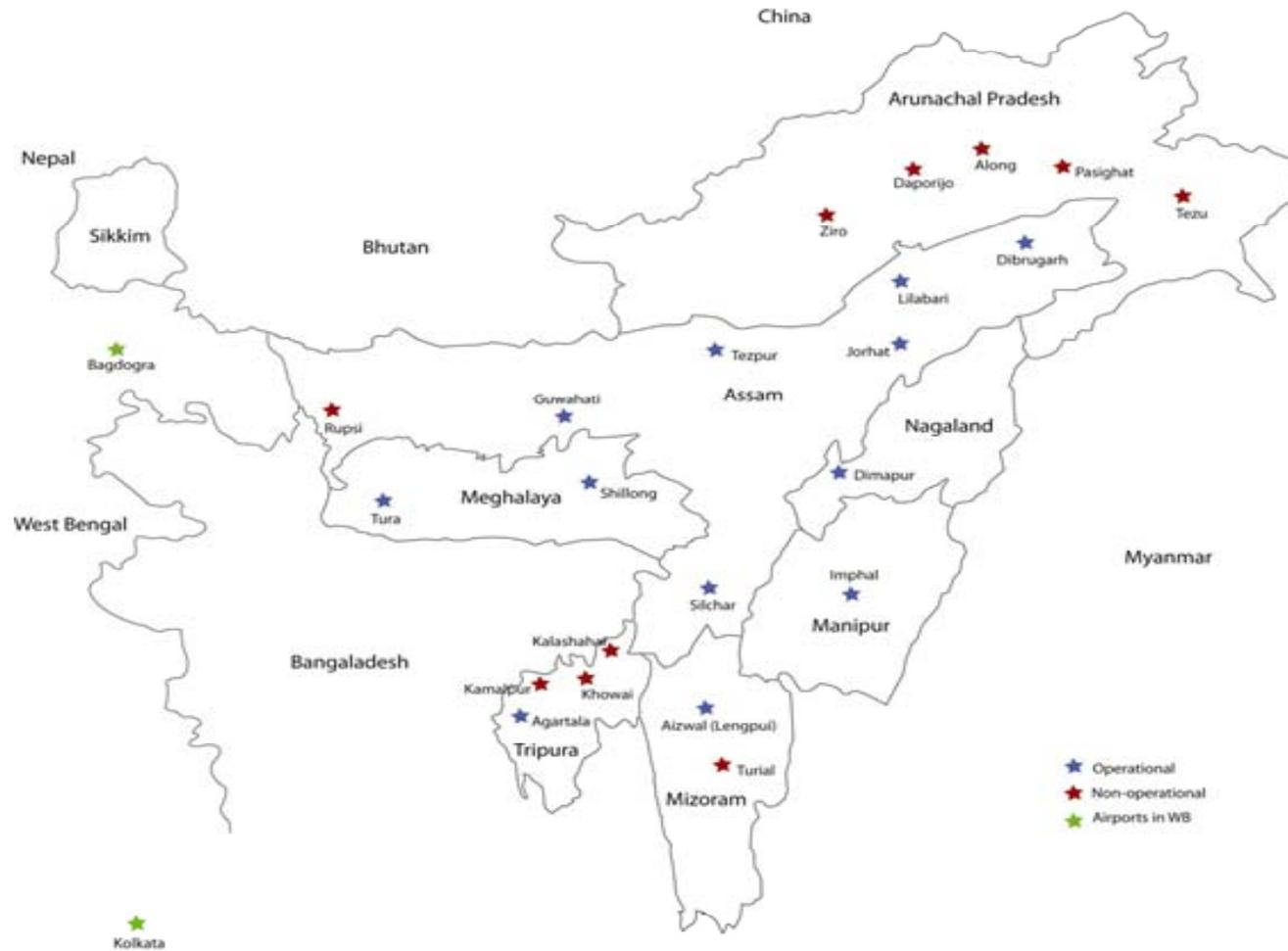
Building Connectivity

Building Connectivity



Present Air Connectivity in NER

(Connectivity with Metros)



NEED FOR IMPROVED AIR CONNECTIVITY
Airport infrastructure, connectiv

Present Air Connectivity in NER

(Airport & Airline-wise)

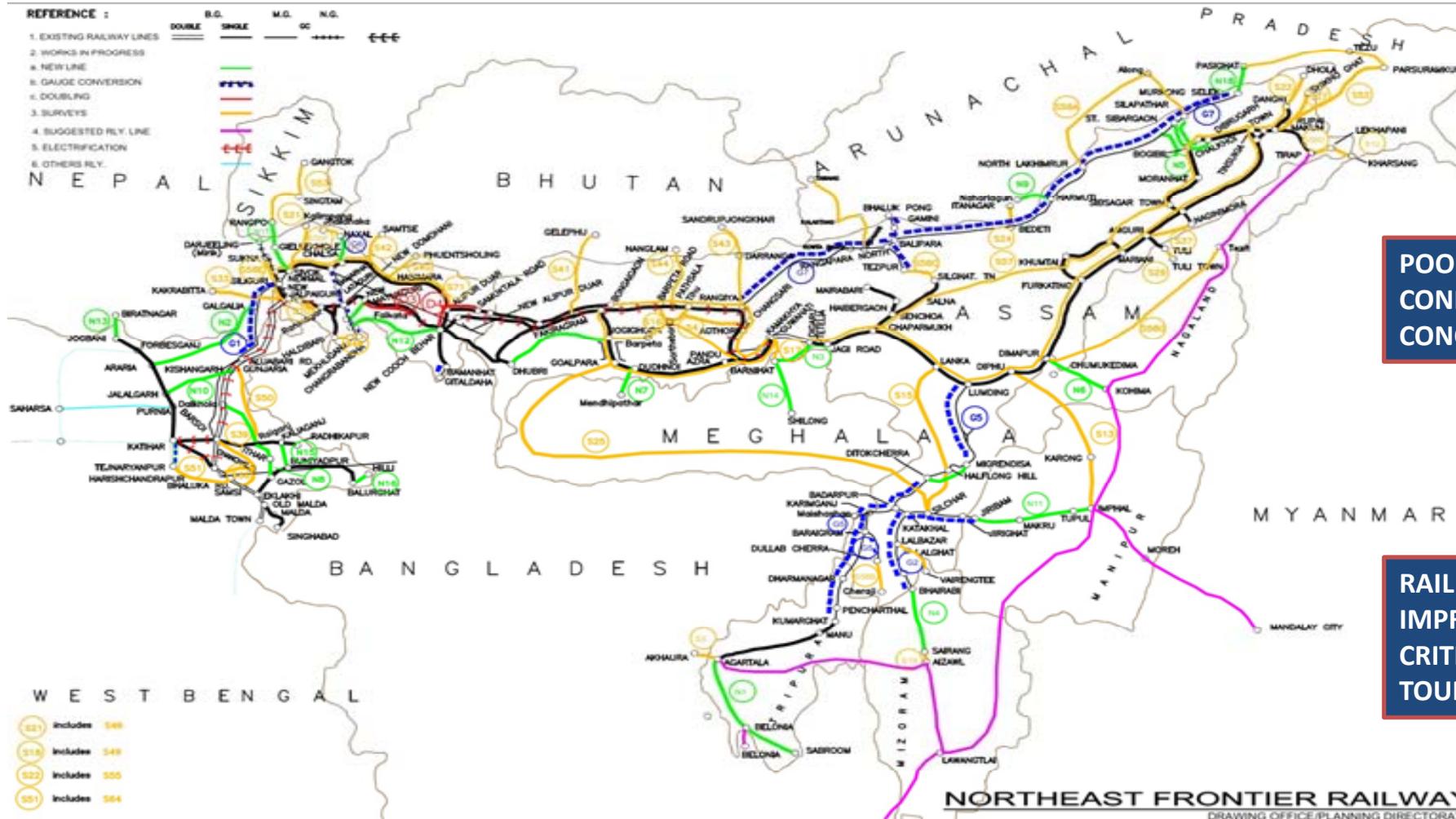


Station	AI	CD	9W	S2	IT	G8	SG	6E
Agartala	→	→	→→	→	→		→	→
Aizwal	→	→	→		→			
Dibrugarh	→			→				→
Dimapur	→	→	→					
Guwahati	→	→→	→→	→	→→	→	→	→
Imphal	→	→	→	→	→→			→
Jorhat		→	→	→				
Lilabari		→						
Shillong		→						
Silchar	→	→	→		→			
Tezpur		→						
Total Stations	07	10	07	05	05	01	02	04

NEED FOR IMPROVED AIR CONNECTIVITY
 Airport infrastructure, connectivity & timings

AI – Air India, CD – Alliance Air, 9W – Jet Airways, S2 – JetLite, G8 – Go Air, IT - Kingfisher Airlines, SG – Spicejet, 6E – IndiGo
 → Jet → ATR42

Present Rail Connectivity in NER (ongoing projects)



**POOR RAIL
CONNECTIVITY MAJOR
CONCERN**

**RAIL CONNECTIVITY
IMPROVEMENT MOST
CRITICAL FOR DOMESTIC
TOURISM GROWTH**



Present Road Connectivity



North East Ring Road suggested by FICCI

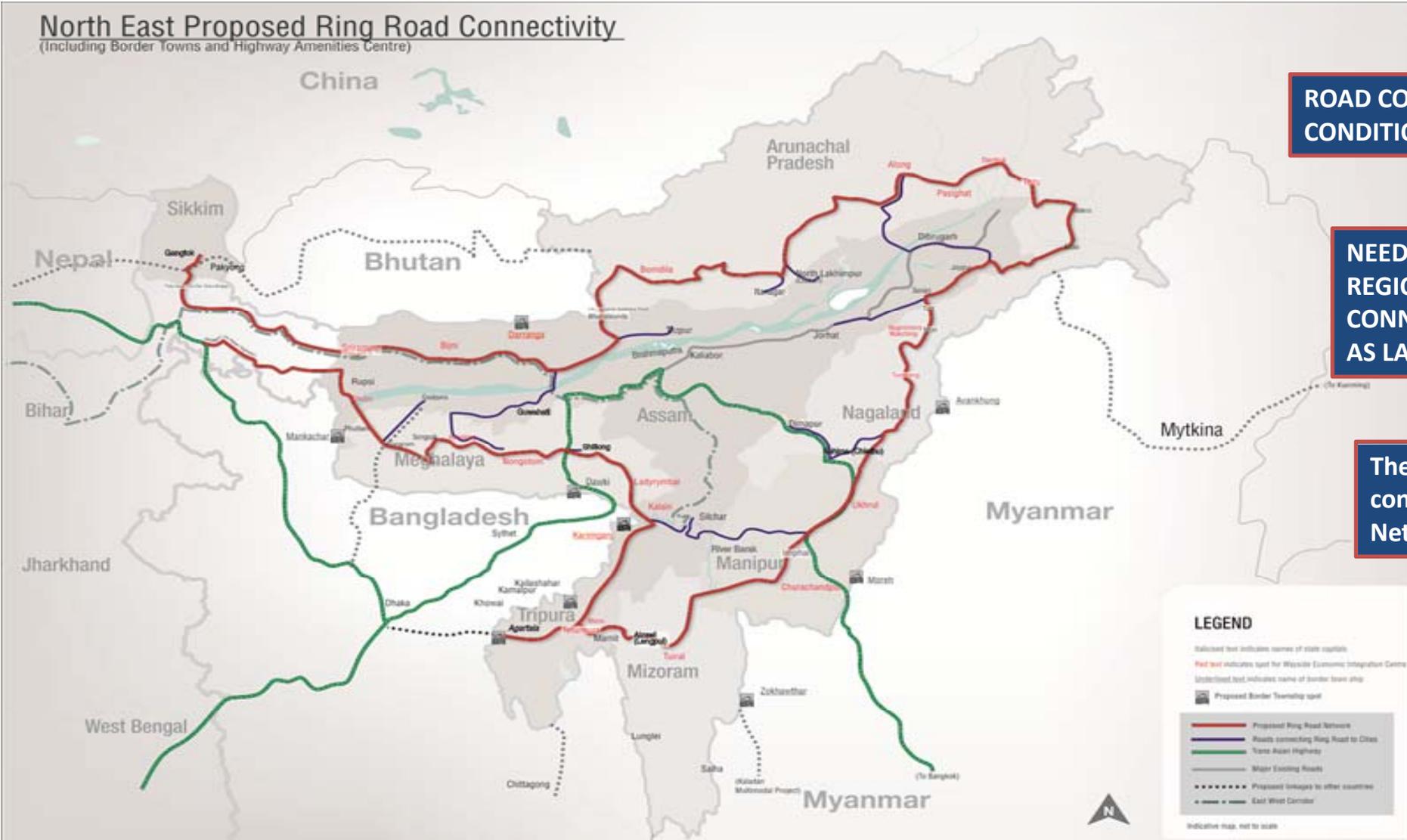


North East Proposed Ring Road Connectivity
(Including Border Towns and Highway Amenities Centre)

ROAD CONNECTIVITY & CONDITION CONCERN

NEED FOR BETTER REGIONAL CONNECTIVITY AS WELL AS LAST MILE ROADS

The Ring road could connect into BBIN road Network



Building Connectivity



Major Connectivity Projects

- East West Corridor – Connecting Mainland India with NE India
- Asian Highway I & II – Connecting Thailand and Myanmar with NE
- Trans Asian Railway Project – Connecting South Asia and Bangladesh with NE
- Trans Arunachal Highway – Connecting the length of Arunachal Pradesh
- Other Road and Railway Projects

Few Suggestions

- Development of Inland Water Transport in Brahmaputra and Barak
- North East Ring Road
- Road Connectivity with Bangladesh through Karimganj, Agartala and Jamalpur
- Rail Connectivity with Bangladesh through Mahishashan

Developing IWT for Tourism

IWT in NE India

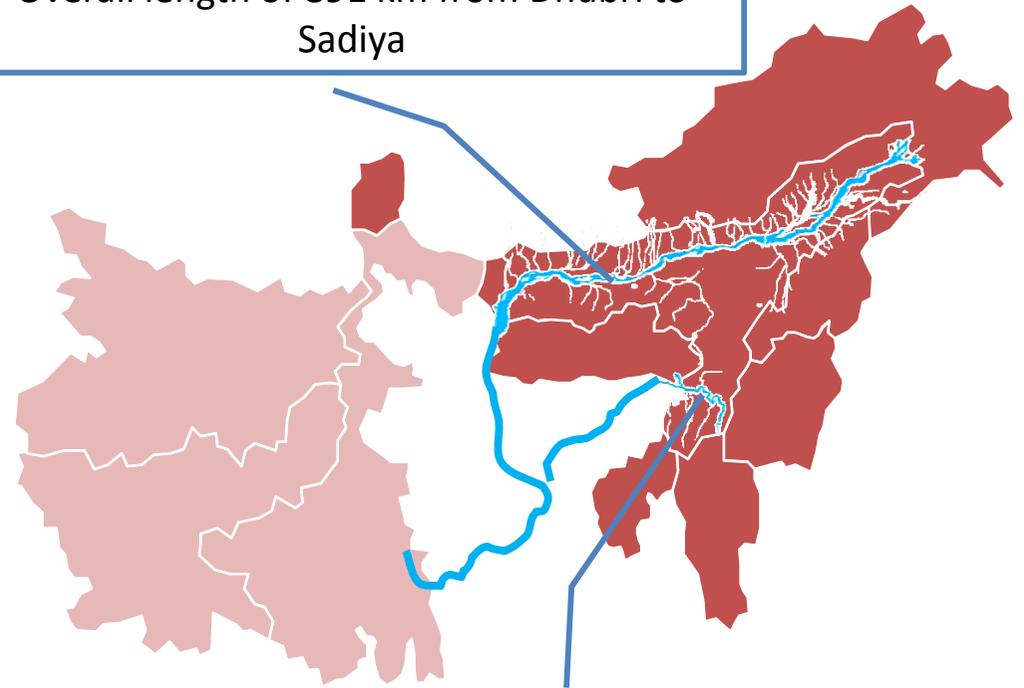


The north east region of India has 18 of the national waterways in India

- Brahmaputra (NW2) and Barak (NW6) are the two national waterways in the region
- However at present both NW2 and NW6 **lacks adequate draft for year round navigation**
- In the entire region, there is only one IWT terminal (Pandur, Assam) which meets the requisite criterion of a terminal
- *Moreover protocol route issues with Bangladesh needs to be resolved*

The sector requires significant physical infrastructure development

NW – 2, (protocol route 1 in Bangladesh).
Overall length of 891 km from Dhubri to Sadiya



NW – 16, (protocol route 2 in Bangladesh). Overall length of 121 km in India from Lakhimpur to Bhanga

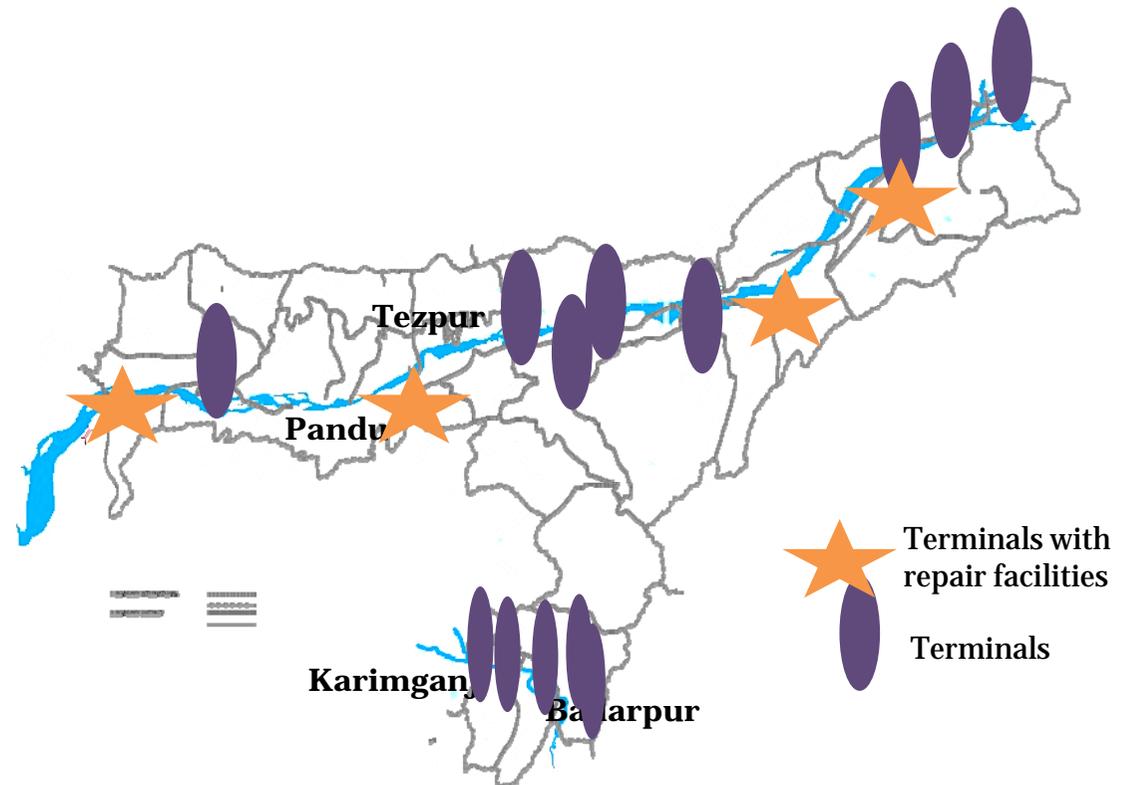
Recommendations for Development



Development of Ports & Port Townships

Ports in Brahmaputra and Barak

BRAHMAPUTRA	BARAK
1. Dhubri	1. Annapurna Ghat
2. Jogighopa	2. Siddheshwari Ghat
3. Sualkuchi	3. Bhanga / Malua
4. Palasbari	4. Sonabarighat
5. North Guwahati	5. Salchhapra
6. Noonmati	6. Kalinagar
7. Kharupetia	7. Rani Ferry
8. Tezpur / Silghat	8. Lakhipur
9. Dhansirimukh	
10. NeematiGhat	
11. Dikhomukh	
12. Oirumghat	



Recommendations for development



Recommendations

- Protocol routes in Bangladesh need to be developed with equivalent LAD of 2.5 meters as available in India
- The proposal for regular cruise and passengers movement between India and Bangladesh needs to be expedited
- To expedite development of IWT, a Indo-Bangla River Transport Corporation may be considered
- Potential for laying pipelines for import of crude oil into refineries in the North East.

- Completion of the bridge over river Feni at Sabroom.
- Rail connectivity with Chittagong via Akahura



Indo – Bangla Protocol Route



Recommendations

- Dredging of Kushiara river to enable year round navigation and connectivity with Barak
- Duliaan – Rajsahi route may be dredged to connect NW 1 with NW 2 via Bangladesh.
- More multimodal routes can be developed by utilising IWT and the routes being opened under BBIN transport agreement.
- Expedite development of Ashugonj port to enable large scale cargo movement
- Containerized cargo movements under the scope of PIWTT, Coastal Shipping & BBIN transport corridor combine can provide a efficient mode of transportation.
- Pangaon ICT should be declared as a transshipment port under PIWTT, from panagon it will take about 4-5 hours to reach Agartala.
- It would take about 48 hours maximum to reach Pangaon from Kolkata under Coastal shy agreement

Developing Circuits

Developing Tourist Circuits



Need for Tourism Circuits

- Tourists identify with tourism regions not states**
- Circuits are more attractive as compared to individual destinations
- Circuits help develop less developed destinations
- Circuits help prioritise development
- Circuits add to tourist experience and help maximise tourism revenue

Possibilities

- Nature & Adventure Tourism Circuits
- Culture and Religious Tourism Circuits
- International Circuits with Bhutan, Nepal, Bangladesh, Myanmar and Thailand

Circuit Development : an Example 1



Dibrugarh- Likhali- Along- Mechuka- Pasighat-Dibrugarh

Nodes	Development Required
Dibrugarh	Hotels, Leisure Activities, Short River Cruises
Likhali	Resorts
Along	Resorts, Rafting
Mechuka	Resorts, Trekking
Pasighat	Resort, Leisure Activities

Target Tourists : Leisure / eco- cultural tourists

Trip Duration : 7 – 10 days

Target Markets : High end Domestic, International

Govt. Interventions required

- Building Roads
- Air Connectivity (Dibrugarh, Along Pasighat)
- Support facilities like security, hospitals, emergency facilities
- Land for development of infrastructure
- Ease Entry Regulations
- Marketing campaign

Circuit Development : Example 2



Dibrugarh- Likhali- Along- Mechuka- Pasighat-Dibrugarh

Nodes	Development Required
Dibrugarh	Hotels, Leisure Activities, Short River Cruises
Likhali	Resorts
Along	Resorts, Rafting
Mechuka	Resorts, Trekking
Pasighat	Resort, Leisure Activities

Target Tourists : Leisure / eco- cultural tourists

Trip Duration : 7 – 10 days

Target Markets : High end Domestic, International

Govt. Interventions required

- Building Roads
- Air Connectivity (Dibrugarh, Along Pasighat)
- Support facilities like security, hospitals, emergency facilities
- Land for development of infrastructure
- Ease Entry Regulations
- Marketing campaign

International Circuit Development



Dhaka – Sylhet – Tamabil – Shillong – Guwahati – Samdrup Jonkhar - Thimpu

Nodes	Development Required
Dhaka	Leisure Activities, Short River Cruises
Sylhet	Hotels, Leisure Activities, Short River Cruises
Tamabil /Dawki	Resort, Rafting, boating
Shillong	Hotels, Resorts, Tourist Taxies, Leisure
Samdrup Jonkhar	Resort,

Target Tourists : Leisure / eco- cultural tourists

Trip Duration : 7 – 10 days

Target Markets : International

Bilateral Interventions required

- Road between Sylhet and Tamabil, Dawki and Shillong needs major improvement
- Immigration facilities at Dawki/Tamabil need to be improved
- Support facilities like security, hospitals, emergency facilities
- Cross Country movement of Vehicles
- Ease Entry Regulations
- Marketing campaign

Financing Tourism Projects

The Financing Challenge



- **Most Tourism Entrepreneurs are 1st Generation Entrepreneurs with limited access to funds.**
- **Banks are often reluctant to lend to a new entrepreneur starting operations in a yet unexplored area**
- Perception of higher risk associated with projects in the North East
- Private Venture Funds have do not have operations in the Northeast
- Land laws designed to protect local community rights often act as a deterrent for tourism investment
- Government Funded projects often suffer from cost overruns and inadequate management capacity
- Very little allocation of funds by Government for large Tourism Infrastructure projects

Financing Tourism

The Way Forward



- **Creation of North East Tourism Development Fund with contribution from Government of India and State Governments**
- Set up a Venture Fund for Tourism Projects with Contribution from Banks and Private Equity Funds
- Develop projects in PPP Mode with community involvement
- Crowd Funding and other innovative funding solutions

Why Public Private Partnership ?

“ PPPs enable the public sector to benefit from commercial dynamism, the ability to raise finances in an environment of budgetary restrictions, innovation and efficiencies, harnessed through the introduction of private sector investors who contribute their own capital, skills and experience ”

Advantages in Tourism for PPP mode

- Faster Implementation
- Value for Money
- Partnership Building
- Enhanced Public Management
- Genuine Risk Transfer
- Output Specification
- Better Performance & Reduced Costs
- Performance-Related Reward
- Private Investment Promotion
- Improved Quality of Service

Overcoming Challenges in Infrastructure and Financing

- **Strategy** - A comprehensive strategic plan
- **Land availability** - Need to enable availability of land through community engagement
- **Incentivisation** - Incentivise investments in tourism in the region
- **Power** - Meet power requirement of tourism sector
- **Administration** - Efficient administrative mechanisms for tourism
- **Institutional Strengthening** - Strengthening institutions like NEC, Creation of new entities dedicated to Tourism in NER,

Addressing Ecological Concerns: Eco Tourism

- Use Locally available material for Construction
- Involve and maximise benefit to Local Community
- Reduce energy and water usage
- Blend with the local environment
- Respect local sensibilities (cultural and ecological)
- Promote Conservation
- Promote Eco Friendly Travel (River Travel)



Marketing the North East Destination

Tourism Hubs in the Neighborhood



- Thailand
 - Among Top Global Tourism Destinations
 - 4% of Global tourism receipts
- Greater Mekong Sub Region
 - Tourist arrivals has more then doubled to around 30 million since 1995
- Nepal
 - Connected to source markets
 - 24% of foreign exchange earnings
- Bhutan
 - Emerging as a high end nature tourism destination
 - Connected to Major Tourism Hubs

NE India is not directly connected with any of the major tourism hubs in the Neighbourhood

Tourism Strategy for the region



In Conclusion



- Tourists don't always look for five star accommodation
- Tourists don't want merely to see but to experience
- Tourism should benefit the local community
- Tourism should be as little intrusive as possible
- Environmental protection should be a priority – Eco Tourism also sells

What we need

- ✓ Innovative Circuit Design
- ✓ Connectivity
- ✓ Basic Infrastructure
- ✓ Destination Development Projects

Presentation
by
Dr. Dipak Sarma
(MD, MRCP (UK, Ireland) TRCPE, FRCPI)



**NORTH EAST / GUWAHATI
AS
MEDICAL HUB FOR BBNM REGION**

INTRODUCTION

□ MEDICAL TOURISM CAN BE BROADLY DEFINED AS PROVISION OF 'COST EFFECTIVE' MEDICAL CARE IN COLLABORATION WITH THE TOURISM INDUSTRY FOR PATIENTS NEEDING SURGICAL AND OTHER FORMS OF SPECIALIZED TREATMENT.



HEALTHCARE DESTINATION

GLOBAL SCENARIO

- ❑ GLOBAL TOURISM HAS GROWN TO APPROX 72 BILLION \$ MARKET
- ❑ PATIENTS SPEND ABOUT 3800 TO 6000 USD PER TRIP
- ❑ GLOBALLY MEDICAL TOURISM IS GROWING AT 15 – 20 %
- ❑ MOST OF THESE INFLOW IS TO MEXICO, SE ASIA, SOUTH ASIA.
- ❑ INDIA LEADS THE SOUTH ASIA REGION

INDIAN SCENARIO

- ❑ INDIAN MEDICAL TOURISM MARKET IS GROWING AT 25% ANNUALLY
- ❑ APPROX 6 LAKHS PATIENTS CAME TO INDIA FOR TREATMENT IN 2015
- ❑ THIS SECTOR IS A THREE BILLION USD MARKET NOW
- ❑ IS EXPECTED TO GROW TO AROUND 8 BILLION BY 2020
- ❑ TRADITIONAL CATCHMENT AREAS – USA, EUROPE, AFRICA, SAARC COUNTRIES
- ❑ NEWER AREAS – INDONESIA, MALAYASIA, LAOS, VIETNAM

**“MT
IS POISED TO BE THE NEXT INDIAN SUCCESS STORY AFTER
IT”**

INDIAN SCENARIO

- ❑ **HUGE NUMBER OF HIGHLY QUALIFIED MEDICAL MAN POWER**
- ❑ **HIGH QUALITY AND LOW COST (65 – 90 % LOWER THAN USA/ UK)**
- ❑ **MANY LARGE AND REPUTABLE PUBLIC AND PRIVATE HOSPITALS / MEDICAL ESTABLISHMENTS**
- ❑ **INVESTMENTS IN MEDICAL INFRASTRUCTURE**

LOCAL SCENARIO

- ❑ INCREASED INVESTMENTS IN MEDICAL INFRASTRUCTURE --- BOTH PRIVATE AND PUBLIC
- ❑ AVAILABLE QUALITY MEDICAL MANPOWER AT PAR WITH REST OF THE COUNTRY
- ❑ NORTH EAST IS KNOWN AS THE **EXPORT HUB** FOR NURSING MANPOWER
- ❑ A PRO ACTIVE GOVERNMENT SECTOR IN MEDICAL AS WELL AS TOURISM SECTOR

LOCAL SCENARIO

□ VARIOUS SPECIALITIES AND SUPER SPECIALITIES AVAILABLE --

- **CARDIOLOGY, CARDIAC SURGERY**
- **NEUROLOGY, NEURO SURGERY**
- **ENDOCRINOLOGY**
- **GASTROENTEROLOGY & HEPATOLOGY**
- **ORTHOPAEDICS AND TRAUMA**
- **CANCER TREATMENT**
- **DENTAL CARE**
- **COSMETIC SURGERY**
- **OPHTHALMOLOGY**



CHALLENGES AND ROADMAP

- ❑ **TO MAKE BBNM AREA AWARE OF OUR FACILITIES AND EXPERTISE**
 - INTERACTIVE SESSIONS / CONFERENCES WITH MEDICAL PERSONALS
 - GOVERNMENT TO GOVERNMENT INTERACTIONS INCLUDING OPENING MISSIONS IN THE TARGET COUNTRIES AND CITIES
- ❑ **PROVIDE LAND TO THOSE COUNTRIES TO BUILD THEIR OWN “HOUSES” TO ACCOMMODATE THE PATIENTS AND THEIR ATTENDENTS**
- ❑ **EASY AND QUICK AVAILIBILTY OF VISA/ VISA ON ARRIVAL**
- ❑ **COMMUNICATION/ TRANSPORT**
 - UPGRADATION OF INFRASTRUCTURE AND INTERNATIONAL CONNECTIVITY OF THE VARIOUS AIRPORTS SOPECIALLY L.G.B.I. AIRPORT
 - IMPROVEMENT OF RAILWAY CONNECTIVITY AND FACILITIES AT THE STATIONS

CHALLENGES AND ROADMAP

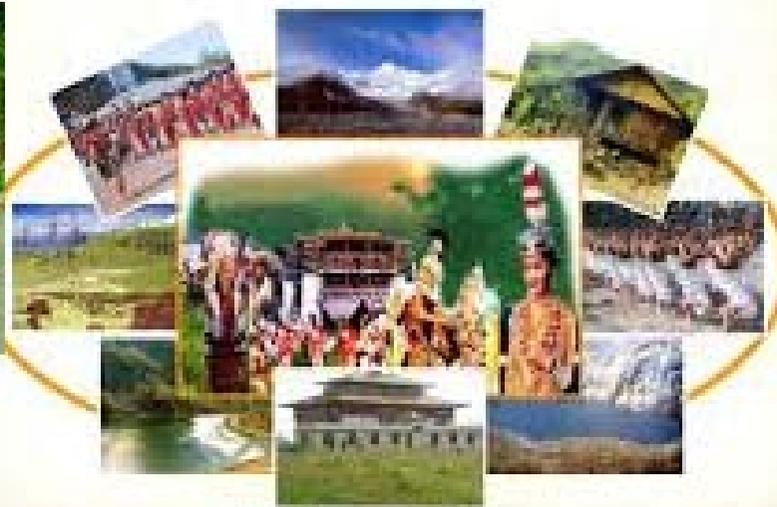
- ❑ MORE INVESTMENTS IN MEDICAL INFRASTRUCTURE- BOTH IN PRIVATE AND GOVERNMENT SECTOR
- ❑ MORE ACCREDITED HOSPITALS LIKE NABH & JCI CERTIFIED INSTITUTES

LOCAL SCENARIO

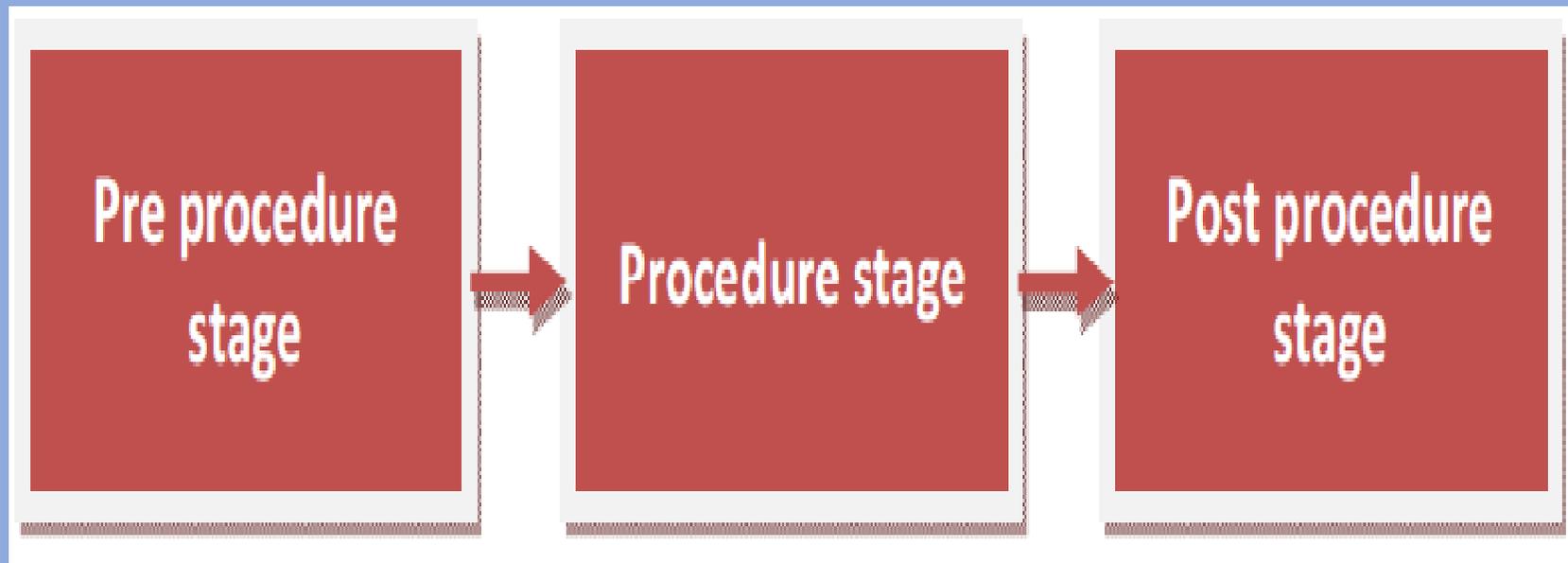
- TOURISM AND WELLNESS**
- ONE OF THE MOST BIO DIVERSE AREA IN THE WORLD**
- A MELTING POT OF DIFFERENT CULTURES AND ETHNICITY**
- RELIGIOUS SHRINES**
- WILDLIFE**
- TEA TOURISM**



**NORTH EAST ... A REAL LIFE EXPERIENCE
UNITY IN DIVERSITY ... INDIA'S SPECIALITY**



MEDICAL TOURISM VALUE CHAIN



PRE PROCEDURE STAGE

Quality of treatment

- Competence of doctors and paramedical staff
- Quality of medical procedure
- Quality of clinical infrastructure
- Quality of non-clinical infrastructure

Connectivity

- Destination well connected to home country

Cost of treatment

- Low cost of medical procedure
- Overall cost of travel and treatment

Ease of access

- Less wait time for treatment
- Availability of visa
- Pre- procedure documentation

Ease of purchase

- Help to finalise travel itinerary
- Terms of payment
- Availability of medical insurance
- Affordable cost of medical insurance

PROCEDURE STAGE

Professionalism in management of hospital

- Swift admission process
- Attention to customers' needs
- Coordination between different wards and departments
- Enthusiastic and proactive staff
- Pick up facility on arrival
- Counselling at hospital on arrival

Competence of staff

- Assurance of confidentiality
- Helpful and cheerful daily care staff
- Daily care staff sensitive to customers' needs
- Knowledgeable and skillful nursing staff
- Quick and responsive nursing care staff
- Nursing staff demonstrates concern

Competence of doctors

- Doctors available when required
- Doctors willing to share information
- Qualified and skillful doctors

Facilitation and care

- Linguist abilities of the doctors and nurses
- Linguist abilities of the non medical staff
- Empathetic doctors and nurses
- Comfortable (and affordable) accommodation
- Good and palatable food
- Privacy
- Proper arrangements for accomplice

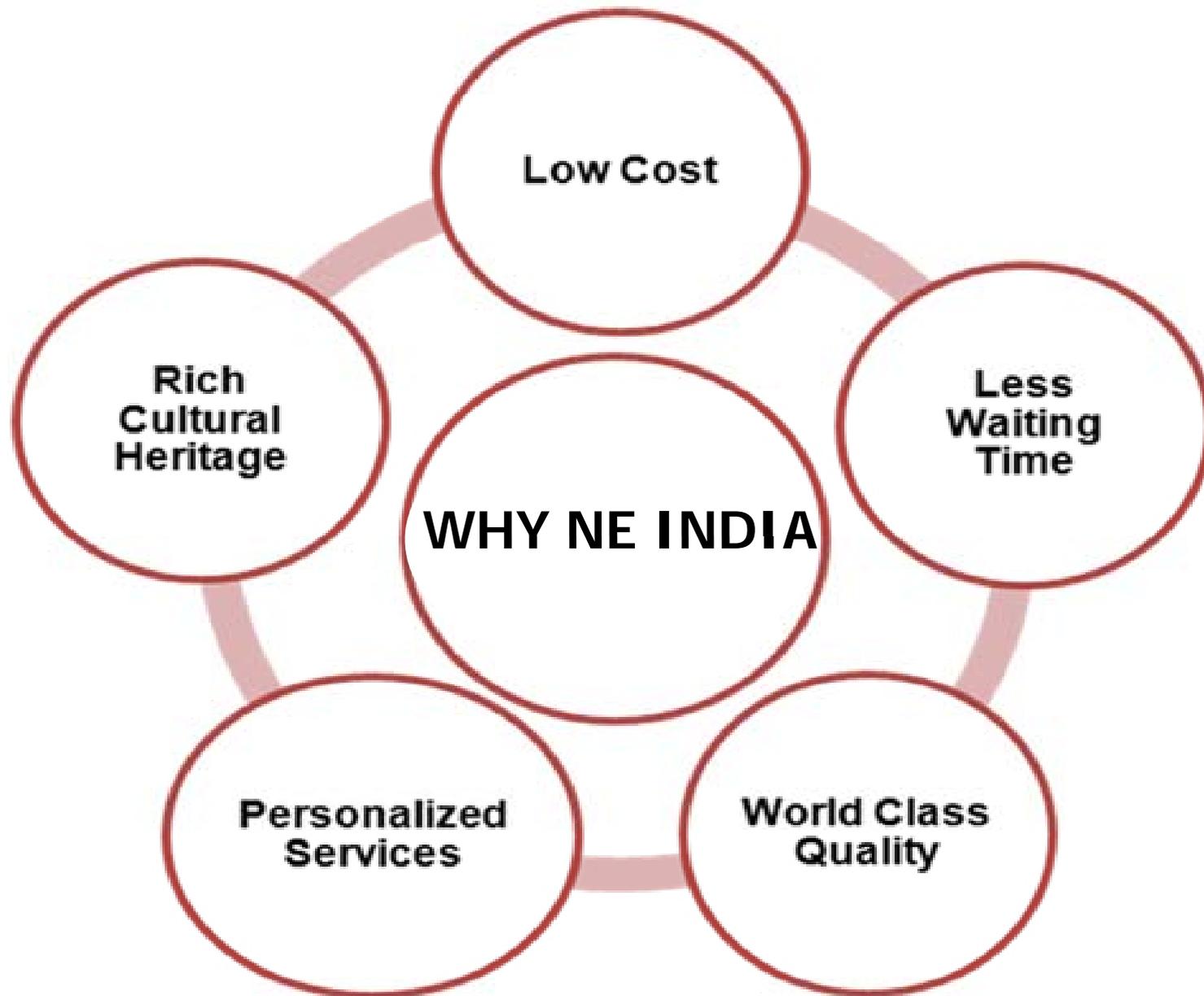
POST PROCEDURE STAGE

- **SIMPLE AND SWIFT DISCHARGE PROCEDURE**
- **CLEAR AND EASY DISCHARGE INSTRUCTIONS**
- **SWIFT AND ERROR FREE BILLING WITHOUT ANY HIDDEN COST**
- **QUALITY OF RECUPERATIVE STAY WITH PROPER MONITORING**
- **AVAILABILITY OF Rx MEDICATION AT HOME LOCATION**
- **EASE OF CONSULTATION FROM HOME LOCATIONS**
- **EASE OF POST TREATMENT VACATIONING**

STRATEGIES FOR DEVELOPING MEDICAL TOURISM

- **PRODUCT**
- **PRICE**
- **PLACE**
- **PROCESS**
- **PHYSICAL EVIDENCE**
- **PEOPLE**
- **PROMOTION**





Low Cost

**Rich
Cultural
Heritage**

WHY NE INDIA

**Less
Waiting
Time**

**Personalized
Services**

**World Class
Quality**



THANK YOU

Presented By
Dr. Dipak Sarma
MD, MRCP(uk , Ireland),
FRCPE, FRCPI

REFERENCES

❑ CII- MCKINSEY (2002): "HEALTH CARE IN INDIA : THE ROAD AHEAD", CII, MCKINSEY AND COMPANY AND HEALTHCARE FEDERATION, NEW DELHI.

❑ COHEN, E.(2010). MEDICAL TOURISM, A CRITICAL EVALUATION TOURISM RECREATION RESEARCH, 35(3), 225-238

❑ INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH VOL.1 ISSUE 3, JULY 2011, ISSN 2231 5780

DPG Roundtable Reports, Vol. 2, Issue 1

Roundtable on “Advancing the BBIN Sub-Regional Cooperation”

The Lily Hotel | Guwahati | January 30-31, 2017



Delhi Policy Group

Core 5A, First Floor, India Habitat Centre

Lodhi Road, New Delhi-110003

Ph. +91-11-48202100

www.delhipolicygroup.org