

Brainstorming Session on
Recent Developments in Myanmar
New Opportunities for Regional Cooperation

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Session 1: Transport Connectivity

**New Development in Myanmar and Prospects for Regional
Cooperation on Transport Connectivity**

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Myanmar stands at the conjunction of Southeast Asia, South Asia and East Asia. Due to its strategic location, Myanmar plays an irreplaceable role in bridging countries and regions together and fostering regional cooperation. Myanmar has made phenomenal progress in transport infrastructure construction in recent years. However, as constrained by economic sanctions and limited resources, and compelled by the need to bring equitable development to four corners of the country, progress on regional connectivity is limited. To deepen regional cooperation, it is necessary for regional stakeholders to pool resources and assist Myanmar to expedite transport infrastructure development.

I. Improvement of Transport Connectivity in Myanmar

Myanmar has made substantial progress in transport infrastructure construction since 1988, and the improvement in the infrastructure of transport has expedited in recent years.

1. General Progress on Road Construction

Myanmar government places great emphasis on road construction in bringing about equitable development opportunities to four corners of country. Road construction is mainly the responsibility of the Ministry of Construction which is undertaking the task of constructing of new roads, upgrading and maintenance of the existing roads with accelerating momentum. New Roads are being constructed and existing roads are being upgraded from earth roads to gravel roads, gravel roads to tarred roads and asphalt roads, and single lane roads are being upgraded to two lanes, four lanes and even six lanes highways gradually.

Since 1988, great achievement has been seen in road construction. Previously, before 1988, there were only 13635 miles of roads maintained by Public Works. By the end of 2011, Public Works of the Ministry of Construction has the road to over 24,000 miles in the entire nation. In addition to Public Works' effort, over 59,000 miles rural roads have been constructed by the Ministry of Border Affairs, the development committees under Yangon and Mandalay Region governments, Nay Pyi Taw Special Development Project, Directorate of Military Engineers, Ministry of Electric Power No. 1 and No. 2¹.

Previously, there were only 11 National Highways of 2452 miles and now the Ministry of Construction is upgrading 36 North-South roads and 45 East-West roads to Union Highways to form a national network of highways. The major project, as stated by the Ministry of Construction, is to upgrade all Union highways to tarred road when the ASEAN community takes shape in 2020 so as to promote balanced development of all regions and

¹ *New Light of Myanmar*, 26 Dec., 2011 P9

states of the country. By March 2011, Public Works of the Ministry of Construction had upgraded 21361 miles and two furlongs of road, and fifty per cent of which have been tarmacked. Roads have been upgraded following a particular priority sequence: Asia Highway and ASEAN Highways are first priority; Inter-Region/State Union Highways, second priority; Inter-District roads, third priority; and Inter-Township roads, fourth priority².

Major road construction projects include 13 roads with a total length of 1809 miles. They are³:

- (1). Pathein-Monywa (450 miles, 5 furlongs)
- (2). Taikkyi-Phaunggyi-Bago (Taikkyi-10th Mile section) (42 miles, 7 furlongs)
- (3).Minhla-Seinkantlant-Myochaung-Phado-Peinzalok-Banbwegon-Penwegon (143 miles, 6 furlongs)
- (4). Koebin-Thagaya (96 miles, 3 furlongs)
- (5). Magway-Kanbya-Myothit-Taungnyo-Nay Pyi Taw (108 miles, 4 furlongs)
- (6). Magway-Natmauk-Pyawbwe (91 miles, 4 furlongs)
- (7). PyinOoLwin-Mogok (97 miles)
- (8). Katha-Sinkhan (65 miles)
- (9). Myitkyina-Sumprabum-Putao (218 miles)
- (10). Thetkeyyin-Phaungbyin-Hkamti (330 miles)
- (11). Nay Pyi Taw-Pyinmana-Pinlaung (70 miles, 2 furlongs)
- (12). Ponnagyun-Yathedaung (22 miles, 6 furlongs)
- (13). Myebon-Minbya (24 miles, 7 furlongs)
- (14). Pauktaw-Minbya (20 miles, 6 furlongs)
- (15). Kyauktaw-Paletwa (33 miles, 5 furlongs)

To overcome the natural barriers such as rivers, valleys and mountains, Public Works has also put much emphasis on construction of bridges. A series of bridges have been built over the Ayeyawady River, the Thanlwin River, in the Ayeyawady Delta, through the Bago Yoma, and in mountainous areas populated by ethnic people.

To cope with the problem of financial constraint, private companies and joint ventures have been allowed to obtain the concession for road construction projects on BOT basis. By the end of 2011, Public Works of the Ministry of Construction had allowed 30 companies to construct 70 road sections with a total length of 4217 miles on BOT basis⁴. Asia World Co Ltd, Homg Pan Construction Co Ltd, and Shwe Than Lwin Highway Co Ltd are among the 30 companies which have been bestowed with concessions for road construction of domestic and regional importance such as Mandalay-Lashio-Muse road, Kengtong-Tachileik road, Bago-Mandalay road, Kyaikto-Thaton-Mawlamyine road and other sections of Union Highways.

² *New Light of Myanmar*, 16 March, 2011 P8

³ *New Light of Myanmar*, 27 Oct., 2010 P11

⁴ *New Light of Myanmar*, 26 Dec., 2011 P9

BOT Road Construction Projects

No	Name	Company	Miles
1	Mandalay-Lashio-Muse National Road (Lashio-Muse Section)	Asia World	Mile 172/0 - 274/3 (102)mile
2	Mandalay-Lashio-Muse National Road (Nawngkio-Lashio Section)	Asia World	Mile 79/0 - 123/0 (44)mile
3	Mandalay-Lashio-Muse National Road (Nawngcho-Lashio Section)	Asia World	Mile 123/0 - 172/0 (49)mile
4	Hseni-Kunlong-Chinshwehaw Road	Asia World	Mile 0/0 - 66/0 (66)mile
5	Mandalay-Lashio-Muse National Road	Asia World	
	(a) Kyuhkok Road Section		Mile 0/0 - 12/0 (12)mile
	(b) Muse Road Section		Mile 274/3 - 284/3 (10)mile
	(c) Namh Kam Road Section		Mile 284/3 - 306/3 (22)mile
6	Meiktila-Taunggyi-Kengtong-Tachileik Road	Homg Pan Construction Co.,Ltd.	Mile 397/4 - 499/6 (102)mile
	(Kengtong-Tachileik Section)		
7	Mandalay-Lashio-Muse National Road	Asia World	Mile 8/0 - 79/0 (71)mile
	(Mandalay-Pyinoowin-Wetwun-Nawngcho Section)		

Source: Ministry of Construction of Myanmar

It deserves to notice that although Asia Highways, ASEAN Highways and GMS corridor projects have been prioritized as stated, due to limited resource and an aim to speed up economic growth and strengthen national unity, more focus has been placed on upgrading road links among major cities and increasing domestic connectivity to less developed areas and ethnic places formerly cut off from the central Myanmar by mountains and rivers. The Yangon-Mandalay expressway and the Patheingyi-Monywa Road are especially important in terms of promoting economic growth and ensuring regionally balanced development.

The concrete expressway linking Yangon and Mandalay was completed by the end of 2011 with the last section, Saga-in—TadaU—Tagundaing (Mandalay) section being commissioned. It is 366 miles and three furlongs long and connects the lower Myanmar and the upper Myanmar with a shortest route. With its completion, travel time from Yangon to Mandalay has been shortened to about seven hours, saving as much as nine hours as compared with old roads.

The Yangon-Mandalay Expressway was constructed in three sections. The first section is from Yangon to Nay Pyi Taw which is 202 miles and one furlong long and was inaugurated on 25 March 2009. It took at least 10 hours for travelling from Yangon to Nay Pyi Taw through the old highway and the new concrete expressway saves six hours. The second section starts from Nay Pyi Taw Thabyegon junction and reaches Saga-in roundabout. It is

150 miles and five furlongs long and was opened on 29 December 2010. The third and last section is Saga-in-TadaU-Tagundaing (Mandalay) section. It connects Saga-in roundabout with Mandalay with a length of 13 miles and five furlongs long. It was opened on 23 December 2011⁵.

Particular effort has been given to the road construction on the western side of the Ayeyawady River, which has lagged behind the eastern side in development due to poor transport conditions. To increase connectivity of the western side of the Ayeyawady River to other parts of the country, the Pathein-Monywa Road has been upgraded to a tarred facility alongside the Kyangin-Pakokku-Kalay Railroad which has been built and put into service section by section.

Pathein-Monywa Road is 450 miles and five furlongs long, linking Ayeyawady Region with Bago, Magway and Sagaing Regions and passing Kangale, Athoke, Yekyi, Ngathaing gyaung, Yenatha, Betye, Okshitpin, Mindon, Padan, Kanbya, Kazunma, Yepyar, Myaing, Linkadaw ad Salingyi⁶. With improved road and railway conditions along the west bank of Ayeyawady River and increased easiness across the river, local people on the west bank of Ayeyawady will enjoy much easier access to Yangon Region, Mandalay Region, Sagaing Region, Rakhine State and Kachin State. Swift commodity flow and increased exchanges with other regions come with improvement of infrastructure conditions and the road will play an important role in the economic development of the areas on the west bank of Ayeyawady River.

2. Improvement on Regional Road Connections

1). ASEAN Highway and ASIAN Highway Network

The ASEAN Highway routes in Myanmar connect Myanmar to China, India and Thailand. There are seven ASEAN highways routes crisscrossing Myanmar. AH 1 starts from Tamu (India Border) and goes through central Myanmar, connecting Mandalay and Yangon, and ends at Myawady (Thailand border). It is also the route of the tripartite India-Myanmar-Thailand highway. AH 2 starts from Meiktila, traversing central Myanmar area and east Shan State and ends at Tachileik (Thailand border). AH3 starts from Kengtung in east Shan State and ends at Mongla (China border). AH14 starts from Mandalay, traversing north Shan State and ends at Muse (China border). AH 111 lies in Shan State. AH 112 passes through Myanmar's southern tail region and together with AH 123 provide extra connections between Myanmar and Thailand.

The Asian Highway in Myanmar consists of AH 2, AH 3 and AH 14. Asian Highway routes plus AH 111 AH 112 and AH 123 form the main trunk of the ASEAN Highway network in Myanmar.

⁵ *New Light of Myanmar*, 26 Dec., 2011

⁶ *New Light of Myanmar*, 10 Nov., 2010

ASEAN Highway in Myanmar

Route No.	Itinerary	Total Length
		(km)
AH1	Tamu - Mandalay - Meiktila - Yangon - Bago - Payagyi - Thaton - Myawadi	1,665
AH2	Meiktila - Loilem - Kengtung - Tachileik	807
AH3	Mongla - Kengtung	93
AH14	Mandalay - Thibaw - Muse	453
AH111	Thibaw - Loilem	239
AH112	Thaton - Mawlamyine - Thanbuzayat - Ye - Dawei - Lehnya - Khamaukyi, Lehnya - Khong Loy	1058
AH 123	Dawei - Maesameepass	141
Total		4456

Source: Ministry of Construction of Myanmar

Myanmar has made progress on Asian Highways in recent years. However, as constrained by limited resources and little financial assistance from abroad, much of the Asian Highway routes are still in critical need of reconstruction by a higher standard, upgrading and maintenance. Compared with its neighbors, the progress made is slow and Myanmar still has a long way to go to catch up with its neighbors.

Status of the Asian Highway in Some Countries (2010)

Country	Primary	Class I	Class II	Class III	Below III	Other	Total	Status
	km	km	km	km	km	km		
Bangladesh	0	68	1,574	32	83	5	1,762	2010
Bhutan	0	7	116	0	47	0	170	2010
Cambodia	0	0	510	835	0	2	1,347	2010
China ^(a)	14,859	2,076	6,280	3,460	32	0	26,707	2008
India	90	4,069	1,675	5,699	117	160	11,810	2008
Lao PDR	0	0	244	2,307	306	0	2,857	2010
Myanmar	0	147	0	1,798	1,064	0	3,009	2010
Nepal	0	0	34	1,243	37	0	1,314	2010
Thailand	182	3,049	1,723	155	2	0	5,111	2008
Viet Nam	0	382	1,847	104	264	0	2597	2010

(a) - China includes 15,400 km of potential Asian Highway routes.

Source: UNESCAP,

adjusted from the table at <http://www.unescap.org/ttdw/common/tis/ah/Status-AH.asp>

Except for a few sections, most sections of Asian Highway sections need to be upgraded to higher standard. Nearly one third the Asian Highway routes in Myanmar are still below Class III roads and nearly two third are Class III road. One third of the Asian Highway routes

are one lane road and there are 518km routes still not paved. The current status of the Asian Highway routes is shown in the following two tables.

Current Status of Asian Highway Network in Myanmar (2011 March)

Route No.	Itinerary	Length	Classification			
			Class I	Class II	Class III	Below Class III
AH1	Myawadi - Peayagyi (- Yangon) - Meiktila - Mandalay - Tamu	[1665]	80	144	984	448
		1,656				
AH2	Tachileik - Kyaning Tong - Meiktila - Mandalay	807	-	6	344	457
AH3	Mongla - Kyaning Tong	93	-	-	93	-
AH14	Muse - Lashio - Mandalay	453	67	-	386	
Total		[3018]3009	147	150	1807	905

Source: UNESCAP, website:

<http://www.unescap.org/ttdw/common/TIS/AH/files/wgm4/Countries/Status/Myanmar.pdf>

Current Status of Asian Highway Network in Myanmar

Route No.	Itinerary	Length	Paved (km)		Unpaved
		(km)	2 Lanes or more	1 Lane	(km)
AH1	Myawadi - Peayagyi (-Yangon) - Meiktila - Mandalay - Tamu	1,650	969	467	214
AH2	Tachileik - Kyaning Tong - Meiktila - Mandalay - Tamu	807	50	541	216
AH3	Mongla - Kyaning Tong	93		5	88
AH14	Muse - Lashio - Mandalay	453	453		
Total		3,003	1,472	1,013	518
Percentage		100	49	33.7	17.3

Source: Ministry of Construction of Myanmar

2). GMS Corridors

Greater Mekong Subregion (GMS) includes the countries Cambodia, Lao PDR, Myanmar, Thailand, Vietnam and China (Yunnan Province and Guangxi Ethnic Zhuang Autonomou Region). GMS economic cooperation started in 1992 with the support of ADB. Construction of economic corridors is one of main aspects of the sub-regional cooperation and specific economic corridors has been identified as flagship projects. There are four economic corridors concerning Myanmar.

The GMS East-West Economic Corridor in Myanmar starts from Myawady and reaches to Mawlamyine, with a distance of about 200 km. The Myawady-Eindu section with a length about 160 km is a part of ASIAN and ASEAN Highway No. 1. The firstsection of

Myawady to Thingannyinaung (18 km) was put into use since March 2005 and upgrading of the section had been completed by April 2006 with financial support from Thailand. The plan to construct and upgrade the section from Thingannyinaung to Kawkareik has been discussed between the governments of Myanmar and Thailand.:

The GMS North-South Economic Corridor is the road section R3b (or called R3W) in Myanmar. It goes through Kunming, Jinghong in China, connecting Mongla, Kengtung and Tachileik in Myanmar and reach Chaing Rai in Thailand. It is an alternative to the Kunming-Mohan-Houayxay-Chiang Rai route which goes through Lao PDR. The total length of it in Myanmar is 256 Km. The routes of it coincide with part of the AH 2 and AH 3 in Myanmar.

The GMS Northern Corridor, i.e. the Kunming-Dali-Ruili-Myanmar route has a total length about 820 Km. It is literally a bilateral cooperation project rather than a project under the GMS framework. China and Myanmar have organized a joint working team for the project and started feasibility studies and drafting of a master plan since September 2010. It is suggested that the corridor take the route alongside the proposed Kunming-Ruli-Muse-Kyaukphu railway.

3). The Stilwell Road

The Stilwell Road starts from Ledo in Assam and reach Kunming via Pangaung Pass (Myanmar-India border) and Myitkyina. It was built during World War II and much of it has become defunct ever since. It has two lines bifurcating at Myitkyina. The northern line begins from Myitkyina, heading east and reaches Tengchong; The southern line turns south from Myitkyina, reaching Ruili via Bhamo.

By April 2007, with the financial and technical support from China and after hard work of three years and seven month, the Myitkyina-Tengchong route had been reconstructed and upgraded to Class II road and put into service. The upgraded road is 172Km in total length, of which 105Km lies in Myanmar.

In October 2010, Yunnan Construction Engineering Group Co Ltd signed the MOU with Yuzana Group of Companies of Myanmar on the reconstruction of Myitkyina-Pangaung section of the Stilwell road. However, little progress has been made since then, with financing problems and instabilities in Kachin State hampering the construction process.

Besides, with support from China, from 2004 to 2006, the road linking Zhangfeng land port with Bhamo with a length of 92Km had been reconstructed into a gravel road according to Class IV standard. The road is a preparation project for the proposed land-waterway combined transportation through Ayeyawady River. The road has to be further upgraded to a higher standard to meet the need of future development of logistics.

4). The Kaladan Multi-Modal Transit Transport Project

In April 2008 India and Myanmar signed the agreement of the Kaladan Multi-Modal Transit Transport Project. The project, consisting of river dredging and port and road construction, will connect Sittway in Rakhine State with Mizoram in India, providing the land-locked northeastern India with a vital route to the Bay of Bengal along the Kaladan River. The project is divided into three phases and is being pushed forward with the redevelopment of Sittway port being set to be completed by 2013.

5). India-Myanmar Friendship Road and Border Roads in Chin State

The India-Myanmar Friendship Road is an important part of India-Myanmar-Thailand

Tripartite highway. The 160 Km Tamu-Kalewa road in Sagaing Region was built and commissioned in February 2001. Upgrading of the road had been carried out in recent years.

In addition to Tamu which was opened as a border trade point in April 1995, while the second Myanmar-India border trade point Reedkawdah in Chin State was opened in January 2004. There are two border roads linking India and Myanmar in Chin State, namely the Falam-Reedkawdah Road (67 miles) and Tiddim-Reedkawdah Road (32 miles). Myanmar and India have agreed to upgrade Tiddim-Reedkawdah Road as first priority. The road currently is an earth road and Public Works of the Ministry of Myanmar will upgrade it phase by phase⁷.

6). Road link between Myanmar and Bangladesh

Direct Road link between Myanmar and Bangladesh is under consideration by the Myanmar government. Road construction in Chin and Rakhine States are making progress. The Paletwa-Kyauktaw road is under construction to link Chin State with Rakhine State, which is part of the Paletwa-Kyauktaw-Sittway-Buthidaung-Maungtaung border trade route⁸. Once completed, it can be further extended to Bangladesh-Myanmar border, linking up with the Cox's Bazaar-Teknaf highway at Gundum, establishing direct road link between Bangladesh and Myanmar.

3. General Progress on Railway Construction

Myanmar has made tremendous progress in railway construction in last two decades. Before 1988, there were 1976 miles of railroads in the country⁹, of which 1924.75 miles were built before 1948, only 51.6 miles were built from 1948 to 1988. Since 1988, the construction of railway has been expedited. By April 2011, 1048.95 miles more railway had been added to the existing railway system and the total length of railway has exceeded 3000 miles. The government of Myanmar plans to further extend the railway system by a rate of building 250 miles railroads annually¹⁰.

In Myanmar government's opinion, in terms of importance in socio-economic development, Yangon-Mandalay railroad stands first, Mandalay-Myitkyina railroad comes second, Yangon-Mawlamyine-ye is third and Yangon-Pyay is fourth¹¹. However, much focus has been put on construction of railroads to areas formerly not linked with the interior of Myanmar. The aim is to promote economic development in a regionally balanced way, so as to promote equitable development of all parts of the country.

Railways were built in Tanintharyi Region, Rakhine State, Shan State, Kachin State and Kaya State and the west bank of Ayeyawady River. A series of road-cum-rail bridges have been put up on the Ayeyawady River and Thanlwin River to overcome natural barriers and provide easy connectivity to once landlocked places.

The Ayeyawady Valley route (Kyangin-Pakokku) which is along the west bank of the Ayeyawady river was started in 2007 with a total length of 320 miles and three sections:

- (1) Kyangin-Thayet Railroad Section (110 miles)
- (2) Thayet-Pwintbyu Railroad Section (100 miles)

⁷ *New Light of Myanmar*, 16 March, 2011 P9

⁸ *New Light of Myanmar*, 16 March, 2011 P9

⁹ *New Light of Myanmar*, 30 Oct., 2010

¹⁰ *New Light of Myanmar*, 5 June, 2011

¹¹ *New Light of Myanmar*, 15 March, 2011 P8

(3) Pwintbyu-Pakokku Railroad Section (110 miles)

Several sections of the railroad have opened to public service ever since¹². The Kyangin-Pakokku Railroad strings together cities and towns of importance all the way from Pathein to Monywa on the west bank of Ayeyawady River and provides easy access to Mandalay, Magway, Kalay and Sittway when accompanying projects are completed as planned. Therefore, it is a vitally important transportation route not only for providing equitable development opportunities to regions on the west bank of Ayeyawady River but also for future regional economic cooperation.

At present, according to the Ministry of the Railway, there are 13 railroad projects are being carried out¹³, they are:

- (1) 320-mile Kyangin-Pakokku railroad
- (2) 257-mile Minbu-An-Sittway railroad
- (3) 98-mile Katha-Bhamo railroad
- (4) 95-mile Pyawbwe-Natmauk-Magway railroad
- (5) 226-mile Mongnai-Kengtung railroad
- (6) 132-mile Dawei-Myeik railroad
- (7) 89-mile Pathein-Begarath-Hline-thaya railroad
- (8) 48-mile Hinthada-Nyaungdon railroad
- (9) 120-mile Pyay-Toungoo railroad
- (10) 120-mile Nay Pyi Taw-Tatkon-Pinlaung railroad
- (11) 475-mile Myitkyina-Bhamo-Hsipaw railroad
- (12) 135-mile Kalay-Kalewa-Yagyi-Monywa railroad
- (13) 150-mile Toungoo-Yado-Loikaw railroad

The total length of the 13 railway projects are 2265 miles, of which 1830 miles are being constructed, about one fourth of the total length has been open to public service by the end of 2010.

4. Improvement on Regional Railway Connections

1). Trans-Asian Railway (TAR)

As emphases have been put on overcoming transportation bottlenecks on domestic front, little progress has been made to bridge the missing links with neighboring countries in the last decade. The missing links of TAR still exist.

Trans-Asian Railway (TAR) Links in Myanmar

Link/Line Section	Track gauge (mm)	Route length distribution, by number of tracks and traction type (km)				
		Total length	Single track/non-elec	Multiple track/non-elec	Single track/elec	Multiple track/elec
<i>My. I</i>						
Thanbyuzayat-Bago	1,000	270	270			
Bago-Kyi Taungkan	1,000	303		303		

¹² *New Light of Myanmar*, 31 Jan., 2012

¹³ *New Light of Myanmar*, 10 Oct., 2010 P9; *New Light of Myanmar*, 21 March, 2011 P7

Kyi Taungkan-Mandalay	1,000	238	238			
<i>Sub-total My. 1</i>		811	508	303		
<i>My. 1a</i>						
Three Pagoda Pass-Thanyuzayat (missing link)	1,000	110	110			
<i>My. 1b</i>						
Bongty-Dawei-Thanyuzayat (missing link)	1,000	345	345			
<i>My. 2a</i>						
Muse-Lashio (missing link)	1,000	232	232			
<i>My. 2</i>						
Lashio-Mandalay	1,000	313	313			
<i>My. 3</i>						
Mandalay-Kalay	1,000	539	539			
<i>My. 3a</i>						
Kalay-Tamu (missing link)	1,000	135	135			
<i>TOTAL</i>		<i>2,140</i>	<i>1,837</i>	<i>303</i>		

Source: UNESCAP, website:

<http://www.unescap.org/ttdw/common/TIS/TAR/myanmar.asp>

There are four missing links.

Muse-Lashio railway (Link My.2a) in north Shan State has a total length of 232 km, all of it passing through adverse mountainous terrain.

Kalay-Tamu railway (Link My.3a) has a distance of about 135 km. Although Myanmar Railways have firm plans for construction of this link, funding difficulties are likely to delay the commencement of this project.

Link My.1a runs from the border with Thailand at Three Pagoda Pass to Thanbyazayat and has a length of 153km.

Link My.1b running from Dawei to the Myanmar-Thailand border at Bongty and then on to Ye and Thanbyazayat, having a length of 345 km. It was initially planned as an alternative to Link My.1a. Progress has been made along this route. The 99-mile Ye-Dawei railway was completed in March 1998 linking Mon state with Tanintharyi Region. As Dawei becomes a Special Economic Zone, as agreed upon by the governments of Myanmar and Thailand, a railway will link Dawei with Bangkok as part of the extended GMS Southern Corridor.

2). Muse-Lashio Railway

In April 2011, Myanmar and China signed an MoU concerning the Muse-Lashio-Kyaukphyu railway construction¹⁴. According to the MoU, the first phase of the project, i.e. the Muse-Lashio railway in Shan State will be undertaken by the China Railway Engineering Corporation of China with an estimated construction term of three years on BOT basis. Data from the Chinese side shows that the Muse-Lashio railway is 126 kilometers long and 41 big and small bridges, 36 tunnels and seven railway stations will be

¹⁴ *New Light of Myanmar*, 28 April, 2011

built along the route. The project will be implemented in line with another ongoing China-Myanmar gas pipeline project stretching from Kyaukphyu to Kunming via Mandalay and Muse. The MoU also covers the environmental protection and social development projects along the rail road¹⁵. In the meantime, preliminary feasibility study had been carried out on construction of the remaining section of proposed railway from Lashio to Kyaukphyu.

However, since then little progress has been made due to financial problems as well as indecision on the break-of-gauge problem resulting from different gauge standards used in the two countries. For increasing the capacity of the railway, the track gauge of the Muse-Lashio railway was proposed to follow the standard gauge in China with a width of 1,435mm rather than the meter gauge applied in Myanmar.

On the Chinese side, there is also a missing link of the TAR between Dali and Ruili in Yunnan Province. Construction of the Dali-Ruili railway is well underway and is to be completed within six years as planned. However, lack of funds and technical problems have stalled up the construction process. The railway line is about 350 Km in length with an estimated investment of about US\$2.5 billion. The railway has to negotiate through some of the most difficult terrains in China and a tunnel as long as 40Km has to be built to cross the daunting and insurmountable Gaoligong Mountains in west Yunnan Province. Upon completion, people can reach Ruili in two hours' time from Dali by train, saving travel time as much as five hours.

3). Other planned or proposed railway routes between Myanmar and China

According to China's medium and long term railway construction plan¹⁶ and the 12th Five-year Planning of Yunnan Province¹⁷, the Dali-Ruili railway will have a branch line to Tengchong and will be extended to the Myanmar-China border at Houqiao dry port. It can link up with Myitkyina later and be further extended to the Myanmar-India border along the Stilwell road.

The feasibility study for the construction of the Kunming-Mohan railway is being carried out. Once completed, branch railway lines such as Jinghong-Kengtung and Lincang-Lashio can also be taken into consideration.

4). Railway link between Myanmar and Bangladesh

In April 2011, the Yoetayoke-Kyauktaw railroad section of Minbu-An-Sittway railroad project was commissioned into service in Rakhine State. It is the third section of 257 miles long Minbu-An-Sittway Railroad Project after the Pyitawtha-Yechanbyin section (11.46 miles) and the Kuntaung-Ponnagyun-Yoetayoke section (22.72 miles). Minbu-An-Sittway railroad is a major transportation facility in the Rakhine State and is being implemented in parts and completed railroad sections are opened separately. Upon completion, it will provide Rakhine State with easy access to Magway Region and other parts of the country and contribute to the all-round development of Rakhine State¹⁸.

The construction of the Minbu-An-Sittway railway will also lay the foundation for future railway linkage between Chittagong and Sittway.

¹⁵ *China, Myanmar sign MoU on rail transport project*, China Daily, 28 April 2011, http://www.chinadaily.com.cn/bizchina/2011-04/28/content_12412367.htm

¹⁶ *The Medium and Long Term Railway Planning of China (Adjusted in 2008)*, Ministry of Railway of China, http://www.china-mor.gov.cn/tljs/tlt/201101/t20110108_6461.html

¹⁷ *The 12th Five-year Planning of Yunnan Province*, <http://www.yndpc.yn.gov.cn>

¹⁸ *New Light of Myanmar*, 11 April 2011

5. Progress in Air and Water Transport Sector

Myanmar has also made progress in air and water transportation.

In the field of aviation sector, before 1988, there were only 66 airports in Myanmar but most of them were out of commission due to lack of maintenance and other reasons. Since 1988, Myanmar has built new airports and upgraded the old ones across the country. Currently, there are 69 airports in the country.

Progress of Air Transport Sector Since 1988

Sr.	Airport	1988	2010	Progress
1.	Runway(above 10000 feet)	66	69	3
2.	Runway(above 5000 feet)	-	11	11
3.	Runway(below 5000 feet)	21	27	6

Source: *New Light of Myanmar*, 29 Oct., 2010

Yangon Airport and Mandalay Airport had been upgraded into international airports. On 19 December 2011, the Nay Pyi Taw International Airport was commissioned into service. Construction of the new Nay Pyi Taw International Airport started in April 2009 and took two and a half year to finish. The airport has 12000x200 feet runway and can handle 5 million domestic and foreign passengers per year¹⁹. Moreover, construction of two more international airports is being planned. One is the Hanthawaddy International Airport in Bago Region and the other is the Dawei International Airport at Dawei Deep Seaport in Tanintharyi Region²⁰.

Airports of Myanmar (above 10,000 feet runway)

Airport	Length	Remarks
1. Yangon International Airport	11200x200	extended
2. Mandalay International Airport	14000x200	opened
3. Nay Pyi Taw International Airport	12000x200	opened
4. Anisakhan Airport	10000x200	extended
5. Nanpaung Airport	11050x200	extended
6. Homalin Airport	12000x 200	extended
7. Namhsam Airport	12000x200	extended
8. Dawei Airport	12000x100	under way
9. Bokepyin Airport	10000x100	opened
10. Kyaukhtu Airport	10000x100	opened
11. Tounggo Airport	12000x200	extended

Source: *New Light of Myanmar*, 29 Oct., 2010

Aviation service has also seen considerable improvement. In addition to the state-owned Myanma Airways, private-owned airline companies such as Air Bagan, Air Yangon and Air

¹⁹ *New Light of Myanmar*, 5 Feb., 2012

²⁰ *Xinhua News Agency Report*, http://news.xinhuanet.com/english/world/2012-02/19/c_131419210.htm

Mandalay have been allowed to run a number of domestic and international routes. Air Bagan is considered the most popular among its peers.

In the field of water transportation, before 1988, there were only 13 jetties for handling international ships and there was no container yard. By the end of 2010, there are 28 jetties for international ships, of which 16 jetties are at Yangon port and 6 at Thilawa²¹. There are three container yards. At present, Yangon-Thilawa port improvement and development project is being carried out to increase the capacity to meet the growing demand for logistics service. Upon completion of the extension project, there will be 62 jetties that can handle 75 ships, and the total volume of freight the ports can handle will increase from 20 million tons a year to 100 million tons a year²². In addition, measures have been taken to dig the water course to allow in 30000 – 35000 ton vessels²³. Dredging has also been carried out on a regular basis on the Ayeyawady River.

On top of that, deep seaports are being developed at Sittway, Kyaukphyu and Dawei with support from India, China and Thailand, with the latter two having the potential capacity of handling 50 million and 100 million tons of freight a year respectively.

Progress of Water Transport Sector Since 1988

		Unit	1988	2010	Progress
Water Transport (Domestic Ship)					
1.	Jetty	No.	92	111	19
2.	Dockyard	No.	5	6	1
3.	Route	No.	53	62	9
4.	Passengers	Million	17.48	25.79	8.31
5.	Total miles (passengers)	Million	346.13	541.22	195.09
6.	Tonnage of goods	Million	1.89	3.60	1.71
7.	Total miles (tonnage)	million	242.64	400.45	157.81
Water Transport (Oversea Ship)					
1.	Jetty	No.	13	28	15
2.	Ship(Coastal, Oversea)	No.	14	25	11
3.	Inland container ground and container yard	No.	-	3	3

Source: *New Light of Myanmar*, 29 Oct., 2010

II. Opportunities and Challenges

Considering Myanmar's pivotal location at the juncture of East, Southeast and South Asia, deepening regional cooperation on transport connectivity will bring Myanmar and neighboring countries many benefits.

1. Market Access and Job Creation

First, neighboring countries have huge markets which are still growing at a rapid pace

²¹ *New Light of Myanmar*, 29 Oct., 2010

²² *New Light of Myanmar*, 25 Oct., 2010

²³ *New Light of Myanmar*, 10 Aug., 2011

despite of the ongoing economic difficulties in U.S.A and Europe. China, India, Bangladesh and ASEAN combined have more than 3 billion people. Both India and China are providing preferential tariffs and other favorable policies to less developed member states in the frameworks of BIMSTEC, GMS, China-ASEAN FTA etc.

At present, China alone is the world's second largest import market. With China rebalancing its regional policy, putting more emphasis on the development of its west regions, west China is developing at a faster pace than east China. Moreover, for creating a favorable environment for the development of the west regions, China is trying to set up a series of gateways along its borders to further open up and deepen regional cooperation with neighboring countries. For example, Guangxi Ethnic Zhuang Autonomous Region has been designated as a gateway to ASEAN, and Yunnan Province a gateway to Southeast Asia and South Asia. To strengthen regional cooperation, it is necessary to improve transport connectivity first. Yunnan Province has set a target in the provincial 12th five-year planning (2011-2015) to increase its expressway (4-lane and above) to 4500Km by 2015, up from 2500Km in 2010. In the field of railway construction, by the end of 2010, the length of railway in operation reached 2500Km and there are 2200Km railways under construction in the province. Yunnan is determined to further improve its transport infrastructure to make expressways and railways reach major border ports such as Ruili (Sino-Myanmar border), Mohan (Sino-Lao border) and Hekou (Sino-Viet Nam border) in a few years' time, and transport and logistics facilities of other border ports of the province will also be significantly improved at the same time.

Growing market in west China, regional trade liberalization together with transport infrastructure improvement will provide neighboring countries and regions with a vast market space.

More jobs opportunities will be created in the service sector. Improvement on transport connectivity is expected to greatly promote the development of logistics and tourism in the region.

2. Industrialization and Economic Cooperation

Trade will increase with the improvement on regional transport connectivity; this may have profound implications on the industrialization in the region.

In the area of export-oriented labor-intensive industries such as the textile and garment industry, China has been competing with countries like Bangladesh for global market share and foreign direct investment (FDI). When the import quotas under the Multi-fiber Agreement (MFA) were finally abrogated in 2005, the competition intensified with China winning a large share of the global market. On the import side, easy transport facility in the region may result in substantial increase of import of manufactured goods with competitive price from Thailand and especially China.

Myanmar today is still a typical agriculture country and slow progress in industrialization has hindered the country from progressing at a fast pace. The Myanmar government is taking measures to promote import-substitution industrialization, trying to change the factor-driven economy into a capital-driven, technology-driven and knowledge-based economy and transforming Myanmar into an industrialized country. However, rash and unprepared opening up of the domestic market may cause disruption in

industrialization in a less developed country and undermine the country's fundamental capability for long-term development. According to the development plans of ASEAN economic community and the China-ASEAN free trade area (FTA), by 2015, Myanmar needs to reduce the overall tariff level considerably and further open its market, and this may bring disruptive effects on domestic industries.

In terms of industrialization policy, northeast region of India is similar to Myanmar to some extent—large quantities of manufactured goods coming from a third party such as China are traded at Myanmar-India border in the form of informal trade which may have negative impacts on the local industrial development.

Nonetheless, as evidenced by most countries' experience, import substitution industrialization strategy in a closed market environment has been proved time and again unsuccessful, and an open environment is indispensable to a country's economic development in the long run. The key to success is to establish a set of sound industrial policies, utilizing comparative advantages in a gradually open market environment, gaining access to regional and world market to achieve scale economy and fostering new competitive advantages by investing more in technology and innovation and climb up the value chain step by step.

The region, Myanmar, Bangladesh, Northeast India, West Bengal and Yunnan Province included, has advantageous location, rich resources and competitive labor cost which are essential for industrial development. At present, the region is on the threshold of getting unprecedented opportunities in industrialization and the prospect of realizing fast economic development of the region has never been so promising.

There are many upbeat reasons in addition to the changing situation in Myanmar. Firstly, in the field of labor-intensive industries, due to growing labor costs and appreciation of the Chinese currency (RMB), China is fast losing competitiveness and gradually phasing out of the industry. In order to rebalance the economy which is excessively dependent on export and investment, the Chinese government has been trying to increase domestic consumption, expand import and upgrade its industries in recent years. By the end of 2011, China's trade surplus has dropped to 2.1% of GDP down from 7% of GDP in 2007. With the current pace of appreciation of RMB, it is expected that China will reach trade balance in about three years. To prop up domestic demand and improve people's living standard, the Chinese government decides to increase the minimum wage more than 13% annually in the 12th five-year planning period (2011-2015)²⁴. With minimum wage increase expected also in Thailand, the comparative advantages of Myanmar and Bangladesh have never been so prominent and a great deal of labor-intensive industries would be shifted to the region. Regional cooperation instead of competition will increase.

Secondly, countries in the region are all willing to deepen economic cooperation on the basis of mutual respect and the win-win strategy. As a result, regional FDI and technology transfer will increase. Countries like China, India and Thailand can provide technologies and equipment most cost-effective and most appropriate to help less developed countries in the region. China and India are offering assistance to Myanmar to set up factories to produce automobiles, tractors, locomotives etc and transferring technologies in economic cooperation

²⁴ *China Plans to Increase the Minimum Wage More Than 13% Annually in the 12th Five-year Planning Period (2011-2015)*, People's Daily Online Report, Feb., 8, 2012, <http://politics.people.com.cn/GB/17056861.html>

projects such as hydropower.

Thirdly, the complementarity in the region has been largely neglected while similar economic and industrial structures of the region have been highlighted unduly. Although regional economies are all agro-based, there exists substantial complementarities. “Resource-based complementarities between SWC and NER are quite substantial...”, and “this is a situation where closer economic cooperation between the PRC and India will help convert this region’s vast resources into wealth, leading to improvements of quality of life of the local people” (Bhattacharya, B., and P. De. 2005).

Complementarities between Northeast Region of India (NER) and Southwest China (SWC)

NER’s Strengths	SWC’s Strengths
Vast reserves of natural resources	Vast market for processed resources
Considerable presence of railways, waterways, and roadways	Good coverage of roadways and airways network
Bordering Bangladesh, Bhutan, India, Myanmar and Nepal	Bordering mainland PRC and some ASEAN members
Developed IT and software services	Developed IT hardware and electronics
Huge potential demand in construction activities	Underutilized capacity in construction activities
Presence of private capital	New opportunities for private enterprises

Source: “Promotion of Trade and Investment between People’s Republic of China and India: Toward a Regional Perspective” (Bhattacharya, B., and P. De. 2005)

3. Challenges of the Regional Routes

To convert the resource complementarities into common wealth for the region, it is necessary to promote infrastructure development, especially the transport development in the region. Nonetheless, it would be fair to say that infrastructure improvement alone will not necessarily improve regional connectivity. Security, social, economic, cultural, environmental, technical and financing factors all have a place in the decision-making process of concerned parties in determining the fate of a route.

The R3B route probably is a case in point. There are two road routes linking Bangkok with Kunming. The overland route via Myanmar (the R3B road) is shorter than the Kunming-Bangkok Highway via Lao PDR (the R3A road) and the logistics cost of it is on par with that of R3A. However, due to relatively poor road condition and more importantly, security problems, its advantages have not been in full play.

**Comparison of Logistics Costs and Time of R3B and R3A
for Transportation of Longan from Chiang Mai to Kunming**

Transport Routes and Transport Means		Mileage (Km)	Logistics Costs (RMB/Kg)	Time (Hour)
1	Chiang Mai-Chiang Rai-Mae Sai-Tachileik-Kengtung-Daluo-Jinghong-Kunming by truck (R3B)	1195	3.1	33.6
2	Chiang Mai-Chiang Rai-Chiang Khong-Huay Xai-Boten-Mohan-Kunming by truck (R3A)	1216	3.12	28.5

Source: “*Sharing the Benefits from Transportation Linkages and Logistics Improvements in the GMS: A Study of the East-West and North-South Corridors*” Report and Presentation from Yunnan, Jan., 2010 Bangkok Thailand

The Mawlamyine-Myawady road (GMS East-West Corridor) also has problems at the Myanmar-Thailand border. “No standardization of custom clearance process”, “border and road Infrastructure in bad condition”, limited capacity of the bridge for border-crossing and delay of custom process have been cited by the Thai side as prominent problems among others hindering smooth cross-border transportation²⁵.

Taking reference from the GMS transportation and logistics cooperation, countries using transit routes usually complain about exorbitant and unpredictable transit charges, cross-border procedures and poor infrastructures in transit countries.

However, from transit country’s point of view, they may not be able reap enough benefit from transit transportation and have been left alone to take all the negative social and environmental impacts. A Laotian commented on the Kunming-Bangkok Expressway via Lao PDR on a GMS Corridor Forum held in Kunming that Lao people might not be able to benefit from the transit route except for “collecting Coca-Cola cans” along the road. This may be an exaggeration, but for the regional routes crisscrossing Myanmar, there are real externalities. Trafficking of people, drugs and protected wildlife, deforestation, illegal trade, HIV/AIDS, money laundry and other negative effects may come and intensify with transportation improvement in the region if no proper measures being taken to address these issues.

In sum, challenges and difficulties each route faces should be identified and measures to improve and remedy the situation should be considered accordingly. Challenges and difficulties of some other selected routes in the region centered on Myanmar are listed in the table below.

Challenges and Difficulties of the Some Selected Routes in the Region

²⁵ *Sharing the Benefits from Transportation Linkages and Logistics Improvements in the GMS: A Study of the East-West and North-South Corridors*, Report and Presentation from TDRI, July, 2010

No.	Routes	Major Challenges and Difficulties
1.	Dali-Muse-Lashio Railway	Financial difficulties; break-of-gauge problem
2.	The Stilwell Road	Financial difficulties; Security problems; lack of support from the central government of India
3.	India-Myanmar Friendship Road	Slow progress in infrastructure improvement in Manipur; trade restrictions
4.	Bangladesh-Myanmar road/railway	Poor infrastructural basis; lack of planning and government support

III. The Way Forward

The two most prominent challenges or constraints hampering transport infrastructure development, as mentioned above, are financial shortage and technical problems. Technical problems, such as the break-of-gauge issue and difficulties in transshipment, can be solved by construction of transport nodes or intermodal terminals to allow smooth shift among different types of transportation. The financial constraint can also be overcome provided the proposed projects are economically sensible and have a promising prospect. Hence it is important to have a bigger picture in mind to address some fundamental issues to promote regional connectivity. Some suggestions are given below in this purpose.

1. Strengthen Multi-lateral Cooperation

Myanmar stands at the conjunction of many regional cooperation mechanisms, playing a pivotal role in regional cooperation. However, due to economic sanctions, it has not fully participated in the regional cooperation such as the GMS cooperation. This is detrimental to the interests of not only Myanmar but also Myanmar's neighboring countries.

For the region around the Bay of Bengal, there are common interests to see a prosperous Myanmar coming along with its neighbors and playing the role—in the long run—of regional powerhouse for generating economic cooperation. The common interest could not be demonstrated more clearly in improvement of transport connectivity. Obviously, transportation facility built on bilateral basis will benefit the third party in the region. For instance, the Muse-Lashio-Kyauphkyu railway, once completed, will also benefit India, Bangladesh and other countries through increased trade with China.

So far, a number of major transport infrastructure projects of regional importance have been carried out mostly on bilateral basis. It is necessary to establish a regional multilateral cooperation mechanism centered on Myanmar. The mechanism, in the initial stage, should involve all the immediate stakeholders in the region, particularly India, Bangladesh, Thailand and China, and should follow the principle of inclusiveness, open to regional and global stakeholders in the long run. It is certain that there will be difficulties in coordinating different interests and concerns from various aspects, strategic, economic, cultural ones, to name just a few, with each conflicting with another hence there is no shortage of reasons to procrastinate regional cooperation. However, in a bigger picture sense, “the opportunity costs of not moving toward greater economic integration between neighboring countries..... could be increasing” (Bhattacharyay and De 2005). Cooperation will generate more common

interests which will in return help overcome real or conceived conflicts of interests and prepare the ground for further cooperation. Moreover, in reality, a dose of healthy competition among the stakeholders usually leads to positive results for the least developed countries in the region and eventually conducive to regional development at large. This cohesive force will be better fostered in a formal framework to encourage exchanges and interaction among members and create a more favorable environment for regional cooperation.

2. A New Plan on Regional Connectivity is Necessary

According to transport development in recent years in Myanmar, a number of major trading routes and economic corridors can be identified, they are:

- (1) Muse-Mandalay-Yangon economic corridor;
- (2) Muse-Kyaukphyu economic corridor;
- (3) The Kaladan River Multi-modal Transit Project;
- (4) Tamu-Mandalay-Myawady economic corridor;
- (5) The coastal economic corridor (Myeik-Dawei-Mawlamyine-Yangon-Pathein-Kyaukphyu-Sittway-Chittagong-Dhaka-Kolkata);
- (6) Ayeyawady inland waterway (Bhamo-Yangon);
- (7) Mawlamyine-Myawady economic corridor (GMS East-West Corridor);
- (8) Mawlamyine-Three Pagoda Pass-Bangkok railway;
- (9) Dawei-Bangkok (GMS Southern Corridor);
- (10) Larshio-Teinni-Lincang highway;
- (11) Taunggyi-Kengtung-Jinghong highway;
- (12) Taunggyi-Kengtung-Tachileik-Chingrai-Chingmai highway;
- (13) Tengchong-Myitkyina-Pangsaung-Ledo road (the Stilwell Road).

Besides, there are still several trading routes or branch lines being planned or considered. Nonetheless, trading routes and economic corridors listed above constitute the main artery to support Myanmar's economic development and regional cooperation. Clearly, new development in regional transport connectivity in recent years has not been accommodated in previous regional transport cooperation frameworks such as Asian highway network, ASEAN highway network, GMS corridors and Trans-Asian Railway network. Therefore, it is necessary to reconsider the overall cooperation plan on regional transport connectivity, taking into account all the existing routes, routes under construction and planned or proposed routes. A new master plan for regional cooperation on transport connectivity should be drawn up with flagship projects being identified.

3. Lessons for Improving Regional Connectivity

According to the reality of the region around Myanmar, selection of flagship routes should take into account two aspects. In the first place, economic development should be prioritized. Next, regional balanced development and poverty alleviation should be considered. In general, the sequence should not be reversed. The main idea is firstly to generate economic development at some focal points, then spread it out to other regions in the next phase.

In the areas around the Bay of Bengal, the most critical problem is that it lacks

substantial economic development although having been richly endowed with advantageous location, vast natural and human resources. Hence, to generate fast development is the main aim of regional cooperation and naturally, the development of the coastal area should be prioritized.

Taking China's regional development strategy as a reference. At the end of 1970s, the opening up and reform policy was firstly implemented in coastal areas. Deng Xiaoping, the late leader of China pointed out that economic policies should allow some regions and some people to get rich first, so as to achieve a common prosperity of all the regions and people through the demonstration effect. In the first phase, other parts of the countries should support the development of the east (coastal areas of China), then in the next phase, the east should support the west (the interior of China). Following this unbalanced regional development strategy, China has seen phenomenal economic development especially in coastal areas. The strategy went to its end in the middle of 1990s when regional disparities grew to a new high. The Chinese government then adjusted the policy and promoted coordinated regional development to address the problem of regional, urban-rural disparities and rebalance the regional economy. Since early 2000s, GDP growth rates of the west, central and northeast regions of China have caught up with and finally exceeded that of the east region of China.

Furthermore, the economic rationale of each route should be carefully studied. There are already a number of lessons we can learn from. For instance, the Kunming-Bangkok expressway (GMS North-South Corridor) was built with high expectation that much trade between Thailand and China could be attracted to this new facility. However, much to the dismay of the officials in Yunnan Province, the trade volume through the route has seen little increase. Aside from problems in the implementation of the GMS CBTA and other trade barriers, the main reason could be that the Thai side plans to go through the GMS East-West Corridor via Lao PDR and Viet Nam to reach Nanning, the capital of the Guangxi Ethnic Zhuang Autonomous Region of China, because there, as adjacent to Guangdong Province, exists a larger market. Similar situations also exist in trading routes and corridors concerning Myanmar with probably different reasons. The Tengchong-Myitkyina road, renovated to Class II road in Sept. 2007, has seen little development in logistics. The reason could be attributed to lack of industrial activities along the route and prohibition of importation of timber from Myanmar since 2006. In the long run, with full development of a series of deep sea ports along the coast of Bay of Bengal, it is reasonable to project that much manufactured goods in industrial parks near Bangkok would take the sea route from Dawei to Kolkata and vice versa, rather than taking the detour of the tripartite India-Myanmar-Thailand highway.

4. Recommendation on Route Selection for Improving Regional Connectivity

Selection criteria of the railway lines of the Trans-Asian Railway network are:

- Capital-to-capital links
- Connections to main industrial and agricultural centers
- Connections to major sea and river ports
- Connections to major container terminals and depots

It would be economically sensible to follow the selection criteria of the TAR network.

Current and future economic centers and important sea ports should be linked up with better infrastructure conditions. In Myanmar's case and considering regional cooperation in a larger picture, Yangon (Thilawa), Nay Pyi Taw, Mandalay, Mawlamyine, Dawei, Kyaukphyu, Sittway, Chittagong, Kolkata, Pathein and Bago should be well connected. Yangon, Bago, Mandalay and Kolkata are traditional economic centers; Thilawa, Dawei and Kyaukphyu have been designated as Special Economic Zones; Sittway, Mawlamyine and Pathein have the potential to become Special Economic Zones in the next phase; Chittagong will become regional logistics center with improved connections with Northeast India, Nepal and Bhutan.

Economic development and regional cooperation will be greatly improved if connectivity among these centers be improved. Through the construction of the trading routes and economic corridors linking these economic centers, sea ports, SEZs, and logistics centers and industrial parks, resources vital for fostering economic development such as investment, technology, information and human resources will be attracted to these centers. With better connection with each other, the centers will proceed to make most of their comparative advantages to complement with each other and enhance regional competitiveness.

In the next phase, a series of regional economic growth poles across the region should be identified. In Myanmar's case, cities and towns with regional importance, such as Taunggyi, Magway, Prome, Kengtung, Lashio, Myitkyina, Myeik, Haka, Hpa'an and other cities in the interior and border cities such as Tamu, Myawady and Muse, could be identified as growth poles and be connected with the economic centers by improved infrastructures. The aim is to spread out economic development nationwide, and keep regional disparities at an acceptable level. For better sharing of the benefit among people, construction of secondary or feeder roads to the main trunks of corridors should also be considered. Small roads and feeder roads should be constructed to let the benefit spread out and trickle down to local people, offering them more opportunities. Eventually, as the network of trading routes and economic corridors extends to cover the four corners of the country, the benefits of economic growth is expected to be shared nationwide and across the region.

Based on these analyses and projections, it is recommended that the focus of cooperation on regional connectivity should be placed on the coastal areas of the region. In the beginning, the coastal corridor (Myeik-Dawei-Mawlamyine-Yangon-Pathein-Kyaukphyu-Sittway-Chittagong-Dhaka-Kolkata) should be prioritized. Currently, much focus has been placed on bilateral cooperation. The coastal line will link up all the bilateral projects and benefit the region as a whole.

Once the major cooperation projects with sound economic rationale be identified, it is important to pool together all the financial resources from multilateral agencies, governments and the private sector to expedite the construction process. Meanwhile, it is necessary to bridge the missing links of all the important routes in the region. With strengthened regional cooperation, it is hoped that a regional transport network can be formed at an early date.

5. Establish a Benefit and Cost Sharing Mechanism

Transport routes and corridors in Myanmar can be regarded as "club goods" of the whole

region. Although most transport routes constructed in Myanmar are on bilateral basis, trade carried out along them in the future can be regional and global. Improvement of the transport conditions in Myanmar will benefit all the regional stakeholders and bottlenecks in Myanmar will prevent every member from fully reap the benefits of infrastructure networks. It is impossible to prevent a third party to enjoy the results of the bilateral cooperation projects, hence, there arises the problem of free riding. On the other hand, each member in regional transport cooperation has its own constraints and may not be able to get its fair share in the cooperation. Usually, the relatively weak country playing the role of transit route has to take much of the externalities.

Therefore, a set of benefit and cost sharing mechanisms should be established, and measures should be taken to remedy the hidden costs in social and environmental areas resulting from the externalities. Specifically, reaching bilateral or regional agreement on transit pricing can be an important approach for better sharing the benefit and costs from improved regional infrastructure network. There are two approaches to determine the transit cost. The “Austrian Model” is to let neighboring countries finance in part or full infrastructure projects in the transit country and they in turn get preferential tolls. The “Swiss Model” suggests that the transit country shoulders all the funding for the transit infrastructure project and charges higher tolls.

In Myanmar’s case, the “Austrian Model” is more appropriate and it is suggested that a set of transparent, predictable and free-of-red tapes fee-charging standards and rules be set up, thus to create a favorable environment for development of transit trade and commercial logistics, and that will generate huge revenue for Myanmar in return.

6. Reduce Non-Physical Barriers to Enhance Interoperability

Taking reference from GMS cooperation on economic corridor development, infrastructure improvement alone does not ensure satisfactory result in terms of fostering and promoting economic relations along the designated routes. Improvement on transport infrastructure, although very important in the very beginning, is actually the beginning of a long march to seamless regional cooperation and integration on logistics. If not accompanied by removing non-physical barriers and improvement of interoperability, transport improvement will not necessarily translate into economic development.

To improve transport connectivity in the region, it requires simplifying and harmonizing the institutional and regulatory framework concerning cross-border procedures and transit trade.

First of all, for removing the “soft obstacles”, it is necessary to further push forward the implementation of GMS CBTA among GMS members based on the experiences and lessons accrued from a number of CBTA pilot projects. The GMS CBTA is a major multilateral instrument to achieve GMS connectivity. It includes a series of measures to facilitate cross-border transport such as Single Stop Inspection (SSI), Single Window Inspection (SWI) and Customs Transit System (CTS). With the implementation of SSI, SWI and CTS, border crossing formalities such as customs, immigration and quarantine inspections will be streamlined and simplified. By facilitating customs clearance procedures, logistics time and cost on corridors can be reduced substantially thus to create a favorable business environment.

The ratification of CBTA leads to removal of some major non-physical barriers on cross-border transportation. GMS member state should be encouraged to ratify the CBTA protocols and annexes at an early time. In the next step, a similar multilateral cooperation mechanism or framework should be established among all the neighboring countries of Myanmar and other regional stakeholders. It should be established at an early time rather than being considered at a later time as this will bring no less benefit to the region than infrastructure improvement.

In addition, Collaboration between border agencies should be strengthened especially on capacity building programs. Training programs with the purpose to deepen understanding of other countries' regulatory and legal framework should be incorporated into regional human resources development plans. Standardized and regular computer based exchange of data and sharing of information between customs and other public agencies should be established among countries in the region. Advices and policy recommendations from the private sector should be earnestly sought after in order to enlarge the involvement and improve the awareness and sense of "ownership" of the economic corridors among the general public.

Through implementation of these measures, it is hoped that interoperability in the region will be improved step by step, and a seamless regional logistics network will be established in the end, so as to fully realize the potential of infrastructure interconnectivity in the region, and as a result the benefit of market access could be shared among all the countries in region.

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