ASSESSMENT OF GREATER MEKONG SUBREGION ECONOMIC CORRIDORS

MYANMAR

10TH ECONOMIC CORRIDORS FORUM
13 DECEMBER 2018

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Photos on the cover (left to right):

Aerial view of Danang Port. This is the third largest port system in Viet Nam and lies at the eastern end of the GMS East–West Economic Corridor (photo by ADB).

Bridging borders. The bridge between the Lao People's Democratic Republic and Thailand allows people to trade and travel (photo by Pitchayawat Proongsak).

Erenhot railway station. Trucks parked at the Erenhot railway station in the People's Republic of China (photo by 2011 Dengjia for ADB).

Note: In this report, "$" refers to United States dollars.

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ABBREVIATIONS

AC	–	asphalt concrete
ADB	–	Asian Development Bank
AH	–	Asian Highway
ASEAN	–	Association of Southeast Asian Nations
BOT	–	build–operate–transfer
CBTA	–	Cross-Border Transport Facilitation Agreement
EWEC	–	East–West Economic Corridor
FDI	–	foreign direct investment
GMS	–	Greater Mekong Subregion
ha	–	hectare
ITD	–	Ital–Thai Development Public Co., Ltd.
IZ	–	industrial zone
JV	–	joint venture
kg	–	kilogram
km	–	kilometer
kph	–	kilometer per hour
Lao PDR	–	Lao People's Democratic Republic
MIZ	–	Myawaddy industrial zone
NSEC	–	North–South Economic Corridor
NSEC-1	–	Kunming–Chiang Rai–Bangkok via Lao PDR or Myanmar Subcorridor
NSEC-5	–	Kunming–Muse–Mandalay–Yangon–Thilawa Subcorridor
NSEC-6	–	Mandalay–Tamu Subcorridor
PRC	–	People's Republic of China
SEC	–	Southern Economic Corridor
SEC-1	–	Dawei–Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau Subcorridor
SEZ	–	special economic zone

CURRENCY EQUIVALENTS
(as of 30 June 2017)

Currency Unit – baht (B)
B1.00 = $0.029
$1.00 = B33.98

Currency Unit – Myanmar kyat (MK)
MK1.00 = $0.00073
$1.00 = MK1,362.00

The Assessment of Greater Mekong Subregion (GMS) Economic Corridors consists of six country reports and an integrative report prepared by a study team composed of Filologo Pante, Jr. (team leader), Josephine Duque-Comia of the GMS Secretariat, Hir Samnang (Cambodia), Sengsavang Phandanouvong (Lao People's Democratic Republic), Phyo Kyaw Thu (Myanmar), Liu Zengjun (People's Republic of China), Pawat Tantrongjita (Thailand), and Pham Thanh Tung (Viet Nam). Cuong Minh Nguyen of the GMS Secretariat provided overall guidance and coordinated with GMS countries, while Cira Rudas and Rowena Sancio (GMS Secretariat) assisted in finalizing the reports. Concerned ministries and agencies in the GMS countries extended valuable cooperation and support in the conduct of the assessment.

All photos, except those on the cover, are by Phyo Kyaw Thu.

I. INTRODUCTION

The development of transport corridors as economic corridors has been at the center of the Greater Mekong Subregion (GMS) Program since the GMS countries adopted the economic corridor approach in 1998. Economic corridors are geographically defined areas that facilitate the national and transnational movement of people, goods, services, capital, and information. They are key instruments for promoting economic integration in the GMS. Along this line, the East–West Economic Corridor (EWEC), North–South Economic Corridor (NSEC), and Southern Economic Corridor (SEC) were designated as flagships of the GMS Program.

A review of the configuration of the economic corridors was conducted in 2016 to take into account the opening up of Myanmar and ensure that (i) there is a close match between corridor routes and trade flows, (ii) GMS capitals and major urban centers are connected to each other, and (iii) the corridors are linked with maritime gateways.

At the 21st GMS Ministerial Conference in Chiang Rai, Thailand on 30 November–1 December 2016, the GMS Ministers endorsed the recommended changes in the configuration of the economic corridors, which addressed the following gaps: (i) limited involvement of Lao People's Democratic Republic (Lao PDR) and Myanmar in EWEC and NSEC; (ii) absence of Yangon, Nay Pyi Taw, and Vientiane in any economic corridor; and (iii) omission of the principal cross-border trade routes among the People's Republic of China (PRC) and Myanmar, Myanmar and Thailand, and the Lao PDR, the PRC, and Thailand in the economic corridors.[1] Figure 1 shows the new configuration of the GMS economic corridors.

The adoption of a new configuration of the GMS economic corridors underscored the need to conduct an assessment of the state of development of the corridors to guide future investments and other interventions for their development. This report presents the findings of the assessment of the Myanmar component of the GMS economic corridors focusing on (i) the status and physical condition of transport infrastructure and cross-border facilities, with emphasis on road transport; (ii) cross-border transport and trade; and (iii) economic potential (special economic zones, tourist attractions, and investment opportunities along and around the economic corridors). The observations regarding the physical condition of the roads in the GMS economic corridors in Myanmar are based on the field survey conducted in June 2017.

[1] Asian Development Bank. 2018. *Review of Configuration of Greater Mekong Subregion Economic Corridors*. Manila. https://www.adb.org/documents/review-configuration-gms-corridors.

Figure 1: New Configuration of the Greater Mekong Subregion Economic Corridors

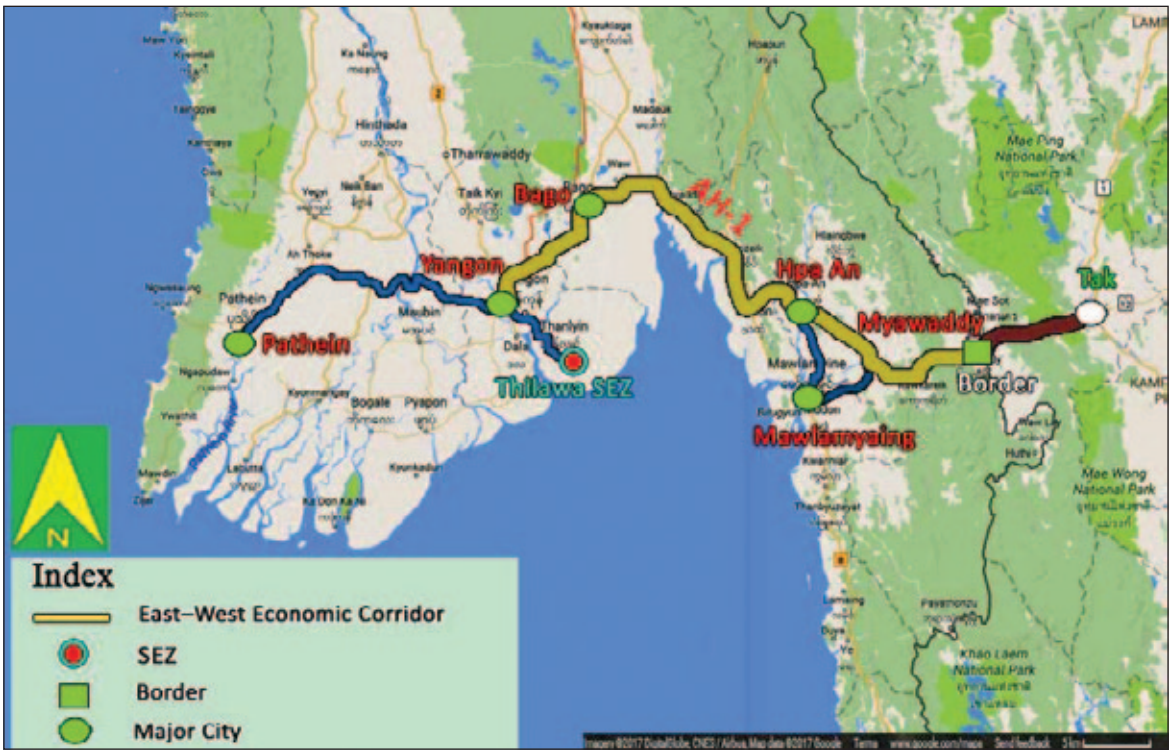
GMS = Greater Mekong Subregion, TSS = Transport Sector Strategy 2006–2015.
Source: ADB. 2018. *Review of Configuration of Greater Mekong Subregion Economic Corridors*. Manila. https://www.adb.org/documents/review-configuration-gms-corridors.

II. MYANMAR COMPONENT OF THE EAST–WEST, NORTH–SOUTH, AND SOUTHERN ECONOMIC CORRIDORS

A. East–West Economic Corridor

This corridor is a land route linking Da Nang in Viet Nam to Mawlamyine and Yangon–Thilawa in Myanmar, using the Myawaddy–Kawkareik–Eindu–Hpa-An–Thaton–Kyaikto–Payagi–Bago–Yangon–Thilawa route, with a possible extension to Pathein (Figure 2). The connection of Pathein to EWEC can be considered in the future because of Pathein's potential for the development of agriculture, forestry, and tourism. All critical bridges from Pathein to Yangon already exist. Table 1 presents basic information on the Myanmar component of EWEC, which include for each section, starting and end points, distances, roads traversed, number of lanes, and road class based on Asian Highway (AH) standards.[2]

Figure 2: Myanmar Component of the East–West Economic Corridor



AH-1 = Asian Highway-1, SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

[2] Primary (four or more lanes, control access); Class I (four or more lanes); Class II (two lanes); and Class III (two lanes). Pavement is asphalt or cement for Primary, Class I, and Class II, and double bituminous treatment for Class III.

Table 1: Basic Information on the Myanmar Component of East–West Economic Corridor

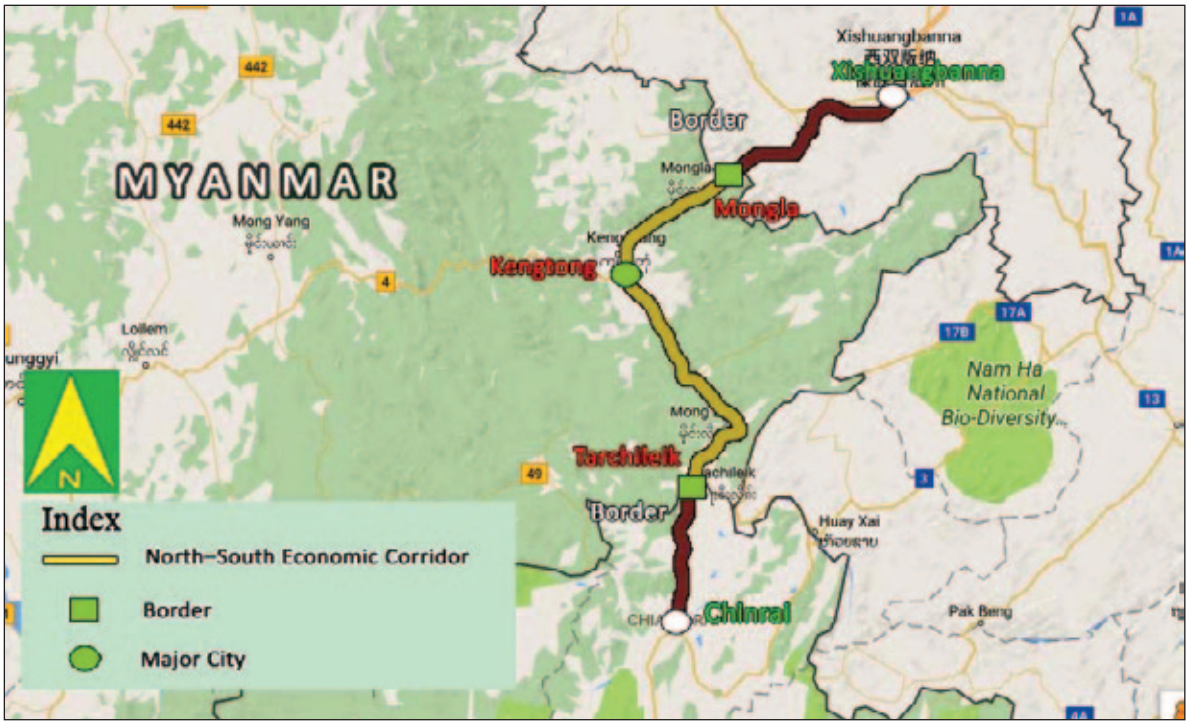
Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Yangon	Payagyi (Bago)	AH-1	97.6	4–6	I
Payagyi (Bago)	Thaton	AH-1	143.6	4	I
Thaton	Hpa-An	AH-1	50.0	2–4	II
Hpa-An	Kawkareik	AH-1	90.0	2–4	II–I
Kawkareik	Myawaddy	AH-1	62.5	4	I
Yangon	Myawaddy	Direct	446.5		

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

B. Kunming–Chiang Rai–Bangkok via the Lao People's Democratic Republic or Myanmar Subcorridor

NSEC-1 in Myanmar includes the Mongla–Kengtung–Tachileik route (Figure 3). This is a major trade route among Myanmar, the PRC, and Thailand. Cross-border trade between the PRC and Myanmar takes place at the Mongla border, and between Thailand and Myanmar, at the Tachileik border. Table 2 presents basic information on the Myanmar component of NSEC-1.

Figure 3: Mongla–Kengtung–Tachileik Route in North–South Economic Corridor-1



Source: ADB. GMS Economic Corridor Assessment Team.

Table 2: Basic Information on the Myanmar Component of North–South Economic Corridor-1

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Mongla	Kengtung	AH-2	90.8	2l	II
Kengtung	Tachileik	AH-3	153.0	2l	II
Total			**243.8**		

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

C. Kunming–Muse–Mandalay–Yangon–Thilawa Subcorridor

NSEC-5 (Table 3) is the main trade route between the PRC and Myanmar. Cross-border trade between the PRC and Myanmar at the Muse–Ruili border gate is the largest among all border gates in Myanmar (Figure 4). The volume of trade that crosses Muse from Ruili is around 11 times greater than the second largest, which is at the Mae Sot–Myawaddy border between Myanmar and Thailand. The Mandalay–Nay Pyi Taw–Yangon route is the main trade corridor within Myanmar.

Table 3: Basic Information on the Myanmar Component of North–South Economic Corridor-5

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Muse	Kukai	AH-14	96.6	2–4	III–I
Kukai	Thein Ni	AH-14	27.3	2–4	III–I
Thein Ni	Lashio	AH-14	51.1	2	II
Lashio	Kyauk Me	AH-14	105.8	2	II
Kyauk Me	Naungkhio	AH-14	48.7	2–4	II–I
Naungkhio	Pyin Oo Lwin	AH-14	37.2	2–4	II–I
Pyin Oo Lwin	Mandalay	AH-14	67.8	4	I
Mandalay	Meikhitilar	AH-1	134.4	4	I
Meikhtilar	Yamethin	AH-1	32.8	4	I
Yamethin	Nay Pyi Taw	AH-1	90.3	4	I
Nay Pyi Taw	Taunggoo	AH-1	37.9	4	I
Taunggoo	Bago	AH-1	172.8	4	I
Bago	Yangon	AH-1	64.3	4–6	I
Muse	Yangon	AH-14/ AH-1	967.0		
Yangon	Thilawa SEZ		27.8	2–4	II–I
Muse	Thilawa SEZ	Direct	994.8		

AH = Asian Highway, km = kilometer, SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 4: Muse–Mandalay–Nay Pyi Taw–Yangon Route in North–South Economic Corridor-5

km = kilometer, NSEC = North–South Economic Corridor, SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

D. Mandalay–Tamu Subcorridor

NSEC-6 links Mandalay to Tamu at the border with India, using the Mandalay–Kalewa–Tamu route via Monywa or Shwebo (Figure 5). It is part of the India–Myanmar–Thailand trilateral highway, which links India to Myanmar, Thailand, and the rest of the GMS. India is upgrading the Tamu–Kalewa–Kalemyo Road in Myanmar. Tables 4–6 present basic information on the alternative routes of the Myanmar component of NSEC-6.

Figure 5: Mandalay to Tamu Route

NSEC-6 = North–South Economic Corridor-6.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 4: Basic Information on the Myanmar Component of North–South Economic Corridor-6, Yargyi Road

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Mandalay	Monywa	AH-1	130.0	2–4	II–I
Monywa	Yar Gyi	AH-1	64.4	2–4	II–I
Yar Gyi	Lar Poh	AH-1	28.9	2	II
Lar Poh	Kalewa	AH-1	91.7	2	Below III
Kalewa	Kyigone	AH-1	27.9	2	II
Kyigone	Tamu	AH-1	121.5	2	II
Mandalay	Tamu	Direct	464.4		

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 5: Basic Information on the Myanmar Component of North–South Economic Corridor-6, Gangaw Road

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Mandalay	Monywa	AH-1	130.0	2–4	II–I
Monywa	Gangaw	AH-1	193.3	2–4	II–I
Gangaw	Kalay	AH-1	150.8	2	Below III
Kalay	Tamu	AH-1	131.4	2	II
Mandalay	Tamu	Direct	605.5		

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 6: Basic Information on the Myanmar Component of North–South Economic Corridor-6, Ye U Road

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Mandalay	Shwebo		112.6	2–4	II–I
Shwebo	Ye U		37.8	2	II
Ye U	Taze		20.9	2	II
Taze	Kalewa		148.8	2	II
Kalewa	Kyigone	AH-1	27.9	2	II
Kyigone	Tamu	AH-1	121.5	2	II
Mandalay	Tamu	Direct	469.5		

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

E. Dawei–Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau Subcorridor

The segment of SEC-1 connecting Dawei and Htee Khee in Myanmar to the Thailand border is an important route connecting Myanmar not only with Thailand, but also with Cambodia and Viet Nam (Figure 6). Therefore, it is essential to develop the roads along this route in Myanmar. Table 7 presents basic information on the Myanmar component of SEC-1.

Table 7: Basic Information on the Myanmar Component of Southern Economic Corridor-1

Starting Point	End Point	Route	Distance (km)	Traffic Lanes	Road Class
Htee Khee	Sinbyudaing	-	27.2	2	Below III
Sinbyudaing	Myitta	-	57.6	2	Below III
Myitta	Dawei	-	55.2	2	Below III
Htee Khee	**Dawei**	**direct**	**140.0**		

km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 6: Htee Khee to Dawei Road

SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

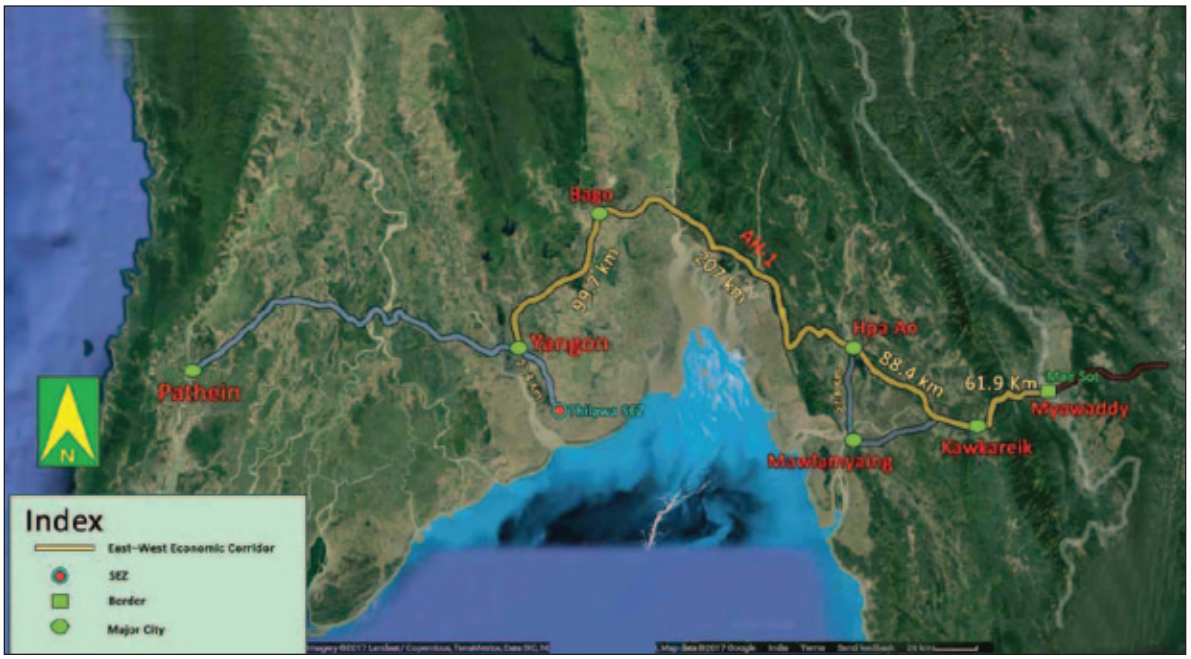
III. STATE OF ROAD TRANSPORT INFRASTRUCTURE IN THE MYANMAR COMPONENT OF EAST–WEST, NORTH–SOUTH, AND SOUTHERN ECONOMIC CORRIDORS

A. East–West Economic Corridor

Yangon–Myawaddy (426.5 km)

Starting from the Bayintnaung Warehouses in Mayangon Township in Yangon, the road leads to Shwepyithar–Insein–Hpawt Kan–Danyinkone. This will join the Pyay road at Khayaypin junction after which Htauk Kyant will be reached. After taking No. 3 road, there will be a junction with one-way heading to the Yangon–Mandalay union highway and the other to the Yangon–Nay Pyi Taw–Mandalay expressway. Trucks are not allowed on the expressway. Max Highway Co., Ltd. was granted management of the Yangon–Bago road section. The Yangon–Bago road will lead to the Bago–Payagyi junction at 60/5 mile. This junction is the intersection of Bawnatgyi–Zaungtu Forestry Road and Mawlamyine road, which is part of the Yangon–Nay Pyi Taw–Mandalay highway. From the junction onward, the road continues to Kyaikhto–Bilin–Thaton, where the road forks in two directions, one to Mawlamyine and the other to Hpa-An. Shwe Than Lwin Highway Co., Ltd. is responsible for that road section, and the Hpa-An route has to be taken to go to Myawady through the Eindu–Kawkareik road. The road section between Yangon and Myawaddy is surfaced with asphalt and in good condition (Figure 7). The majority of vehicles found on the road are 18-wheel and 22-wheel articulated trucks. Cars can go at the speed of 60 to 80 kilometers per hour (kph).

Figure 7: Yangon–Myawaddy Road Section, East–West Economic Corridor



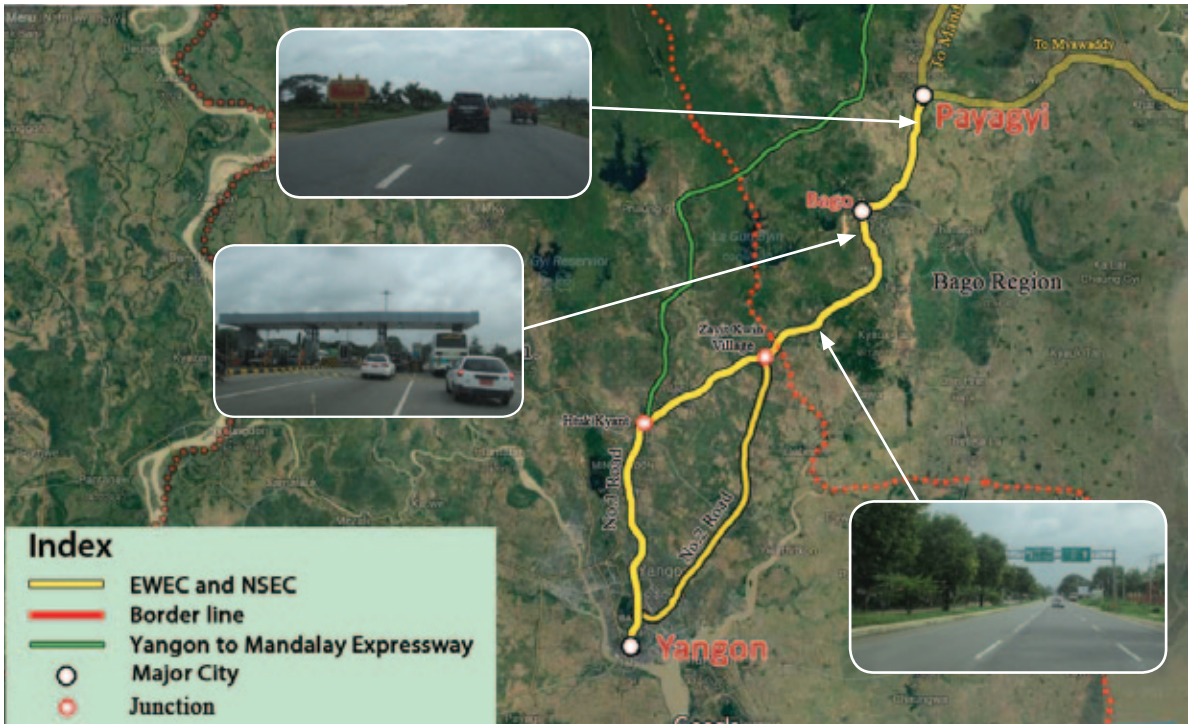
km = kilometer, SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

Section 1: Yangon–Payagyi (98 km)

Starting from Bayintnaung of Mayangone Township, the road passes through Shwepyithar, Insein, and Hpawtkan where the trucks go through the Weight Inspection Gate. The road leads to Khayaypin Junction and continues to Htauk Kyant where there is a side road leading to Yangon–Pyay Road (Figure 8). The heavy trucks go to No. 3 road passing Khayaypin junction. Max Highway Co. Ltd. constructed the Yangon–Bago highway or main road from 1/0 mile to 14/6 mile under a build–operate–transfer (BOT) scheme. The six-lane road from the exit point of Yangon, Junction of Htauk Kyant at 1/0 mile is paved and covered with asphalt. The road from Yangon to Bago is separated by an island decorated with flowers. The many cars in the Htauk–Kyant junction or intersection often cause traffic jams. Traffic at the Htauk Kyant junction is always heavy, as there is a street market there, and the area is busy with trucks loading cargo. The road then goes back to the junction where Yangon–Bago–Mandalay Union Highway and Yangon–Nay Pyi Taw–Mandalay expressway meet.

No. 3 Junction is at the 4/0 mile post after Htauk Kyant. Some light trucks go directly to Htauk Kyaunt, while express buses and trucks from Bago and Mandalay, and passenger cars use No. 3 road, which is a 12-foot wide asphalt road. The toll gate of Max Highway Co. Ltd. is set up at 4/2 mile. The road then heads toward a 100-foot concrete bridge at 8/0 mile, after passing Hlegu market. After another junction is reached, one road leads to No. 2 highway and another to a 12-foot long asphalt feeder road. Zayak-kwin junction is at 13/1 mile where a 12-foot long asphalt road is paved for the purpose of inspecting trucks. At the Hlegu area is Zayat-kwin junction where No. 2 road continues to Eastern and Southern Dagon Myo Thit. Trucks traveling back and forth to Yangon have to queue along the Zayat-kwin junction for inspection. No. 2 road is used mostly by heavy trucks, while the Yangon–Bago road section is used by passenger cars and articulated trucks. Yangon–Bago highway road

Figure 8: Yangon–Payagyi Road Section



NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

is a smooth asphalt road. Max Highway Co., Ltd. is responsible for the maintenance and upgrade of the section between 31/0 mile and 50/0 mile within Bago District, and another road section between Yangon and Bago (total of 30.6 km). The 32/6 mile post marks the end of Yangon Region and the start of Bago Region.

The road at the boundary of the Bago Region is a 72-foot wide asphalt road with minimum 4-foot shoulders. The road is surrounded by farmland, except at the entrance of villages. There is a rest area in Inntakaw town at mile 35/5, as well as restaurants, auto repair and service centers, and tire and tube service centers. At 36/4 mile, a feeder road leads to Inntakaw industrial zone, one km away. The route leads to Bago Tenth Mile Hill where the road is sloping with many turns, and ups and downs. The road then passes Tharyarkone Village and Bandarkone village where there are many pottery and glazed earthenware shops. At 44/2 mile, a two-way feeder lane heading toward Phaung-gyi and Tikekyi merges with the Yangon–Bago Highway. A toll gate, managed by Max Highway Company Limited is set up at 45/0 mile. There is a bypass road (Bago Bypass) after the toll gate, which is 18-feet wide and paved. Trucks use this bypass road to go around rather than go through Bago City.

According to the Department of Highways, Ministry of Construction, 11,300 vehicles, including trucks of all sizes, pass the gate on average every day (Table 8). This is based on the data collected by the Department of Highways on the number of vehicles crossing toll gates every day during the first week of each month. The distance from No. 3 Junction to Bago is 40 km, while that from Bago to Payagyi is 20 km. There are 22 concrete 24-foot long bridges between Bago and Payagyi.

Section 2: Payagyi–Thaton (144 km)

Mile post 59/4 is the start of Mawlamyine Road on the Yangon–Mandalay highway. There is a toll or weight inspection gate at the 60/4 mile post operated by Shwe Than Lwin Highway Co., which is responsible for a 90.7 km long road section (from Payagyi to Kyaikhto). The average number of vehicles going through the gate daily is 4,000 (Table 9). At mile post 60/7 mile, the

Table 8: Average Daily Number of Vehicles Passing through Htauk Kyant Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	624	1,632
Bus	101	598
Light truck or passenger car	519	1,715
Others (three-wheel motorcycle, farm truck, and trailer G)	1,849	3,580
Total	**3,093**	**7,525**

Source: Department of Highways, Ministry of Construction.

Table 9: Average Daily Number of Vehicles Passing through Payagyi Gate
(as of 7June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	671	810
Bus	485	589
Light truck or passenger car	1,150	1,392
Others (three-wheel motorcycle, farm truck, and trailer G)	1,661	2,027
Total	**3,967**	**4,818**

Source: Department of Highways, Ministry of Construction.

road passes an agro-industrial project implemented by Mudon Maung Maung Company on a 500-acre wide plot. The road section between Payagyi and Waw is 36-feet wide (Figure 9). The Waw City Development Committee manages another gate where wheel tax fees are collected at 70/0 mile. The road will reach a small bridge at the 70/2 mile post where it crosses the Yangon–Mawlamyine railway at 70/7 mile. The road section from the Payagyi toll gate is being widened to 24–48 feet. A side road runs to Daik-U from Waw, after which the road crosses the Yangon–Mawlamyine railway.

The road then heads toward the Sittaung Bridge Toll Gate and Weight Inspection Gate operated by Shwe Than Lwin Highway Co. (90.72 km from Phayargyi to Kyaikhto). Table 10 shows the number of vehicles passing the Sittaung Bridge daily. Sittaung Bridge is a steel girder bridge 2,392-feet long and 24-feet wide

Figure 9: Payagyi–Thaton Road Section

km = kilometer, EWEC = East–West Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 10: Average Daily Number of Vehicles Passing through Sittaung Bridge Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	671	816
Bus	525	601
Light truck or passenger car	1,250	1,431
Others (three-wheel motorcycle, farm truck, and trailer G)	1,736	2,122
Total	**4,182**	**4,970**

Source: Department of Highways, Ministry of Construction.

with a 60-ton capacity. Kyaikto is 24 km away from the Sittaung Bridge where there is a gate for collecting wheel tax fees. If the vehicles enter and exit the gate within 24 hours, the fees are collected only once. The intercity road of Kyaikto is 24-feet wide. There is a railway crossing near the exit to Kyaikto, after which is a side road heading to the famous Kyaikto Pagoda. Over a million visitors come to Kyaikto every year. The distance from Payagyi to Kyaikto is 74 km. The road runs to Beelin after Kyaikto, where there is a gate collecting wheel tax fees at the entrance. Shwe Than Lwin Co. operates a toll gate, and is responsible for the 115.5 km long Kyaikto–Thaton–Mawlamyine road section. The streets are very narrow in the inner part of Beelin town. Further on is Thaton.

Section 3: Thaton–Hpa-An (50 km)

The roads in Thaton City were widened to 48 feet, while the road from Thaton to Hpa-An is paved with the mile post set at zero. If the Hpa-An route is not taken, the road will lead to Mawlamyine, 60 km away from the junction. After passing Kyarpan Village, the road runs to the toll gate of Shwe Than Lwin Highway Co., which is responsible for a 42.2 km section between Thaton and Myaing-ka-lay. Donthami creek demarcates the area between Mon State and Kayin State (Figure 10). Donthami Bridge is 13 km away from Thaton and is 18-feet wide and 600-feet long with a capacity of 30 tons. The Durian port of Hpa-An will be reached after the Donthami Bridge. Shwe Than Lwin Co. is implementing the road expansion project along the Thaton–Hpa-An road section. After completion, the road width will be 36 feet from the current 24 feet. After passing cement factories, the road will reach the entry point of Hpa-An and then Thanlwin Bridge, a 2,252-foot long steel truss bridge with carrying capacity of 60 tons. The distance from that bridge to Hpa-An is 8 km. There are 58 bridges, which are less than 60-feet long, on the road section between Thaton and Hpa-An.

Section 4: Hpa-An–Myawaddy (152.5 km)

The gate at Thanlwin Bridge is supervised by a combined team comprising officials from customs, immigration, road transport, the administration department, and the police. The First Azure Co., Ltd. administers the wheel tax collection.Two roads radiate from the Thanlwin

Figure 10: Thaton–Hpa-An Road Section

km = kilometer, EWEC = East–West Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Bridge, one headed toward Hpa-An (8 km) and, the other, to Mawlamyine (50.9 km). At the road going to Hpa-An is a side road at 2/6 mile through which Hlaing Bwe` is reached. Kawkareik is 74.63 km distant from the junction at mile post 2/6. The road traverses Naunglone Village at 9/5 mile and Naunglone Bridge, which is 380-feet long with a capacity of 30 tons, after which Eindu is reached at 13/0 mile (Figure 11). First Azure Co. operates a toll gate at the entrance of Eindu, and is responsible for a 95.6 km long road section (road sections between Hpa-An and Eindu, and between Hpa-An and Mawlamyine). The number of vehicles passing through the Eindu Gate is shown in Table 11.

The Eindu–Kawkareik road section (107 km) is being upgraded with financial assistance from the Asian Development Bank (ADB). The Eindu–Kawkareik road section will be a 10-meter, two-lane Association of Southeast Asian Nations (ASEAN) Highway Class II standard, concrete, bituminous road. There will be 19 reinforced concrete bridges, 78 box culverts, and 14 pipe culverts along the road. The funding for this project consists of $100 million from ADB, $20 million from the ASEAN Infrastructure Fund, and $1.8 million from the Government of Myanmar (Figure 12). The project is expected to be completed by December 2019. Pyunghwa Engineering Consultant Ltd. representing the Myanmar Ministry of Construction, is supervising project implementation, while the China Road and Bridge Corporation is conducting the civil works with three to four subcontractors (see the photo below).

Table 11: Average Daily Number of Vehicles Passing through Eindu Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	184	176
Bus	52	181
Light truck or passenger car	347	495
Others (three-wheel motorcycle, farm truck, and trailer G)	600	808
Total	**1,183**	**1,660**

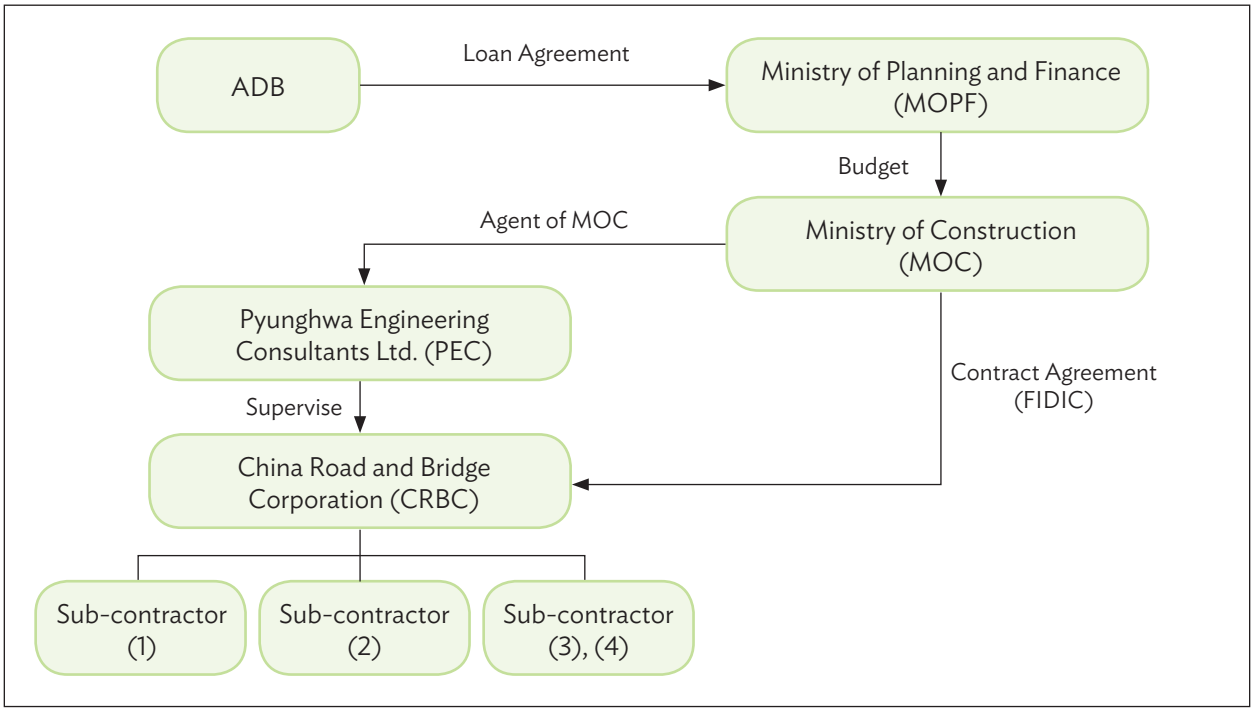
Source: Department of Highways, Ministry of Construction.

Office of China Road and Bridge Corporation for Upgrading the Eindu–Kawkareik Road Section. The corporation requires an on-site office because it works with three to four subcontractors for the project.

Figure 11: Hpa-An–Myawaddy Road Section

km = kilometer, EWEC = East–West Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 12: Eindu–Kawkareik Road Project Implementation Arrangements



ADB = Asian Development Bank, FIDIC = International Federation of Consulting Engineers.
Source: Ministry of Construction.

Eindu Village is where Myawaddy Road and Mawlamyine Road meet. As the upgrading of the Eindu–Kawkareik Road is still ongoing, there are many potholes along the road, which is only 12-feet wide. Kyarlay Village is at 38/4 mile and Gyine Village is at 63/3 mile, and the capacity of Gyine Bridge is only 25 tons; thus, vehicles weighing more than 25 tons have to use a pontoon bridge. There is a gate at Gyine Bridge for collecting wheel tax fees after which the road reaches a junction going in two directions. One heads toward Kyar Inn Seik Gyi, and the other toward Kawkareik, where there is another wheel tax collecting gate. After the entry gate of Kawkareik is passed, the road again heads in two destinations, one to Kawkareik downtown and the other to Myawaddy. The Kawkareik–Myawaddy road section was upgraded with funding from the Government of Thailand and constructed by Thailand's See Sang Co., Ltd. Classified as an ASEAN Class II, this road is considered the best in Myanmar (see the photo below).

The Kawkareik–Myawaddy road traverses the Dawna Mountain (3,717 feet). Despite the road being winding and sloping in many places, it takes just around 45 minutes to reach Myawaddy as the road is in good condition. The road goes through Thingan Nyi Naung, then Ywathit Village, Myawaddy Trade Zone, Me` Kanel, Phar Chaung and, finally, Myawaddy. The route from Mywaddy to Mae Sot in Thailand goes through No. 1 Thailand–Myanmar Friendship Bridge, which has a capacity of 13 tons. The vehicles from Thailand are allowed into Myanmar until the Myawaddy Trade Zone. The No. 2 Friendship Bridge, with a capacity of 60 tons, has been completed, but the approach roads for both countries are still under construction. This bridge will link Mae Sot and Myawaddy to allow heavy cargo trucks. The Government of Thailand is providing financial assistance for the construction of the bridge and the Traffic Change Over and Border Control Facilities at an estimated cost of baht B3.9 billion.

An average of 2,600 Thailand vehicles passed through Myawaddy Gate, and 4,100 Myanmar vehicles passed through Mae Sot Gate per month in 2016. However, Myanmar-licensed vehicles are mainly sedans, pickup

Kawkareik–Myawaddy road. Newly upgraded, this road is considered the best in Myanmar.

trucks, vans, or small passenger cars. Thailand cargo trucks are allowed up to Myawaddy Trade Zone for loading and unloading cargo, since there is no limitation or specification of Thailand-registered large vehicles (especially cargo trucks) by the Myanmar border authority. As Table 12 shows, there are no large vehicles entering Thailand from the Myanmar side, as Thailand's authorities do not allow trucks from Myanmar to go through Thailand's border. The number of large vehicles registered in Thailand entering Tachileik (the other Myanmar–Thailand border) has been shrinking, but that on the Myawaddy side has been booming, with the number more than doubling between 2013 and 2014. In March 2017, an average of 1,079 large vehicles entering Myanmar was recorded.

Although there is no rule on passenger or cargo vehicles, if a tour caravan wants to come to or pass through Myanmar, the tour operator needs to apply for a permit at the Ministry of Hotels and Tourism. If the application is successful, the Ministry of Transport and Communication issues a temporary border pass upon payment of MK50,000 per vehicle and MK20,000 for a driver's license, which are provided to tour buses and caravans. The tour operators need to return the border pass upon completion of their tour in Myanmar. If Myanmar will later sign bilateral or trilateral agreements with other countries that cover this area, the tour operators need not apply for a license or make a payment to the Ministry of Transport and Communication to cross the border.

Table 12: Number of Vehicles Passing through the Myanmar–Thailand Border, Myawaddy–Mae Sot

Year	Registered in Myanmar		Registered in Thailand	
	No. of Small Vehicles	No. of Large Vehicles	No. of Small Vehicles	No. of Large Vehicles
2013	31,554	0	7,342	13,434
2014	49,443	0	4,335	25,684

Source: Road Transport Administration Department.

Second Myanmar–Thailand Friendship Bridge. The bridge was completed in 2017 but has yet to open in 2018. Myanmar and Thailand are developing border gate infrastructure to facilitate export and importation of goods.

B. Kunming–Chiang Rai–Bangkok via Lao People's Democratic Republic or Myanmar Subcorridor

Mongla–Kengtung–Tachileik

The Myanmar component of NSEC-1 includes two border crossings: one with the PRC at Mongla and another with Thailand at Tachileik. Kengtung was the former capital of Eastern Shan State. Myanmar's trade with the PRC is conducted through the Kyaing Ton–Mong La Road. The Kengtung–Mongla Road is 90.8 km long with a road width of 12 feet (Figure 13). This road is not in good condition, partly due to security problems in the area. Tachileik is in the Myanmar border with Thailand across Mae Sai. It is part of the Golden Triangle area, which is a popular tourist destination, a big market in the Eastern Shan State, and has the third largest border trade in Myanmar. The Kengtung–Tachileik Road is 24-feet wide with asphalt surface and is in good condition.

C. Kunming–Muse–Mandalay–Yangon–Thilawa Subcorridor

Yangon–Mandalay–Muse

Section 1: Yangon–Bago Route (51.1 km)

This road section in NSEC-5 is the same as the Yangon–Myawaddy Road in the Yangon–Payagyi section above (Figure 14).

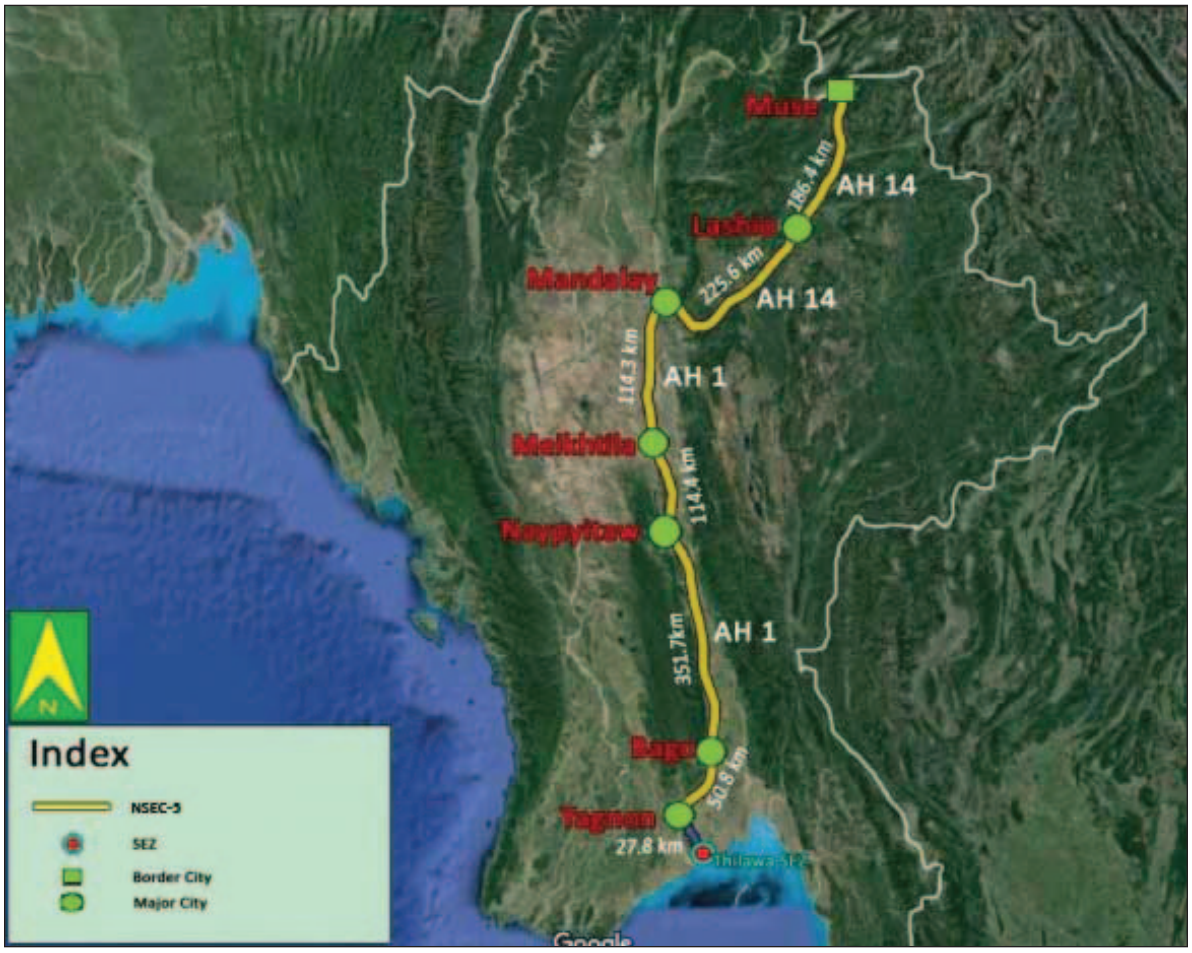
Section 2: Bago–Taungoo Route (105 km)

The toll gate managed by Max Highway Co. Ltd. is at the 45/0 mile post, beyond which is the Bago Bypass Road paved with asphalt at a width of 18 feet. Trucks use this bypass road mainly to avoid going through Bago City. The Bago Bypass Road is used mainly by heavy cargo trucks. Thus, this road is frequently damaged, and some parts are under repair. Max Highway Co., Ltd. operates the 30.6 km long road, which starts at mile post 31/0 and ends at 50/0. A total of 11,300 vehicles, including 6- to 18-wheel trucks and

Figure 13: Mongla–Kengtung–Tachileik Road Section

AH = Asian Highway, km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 14: Yangon–Mandalay–Muse Road Section



AH = Asian Highway, km = kilometer, NSEC = North–South Economic Corridor, SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

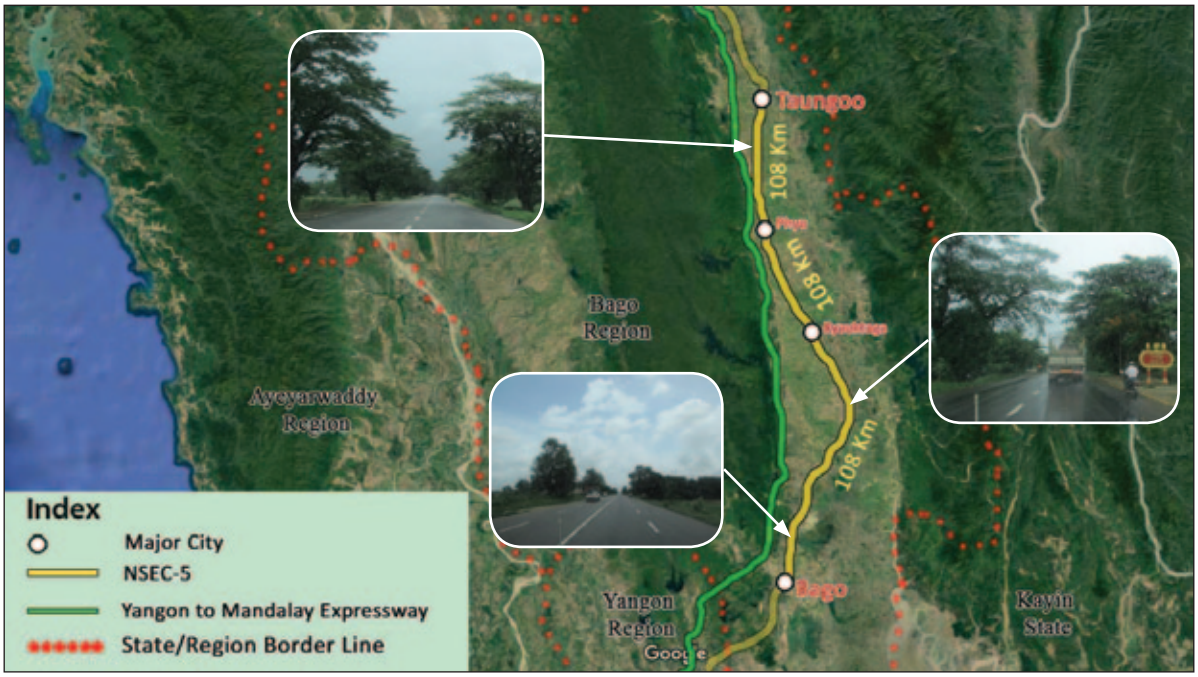
22-wheel articulated trucks were observed to have passed through the Max Highway (Bago) toll gate on 7 May 2017. Shwe Thanlwin Highway Company undertook the construction and maintenance of the 77.2 km long road section, that starts at 50/0 mile and ends at 98/0 mile. The width of the road in this section is 48 feet, except for the part between the 54/0 and 60/4 mile posts, which was widened to 36 feet. The Bago–Payagyi junction, which is the intersection connecting to the Bawnakgyi–Zaungtu Thittaw Road and Malamyine Road, is at the 60/5 mile post.

The Shwe Than Lwin Highway Co. operates another toll gate at mile post 66/6 where the road width is 36 feet. The width of the road section between 66/6 mile and 70/0 mile (Daik-U) is 24 feet; preparation for road widening was observed during the site visit. Daik-U–Sittaung Road goes through the town of Daik-U at the 85/4 mile. The road section between Daik-U and Pyun Tan Sar is 36-feet wide, with asphalt surface and in good condition. The road then heads toward Nyaunglaypin at the exit of which is a toll gate managed by High Star Company, which is responsible for a 50.3 km long road section from 98/0 mile to 129/1 mile. After Nyaunglaypin, the road heads north to Painzalote, situated at 118/0 mile. From that point to 129/0 mile (Kyauk Ta Gar), the roads were widened from 24 feet to 36 feet with asphalt surface. The road then runs to Kyauk Gyi at 145/0 mile. The road section between Paenwekone and Kyauk Gyi is 12-feet wide

and covered with asphalt. From there, the road leads to Kanyuntkwin where the road is 36-feet wide, with asphalt surface and in good condition. Road widening projects from the current 24 to 36 feet along the Kanyuntkwin–Phyu–Nyaungpinthar road section were observed. Although the road sections around the entrance and exit of each city and town are 48-feet wide, the intercity roads are normally 36-feet wide.

After Nyaungpinthar, the next milestone is Phyu at the 136/4 mile post, which is a busy rest area for trucks and passenger cars (Figure 15). Beyond that is Zayar Wadi City at 140/4 mile, followed by a 77.2 km stretch managed by Kanbawza Pathfinder Industries Ltd. under the BOT scheme. Further up this route is Kywe`Pwe` at 151/4 mile, where the road is badly damaged. The road section between Phyu and Oak Twin, as well as

Figure 15: Bago–Taungoo Road Section



km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 13: Average Daily Number of Vehicles Passing through Bawnutgyi Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	724	1,232
Bus	98	128
Light truck or passenger car	612	1,215
Others (three-wheel motorcycle, farm truck, and trailer G)	1,749	2,580
Total	**3,183**	**5,155**

Source: Department of Highways, Ministry of Construction.

the areas around the entrance and exit of Oak Twin, are being widened from 24 to 36 feet. The Yangon–Taungoo–Mandalay route traverses the Bago Region, where there are altogether four bridges with a length of above 50 feet, four bridges longer than 100 feet, and 61 bridges shorter than 50 feet along the route.

Section 3: Taungoo–Nay Pyi Taw Road Section (194.7 km)

The road going up to Taungoo is in good condition (Figure 16). The same is true for the road from Taungoo to Yaetarshay at 185/0 mile. Up to Swa, the road was widened by 4 feet on each side with concrete, but after Swa, the widened portions are covered with soil. The road runs to Thargara at 197/5 mile after passing through a toll gate operated by Oriental Highway Co., Ltd. From Thargara, one road heads toward Aunglan and the other to Nay Pyi Taw. The road section between Thargara and Myohla–Yayni at 217/2 mile (start of Mandalay Region) was widened to 36 feet, but only 24 feet is covered with asphalt. The road section between Yayni and Tharwuthti–Le`way at 232/6 mile is being widened, but in the meantime, the entry and exit areas are badly damaged. After Le`way, the road is 36-feet wide and covered with asphalt. Nay Pyi Taw is reached at the 243/0 mile post. There is a bypass road outside Nay Pyi Taw, which is 36-feet wide and in good condition.

Section 4: Nay Pyi Taw–Yamethin Road Section (67.6 km)

The Oriental Highway Co. manages a toll gate at the 248/0 mile post , and is responsible for the 67.6 km long road section between Nay Pyi Taw and Yamethin, and the 5.6 km long bypass road around Nay Pyi Taw (Figure 17). The total width of this road is 36 feet, of which 24 feet is covered with asphalt. A new four-lane asphalt road running along a flat region was opened in July 2017. The road leads to Yezin, and then another toll gate managed by the Oriental Highway Co. in

Figure 16: Taungoo–Nay Pyi Taw Road Section

km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Tetkone at 278/4 mile. An average of 4,600 vehicles passed this toll gate daily, of which around 2,000 vehicles were 6- to 22-wheeler trucks (Table 15). The Oriental Highway Co. is expanding the four-lane road with asphalt concrete (AC) cover. Additional bridges are also being constructed along this road.

Table 14: Average Daily Number of Vehicles Passing through Taungoo Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	710	1,432
Bus	112	132
Light truck or passenger car	818	1,225
Others (three-wheel motorcycle, farm truck, and trailer G)	1,549	2,680
Total	**3,189**	**5,469**

Source: Department of Highways, Ministry of Construction.

Figure 17: Nay Pyi Taw–Yamethin Road Section

km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 15: Average Daily Number of Vehicles Passing through Tetkone Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,349	1,338
Bus	323	304
Light truck and passenger car	177	137
Others (three-wheel motorcycle, farm truck, and trailer G)	404	410
Total	**2,253**	**2,189**

Source: Department of Highways, Ministry of Construction.

New four-lane road along Nay Pyi Taw–Yamethin road section. Oriental Highway Co. constructed the road by build–operate–transfer; it was opened on 1 July 2017.

Section 5: Yamethin–Meikhtila Road Section (76.8 km)

Yuzana Highway Co., Ltd. is responsible for the management of the Yamethin–Meikhtila road section, which is 61.2 km long (Figure 18). The road between mile post 290/0 and 296/2 mile is 24-feet wide and covered with asphalt. From mile post 296/0 to 300/0, the road was widened to 48 feet. Yuzana Highway Co. manages a toll gate at mile post 296/2. Around 4,100 vehicles go through this gate daily (Table 16). From Yamethin, the road splits in two destinations, one to Myo Hla, which is 12.9 km from Yamethin; and the other to Shwe Myin Tin, which is 9.7 km from Yamethin. The Pyawbwe–Nat Mauk road section starts at 302/0 mile. From there, the width of the road varies from 24 to 48 feet. Meikhtila district starts at the 329/0 mile post, where the road is of four lanes and asphalt surface. The Meikhtila bypass road at 330/4 mile is 18-feet wide with asphalt surface. All trucks use this bypass road.

Figure 18: Yamethin–Meikhtila Road Section

km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 16: Average Daily Number of Vehicles Passing through Yamethin Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,401	1,383
Bus	326	324
Light truck or passenger car	188	153
Others (three-wheel motorcycle, farm truck, and trailer G)	423	415
Total	**2,338**	**2,275**

Source: Department of Highways, Ministry of Construction.

New four-lane road along Yamethin–Meikhtila road section. Yuzana Co. constructed the road by build–operate–transfer.

Section 6: Meikhtila–Mandalay Road Section (114.26 km)

The Meikhtila–Mandalay road section, managed by Thaw Tar Win Co., Ltd. under a BOT scheme, has a toll gate, Thapyay Wa, in Thaw Tar Win at 349/4 mile (Figure 19). The road from Meikhtila to Won Twin is of asphalt cover and 48-feet wide. The road traverses Meikhtila, Won Twin, and Kume`; Han Myint Moh at 385/0 mile, and Kyauk Se` at 394/0 mile, where construction of a bypass road was planned to start in late 2017. From there, the road runs to Sinkkai at 412/4 mile where the Myo Thar Gone toll gate is operating, and then Myit Nge` at 422/0 mile, where traffic volume is high. There are 1,696 trucks passing through the toll gate every day heading north and 1,623 trucks heading south. The corresponding number of passenger cars going through the gate is around 9,600 daily. Six bridges with a length of 180 feet and above are on this route.

Figure 19: Meikhtila–Mandalay Road Section

km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 17: Average Daily Number of Vehicles Passing through Thapay Wa Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,849	1,838
Bus	323	304
Light truck or passenger car	277	237
Others (three-wheel motorcycle, farm truck, and trailer G)	404	410
Total	**2,853**	**2,789**

Source: Department of Highways, Ministry of Construction.

Mandalay–Muse Road Condition (412 km)

Section 7: Mandalay–Pyin Oo Lwin Route (67.2 km)

There are two routes from Mandalay to Pyin Oo Lwin (Figure 20). One is the former route that links Mandalay City and Pyin Oo Lwin, while the other is the link from the bypass at Htone Bo. Some parts of the road are dual carriageways, while other parts are one way. Oriental Highway Co. manages the 38.6 km long road section from the 8/0 mile post to 32/0 mile post under the BOT scheme. The road is 24-feet wide and in good condition. Oriental Highway Co. also operates the toll and weight inspection gate, where the regional government inspects trucks.

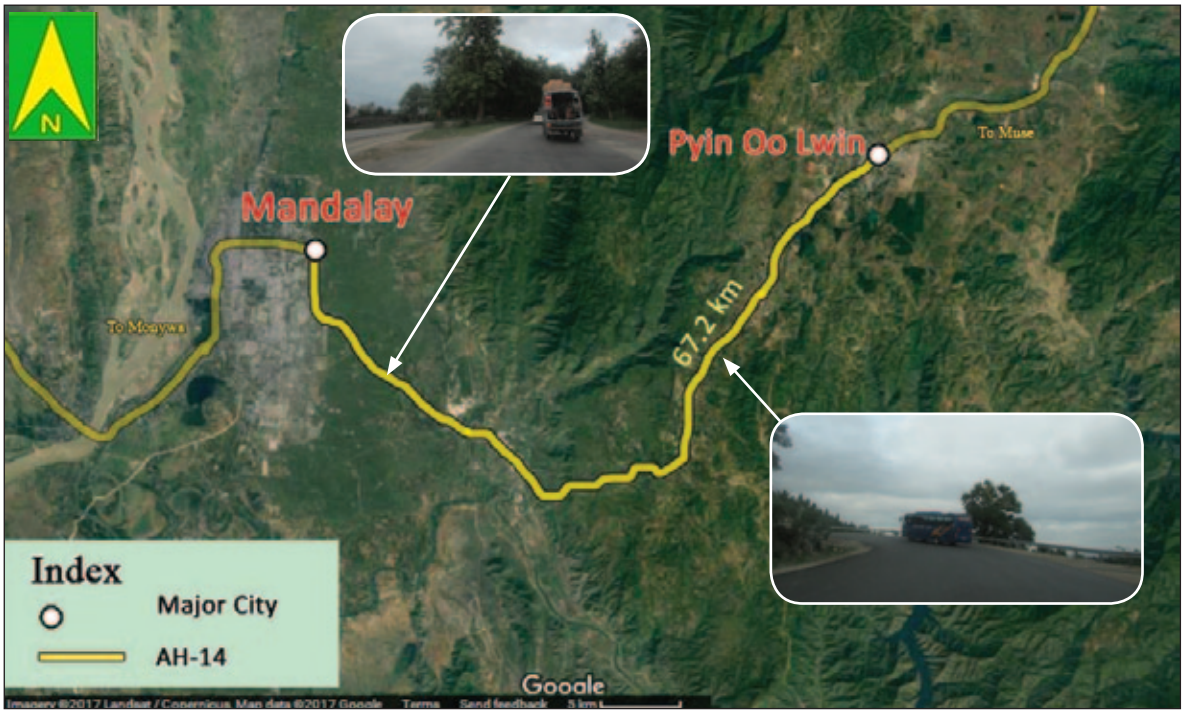
The road leads to Pyin Sar Village, the site of the largest information technology center of Myanmar, Yatanarpon Teleport, and then reaches the highest hill at the 27th mile post. The road at that point is dual carriageway. The road slopes down at the 28th mile and continues until it reaches the A-Ni-Sakhan, through Thone Taung Village and Phyar Chan Village where the topography is flat. The road starts going up again at the 38th mile (Doe Kwin Village), until it reaches Pyin Oo Lwin province at the 42nd mile, located 3,300 feet above sea level. Over 6,500 vehicles of different types pass the 16th mile toll gate every day (Table 18). The Pyin Oo Lwin Bypass Road for cargo trucks starts near A-Ni-Sakhan and meets the old road at the 42nd mile (Figure 21).

Table 18: Average Daily Number of Vehicles Passing through the 16th Mile Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,569	1,486
Bus	332	374
Light truck or passenger car	492	590
Others (three-wheel motorcycle, farm truck, and trailer G)	880	921
Total	**3,273**	**3,371**

Source: Department of Highways, Ministry of Construction.

Figure 20: Mandalay–Pyin Oo Lwin Road Section



AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Toll gate or weight inspection gate, Mandalay–Muse Road. Oriental Highway Co. operates the toll and weight inspection gate, where the regional government inspects trucks.

Figure 21: Pyin Oo Lwin Bypass Road Built and Upgraded by Oriental Highway Company

Source: ADB. GMS Economic Corridor Assessment Team.

Section 8: Pyin Oo Lwin–Lashio Route (158.4 km)

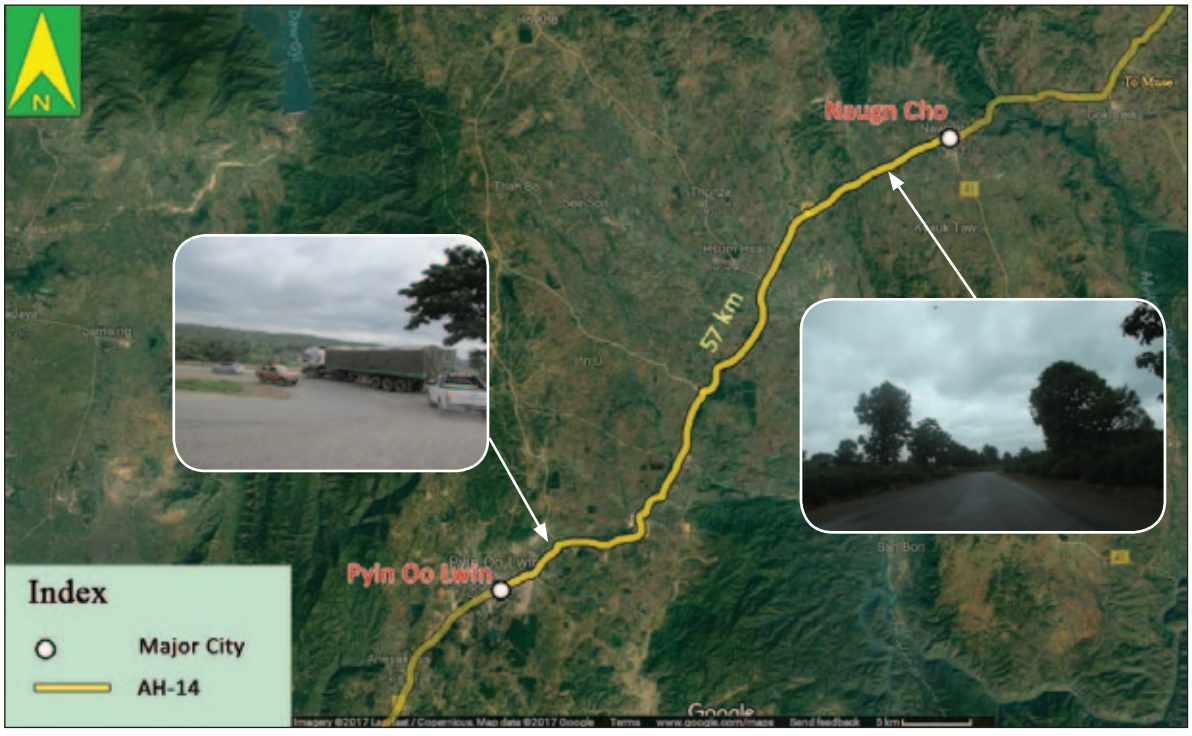
After exiting Pyin Oo Lwin, Oriental Highway Co. operates a toll gate and manages a 37.01 km section from 56/0 mile to 79/0 mile. The road, which starts sloping downward from the 49th mile, is 24-feet wide, enough for two cars to navigate safely. The road is in good condition. At the 55th mile, there is a big turn in the road, formally named Myaing Gyi Turn or considered by drivers as a "turn of danger." At mile post 52/4 is a 20-foot wide bridge, after which another big turn comes up at the 54th mile post. The 55th mile post marks the end of the Mandalay Region and start

Table 19: Average Daily Number of Vehicles Passing through the Lashio Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,339	1,351
Bus	113	104
Light truck or passenger car	252	257
Others (three-wheel motorcycle, farm truck, and trailer G)	875	876
Total	**2,579**	**2,588**

Source: Department of Highways, Ministry of Construction.

Figure 22: Pyin Oo Lwin–Naung Cho Road Section



AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

of Naung Cho Township of Shan State (Figure 22). From this point onward, the road keeps going downward. Oriental Highway Co. manages a toll gate, the Bank Bwe Gate, at the 60th mile post. The road then intersects the railway line at mile posts 69/5 and 71/1. Naung Cho is 2,787 feet above sea level and is not as high as Pyin Oo Lwin.

Naung Cho–Kyauk Me Road Section (35.2 km)

After the intersection of the road with the railway at the exit point of Naung Cho at the 78/6 mile post, Oriental Highway Co. operates a toll gate responsible for a 35.4 km section. After the gate, the road spirals downward until it reaches the Gote Twin Bridge at the 84th mile post. This is a dangerous route due to the double turns on the road. To get to the Gote Twin Bridge, it is necessary to drive downward from 2,255 feet to 1,502 feet or for over 700 feet. After the bridge, the road spirals upward again. There are 30 turns in the area, with some double and triple turns required, especially around the 85th mile post. The hilly area starts at the 89th mile post. Between the 93rd and 95th mile posts, the road is generally straight and flat that even trucks can go at high speed. Kyauk Me is at 2,489 feet above sea level on the left side of Mandalay–Lashio highway (Figure 23). On average, 2,389 vehicles pass through the Kyaukme Road Toll Gate every day (Table 20).

Table 20: Average Daily Number of Vehicles Passing through the Kyaukme Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,298	526
Bus	113	104
Light truck or passenger car	352	287
Others (three-wheel motorcycle, farm truck, and trailer G)	907	868
Total	**2,670**	**1,785**

Source: Department of Highways, Ministry of Construction.

Gote Twin Zing Zaung Road (Naung Cho to Kyauk Me). This is a dangerous route: after the Gote Twin Bridge, there are 30 turns in the area, with some double and triple turns required.

Figure 23: Naung Cho–Kyaukme Road Section

AH = Asian Highway.
Source: ADB. GMS Economic Corridor Assessment Team.

Kyauk Me–Lashio Road Section (75.2 km)

Oriental Highway Co. operates a toll gate after Kyauk Me under a BOT scheme. The company is responsible for 35.4 km of this road section. The road slopes downward after the toll gate. The road section around the 112th mile post has many turns, but is smooth. The road intersects the railway line at the 121st mile post, with the railway running on a bridge over the road. Trucks loaded with a high stack of cargo have to take great care at this point. At mile post 122/3, there is a 180-foot long concrete bridge called "Kyin Li."

The road heads toward Baw Gyo Village where the road is on level ground and wide. Thereafter, it leads to Hsipaw where the 569-foot long Hsipaw Bridge on the Dotehtawaddy River with a capacity of 75 tons has to be crossed (Figure 24). From there, the road passes the "Tone Bar" hill where the drive is steep and long. After that, the road is generally straight with slight slopes every now and then. It reaches the "Sint Inn" Bridge at mile post 149/5, which marks the border between Hsipaw and Lashio. The road then passes Naung Pon Village and the Khay Nin Toll Gate of Oriental Highway Co., which manages a 40.2 km road section between Hsipaw at 147/0 mile and Lashio at 172/0 mile. After the toll gate, the road is straight and road surface is smooth. Vehicles use the bypass road around Lashio at mile post 169/0. Over 2,610 vehicles pass Khay Nin Toll Gate every day (Table 21).

Table 21: Average Daily Number of Vehicles Passing through the Khay Nin Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,298	520
Bus	113	104
Light truck and passenger car	272	297
Others (three-wheel motorcycle, farm truck, and trailer G)	835	826
Total	**2,518**	**1,747**

Source: Department of Highways, Ministry of Construction.

Figure 24: Kyaukme–Lashio Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Section 9: Lasio–Muse Route (186.38 km)

Lashio–Hsenwi (Theinni) Road Section (46.7 km)

The Lashio Bypass Road is a 24.9 km long tarred road, with a width of 36 feet. Oriental Highway Co. manages a toll gate at the 179th mile post. From the 183rd mile post, the road goes uphill with many twists and turns, continuing to Namp Hu Village until the road runs downward from the 186th mile post. The bridge at mile post 190/7 marks the border between Lashio and Hsenwi. The road then goes through the Yay Pu Inspection Gate administered by the Border Trade Department at the 199th mile post. Only selected vehicles are inspected. After that, the road heads toward Hsenwi. The road between Lashio and Hsenwi is mostly flat with a few ups and downs at points (Figure 25). Thus, trucks can drive at a relatively high speed. Hsenwi is 1,997 feet above sea level.

After exiting Hsenwi (Theinni), the road goes through a toll gate managed of Oriental Highway Co. for the 40.2 km long Hsenwi (Theinni)–Kutkai Road. It goes uphill from there with cliffs on both sides. It was learned during the site visit that retaining walls and drainage systems were being developed along this route. Because the road has many curves and turns, vehicles have to go uphill slowly. Heavy trucks go through this road at only 10 miles per hour. The entry point of Kukai is reached at the 209/5 mile post, after which another climb starts at the Yin Kwe Mountain at the 212 mile post. The road then reaches the Loisamsays Mountain at an altitude of 4,250 before arriving at Kukai town at 4,431 feet above sea level. Over 3,111 vehicles pass through the Kutkai Toll Gate every day (Table 22).

After Kutkai, there is a toll gate for managing the 42.2 km long road section between Kutkai and Muse. From the toll gate, the road goes downward again with many twists and turns, including a three-point turn at the 226th mile post. The road surface is rough due to damage by a mountain torrent. The road then runs to Namp Kook Village where the Oriental Highway Co. is upgrading the road section between the 112 and 228/4 mile posts. Poor road conditions are encountered again at mile post 231/1 due to mountain torrents, before reaching Maung Phone Mountain which, at 5,066 feet above sea level, is the highest point in the Kutkai–Muse road section. A dangerous downhill drive starts from there, especially after Man Le` Village. The road then crosses the 180-foot Namp Khaing Bridge, and heads toward Namp Phat Kar and Namp Khan. The road reaches the Muse border at the 269/4 mark after an uphill climb from the 250th mile. There are new bridges being constructed just before this point. The road in this area is generally flat. Oriental Highway Co. operates a toll gate at the 275th mile to manage the 42 km long Namp Phat Ka–Mong Yu road section. The road goes through the 105 mile border trade zone where the road is rough due to heavy trucks' high usage. At the 280th mile, the same company operates another toll gate to manage the 16.1 km long Mai Yu–Muse road section.

Table 22: Average Daily Number of Vehicles Passing through the Kukai Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,298	520
Bus	113	104
Light truck or passenger car	252	257
Others (three-wheel motorcycle, farm truck, and trailer G)	875	876
Total	**2,538**	**1,757**

Source: Department of Highways, Ministry of Construction.

Except in a few places where the roads are rough, the roads along the Mandalay–Muse section are wide and in good condition (Figure 26). Apart from segments with heavy traffic, the remaining parts are convenient for heavy trucks to go through. Some projects for upgrading and widening are ongoing, the completion of which will make the Mandalay–Muse road an international standard highway. Over 3,374 vehicles pass through the Mai Hu–Muse Toll Gate every day (Table 23).

Figure 25: Lashio–Hsenwi (Theinni) Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 23: Average Daily Number of Vehicles Passing through the Muse Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	1,298	520
Bus	113	104
Light truck or passenger car	252	257
Others (three-wheel motorcycle, farm truck, and trailer G)	875	876
Total	**2,538**	**1,757**

Source: Department of Highways, Ministry of Construction.

Myanmar and the PRC have not signed a bilateral agreement on transporting goods and people across the Myanmar–PRC border. Nevertheless, PRC trucks and other vehicles can come into Muse up to the 105-mile Muse Trade Zone, which is 7 miles in Myanmar's territory. Myanmar trucks are also allowed to go into the PRC to unload their goods or to load PRC exports to Myanmar at the duty-free zone in Jiagao.

Table 24 shows the number of vehicles crossing the Myanmar–PRC border per month in 2013 and 2014. Besides Muse, the Ministry of Commerce, Immigration Department, and Customs Department work at other Myanmar–PRC border posts, such as Chin Shwe Haw, Lwejel, and Kanbikete. However, there is no official or exact figures on the number of vehicles crossing the Myanmar and PRC borders through those other posts.

Figure 26: Hsenwi (Theinni)–Muse Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 24: Total Number of Vehicles per Month Passing through Myanmar–People's Republic of China Border in 2013 and 2014 (Muse–Jiegao)

Year	Manwein Gate				Sin Phyu Gate (Passenger Cars Only)			
	Registered in Myanmar		Registered in the PRC		Registered in Myanmar		Registered in the PRC	
	No. of Small Vehicles	No. of Large Vehicles	No. of Small Vehicles	No. of Large Vehicles	No. of Small Vehicles	No. of Large Vehicles	No. of Small Vehicles	No. of Large Vehicles
2013	8,247	68,906	2,487	6,406	27,470	0	16,716	456
2014	11,352	82,428	3,020	6,759	19,922	0	13,483	403

PRC = People's Republic of China.
Source: Road Transport Administration Department.

D. Mandalay–Tamu Subcorridor

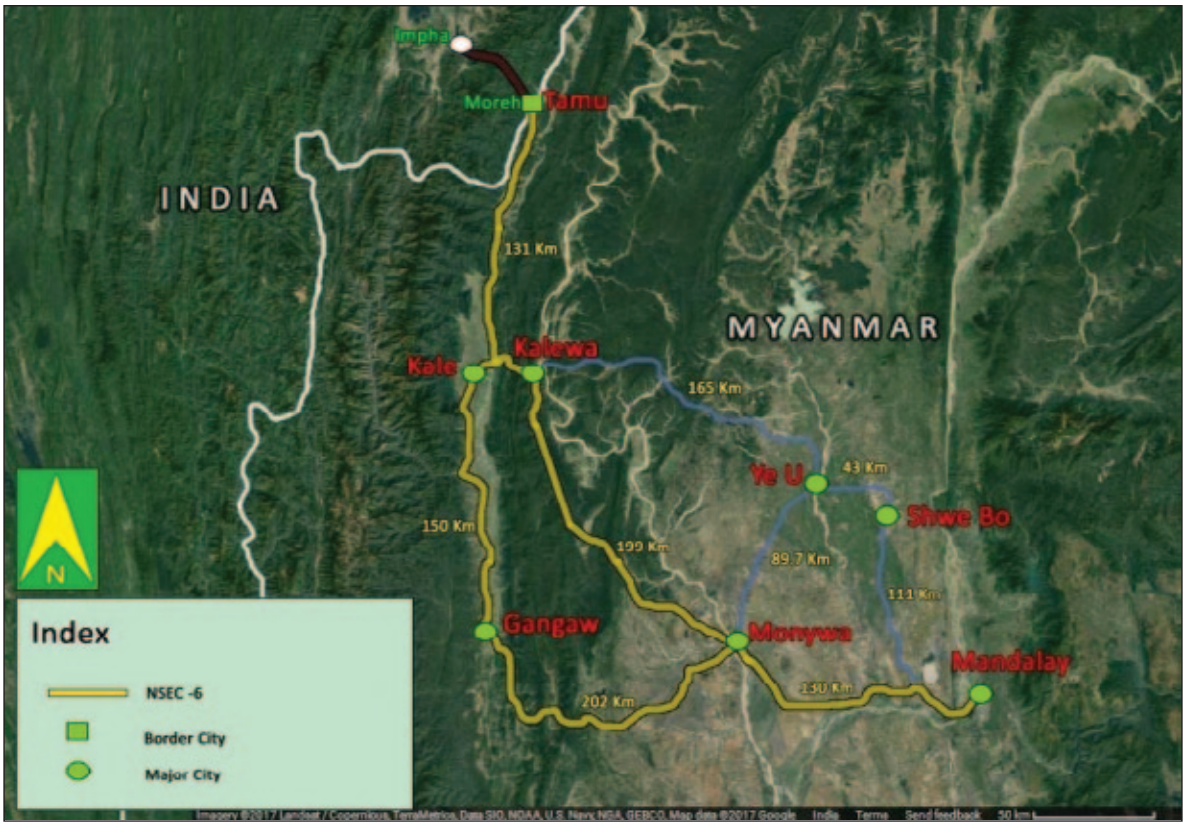
There are three alternative routes from Mandalay to Tamu in NSEC-6: (i) Mandalay–Monywa–Palae–Gantgaw–Kalay–Tamu, (ii) Mandalay–MonywavYar Gyi–Lar Poh–Kalewa–Kalay–Tamu, and (iii) Mandalay–Ye U–Kalewa–Kalay–Tamu (Figure 27).

Section 1: Mandalay–Monywa Road Section (115.5 km)

The highway linking Mandalay and Monywa, which is 115.5 km long, starts at the Ayeyarwady Bridge crossing, the Yatanarpon Bridge (Figure 28). This 3,694-foot long bridge constructed in 2008 is a steel-truss type bridge. It is a four-lane bridge with 5-foot wide pedestrian lanes on each side. In fiscal year 2016–2017, over 12,000 vehicles passed through the bridge per day. An overhead railway bridge is 1 mile from that bridge, after which the road leads to Sagaing industrial zone and Monywa Feeder Road. The Sagaing–Monywa road starts at the 12/0 mile post. Shwe Taung Development Co. upgraded the Sagaing–Monywa–Shwe Bo road section. It is a two-lane asphalt road with a width of 24 feet. There is a toll gate (Kantalu Toll Gate) after Sagaing at the 22/7 mile post. Based on the reported data, over 7,000 vehicles pass through this gate every day. The road is 48-feet wide with four lanes.

Further on, the road heads in two directions: Monywa and Shwe Bo. The road to Monywa is straight and generally smooth. There is another toll gate near Nyaung Pin Win Bridge at the 38/4 mile post, where 3,500 vehicles are recorded to pass through daily. The road then goes through a 600-foot long concrete

Figure 27: Mandalay–Tamu Road Section in North–South Economic Corridor-6



km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

bridge that crosses the Mu River, after which is the Myin Mu Toll Gate where 5,000 vehicles go through daily. The Sagaing–Monywa highway then passes Myin Mu by using the bypass road. The road section between the 52nd and 68th mile posts were widened from 24 feet to 32 feet. Around the Chaung-U area, the 18 km long road section is being surfaced with another layer. After Chaung-U is a toll gate at the entrance of Monywa, where around 3,500 vehicles pass through every day. The Mandalay–Monywa road is wide and smooth, and heavy trucks can pass conveniently on it. It will further improve after completion of the ongoing upgrading and widening project.

Section 2: Monywa–Kalay Road (222.1 km)

Monywa–Yar Gyi Road Section (64.4 km)

The Mandalay–Monywa road traversing Monywa is 9.7 km long (Figure 29). A feeder road leads to an airport at its exit point, after which the road reaches the Chindwin Bridge of Monywa. This bridge plays a vital role in connecting commercial activities between the east and west banks of the Chindwin River, Sagaing Region, and Magwe Region. Officially opened in 2007, it is a 4,730-foot long concrete bridge. The Monywa Group of Companies collects bridge-crossing fees. According to the company, the number of vehicles passing through the bridge daily is 2,300.

Figure 28: Mandalay–Monywa Road Section

AH = Asian Highway.
Source: ADB. GMS Economic Corridor Assessment Team.

Table 25: Average Daily Number of Vehicles Passing the 40-Mile Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	56	20
Bus	50	56
Light truck or passenger car	178	152
Others (three-wheel motorcycle, farm truck, and trailer G)	100	135
Total	**384**	**363**

Source: Department of Highways, Ministry of Construction.

Figure 29: Monywa–Yar Gyi Road Section

AH = Asian Highway.
Source: ADB. GMS Economic Corridor Assessment Team.

Around 4.8 km from the Chindwin Bridge is a junction leading to Pathein and Kalewa. It is 724.2 km to Pathein and 180.2 km to Kalewa from that junction. The Monywa–Kalewa road is divided into two sections managed by the Monywa Group of Companies under a BOT scheme: the 64.3 km long

Monywa–Yar Gyi section; and the 120.7 km long Yar Gyi–Kalewa section. A toll gate is on the Monywa–Yar Gyi road (Khot Pin Toll Gate) where 350 vehicles are recorded to pass through daily. This road is 18-feet wide and covered with asphalt. Although the road is narrow, it is not difficult to drive through, as the traffic volume is light. Going further, a 30-foot dry creek bed has to be crossed. In the rainy season, the river's water level is high, and cars have to wait until the water level goes down. The road goes uphill gradually from the 17/6 mile post, and then goes down again until it reaches another dry creek bed. From there, the rough road slopes upward again. Despite going uphill, the road is covered with soil. The road condition improves around the 24th mile post, but is poor again around the 32/2 mile post, with many turns, slopes, and potholes. After crossing a bailey bridge with 20-ton capacity at the 35th mile post and a 30-foot long concrete bridge at the 37/6 mile post, Yar Gyi Village is finally reached.

Yar Gyi–Lar Poh Road Section (28.9 km)

The road goes uphill in this section. After exiting Yar Gyi, the road passes through the Pahtoeloan Toll Gate where around 15 buses, 10 trucks, and 25 passenger cars go through the gate every day. From that point onward, the road slopes upward and downward with a sharp turn at the 44th mile. At the 45th mile post, the road can accommodate only one car at a time, as the road has many twists and turns. The road is very steep with a two-point turn at the 47/1 mile post. Heavy trucks have to exercise extra care, as that point is 2,300 feet above sea level. From the 49/6 mile post, the asphalt-covered road goes downhill. The road becomes narrow between the 47th and 57th miles due to past landslides. After passing the View Point at 58/1 mile where Lar Poh Village and its mountain of stones can be seen clearly, the road reaches Lar Poh village after crossing a long concrete bridge. The road between Monywa and Lar Poh can be used under any weather condition (Figure 30).

Figure 30: Yar Gyi–Lar Pho Road Section

AH = Asian Highway.
Source: ADB. GMS Economic Corridor Assessment Team.

Lar Poh–Kalewa Road Section (91.7 km)

This road section cannot be used during the rainy season (Figure 31). Although there are only minimal slopes with a few uphill stretches, the road is made of earth and stones. Due to the very bad road condition, cars can go only at a speed of 10 miles per hour. Most of the road along this section is in poor condition, due to damage by landslides on one or both sides, and with many potholes. The road runs to Khin Oo Village at the 95th mile, passing through Myo Ma Village at the 93rd mile, and the Sakhan Gyi Toll Gate at the 103rd mile of the Kalewa township. Around 8–9 trucks, 10–15 buses, and 5 passenger cars are recorded to pass through this gate daily. The road section up to the 115th mile post (where Myithar River flows) is constructed on sandy mountains, so the soil is soft. In the rainy season, the road becomes muddy, and no vehicles can pass. In the summer, the mud dries up, turns to blocks, and causes a lot of dust, making transport through this road difficult.

Section 3: Kalewa–Ye U (168.6 km)

The Kalewa–Ye U road section starts at 0/0 mile and ends at the 104/6 mile post, traversing Mahar Myaing forest. The Ye U feeder road, at the opposite side of the the Myit Thar Bridge, leads to Chindwin Bridge in Kalewa. The Chindwin Bridge is on Chindwin River parallel to the to Kalewa–Ye U road. Officially opened in April 2017, the bridge is of the reinforced type with iron frame. It is 854.88-meters long and 8.5-meters

Figure 31: Lar Poh–Kalewa Road Section

AH = Asian Highway.
Source: ADB. GMS Economic Corridor Assessment Team.

wide, with a capacity of 75 tons. A toll gate is at the other end of the bridge where around 300 vehicles are reported to pass through every day. An 18-foot wide concrete road after the bridge is followed by several small bridges with 13-ton capacity along the road. Some parts of the road are only 12-feet wide, which make it difficult for heavy trucks to navigate. There are six bridges along the way, and a new one is being built at the 94/6 mile post. After that, another eight small bridges have to be passed until Ye U is reached (Figure 32).

Section 4: Kalewa–Kalay (37 km)

A toll gate collects wheel tax and bridge user fees just before the Myit Thar Bridge. After the bridge, a junction with one road leads to Kalewa (1.6 km), another road to Maw Lite (57.9 km), and and a third road to Kalay (37 km). Because Kalewa is the confluence of Chindwin and Myit Thar rivers, water transport is well developed in the area, and is the major means of transporting passengers and cargo from Mandalay or Monywa to Kalewa. From Kalewa, road transport is used to go to Kalay and Tamu. The road section between Kalewa and Kalay is narrow, as the road runs between the Myit Thar River on the left side, and a rocky wall on the right side. There are 21 old bridges along this road with capacities of not more than 13 tons each. Trucks with heavier loads cannot use those bridges and, instead, have to use the feeder road. The road section from Kalewa to Kyee Kone is 27.3 km long, and new roads are being constructed. At Kyee Kone Village, a gate collects wheel tax fees, after which the byroad to Tamu joins the Kalewa–Kalay Highway. India funded the construction of the 115.9 km road section between Tamu and Kalay, and is reported to be providing further funding for the construction of the Kalewa–Kalay section (Figure 33).

Figure 32: Kalewa–Ye U Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 33: Kalewa–Kalay Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Section 5: Kalay–Tamu Road Section (120.7 km)

The Kalay–Tamu road section, which is 120.7 km long, starts at the 17th mile post (Figure 34). The construction of this section was undertaken under the India–Myanmar Friendship Project, which was started in 1996 and completed in 2001. In 2008, India provided additional funds to upgrade the road. The road linking the exit point of Kalay and the Kalay–Tamu–Kalewa junction is a 24-foot wide asphalt road. The road runs through Kyat Hpa Net Village, Kham Pat town, Boke Kan Village, and Pan Thar Village before reaching the Pan Thar Police Inspection Gate and Toll Gate at the 3rd mile post. The Kalay–Tamu Road is flat and in good condition, but the need to cross 48 bailey bridges is a major barrier. The Government of the United Kingdom constructed these bridges in the 1940s, with the capacity of each bridge varying from 13 tons to 24 tons. Although the regular width of each bridge is 12 feet, some are just 10 feet wide, thereby obstructing the passage of trucks. Feeder roads were constructed as an option. Of the 48 bridges, four are 200-feet long and two bailey bridges are 100-feet long. Vehicles have to slow down while crossing these bridges.

Section 6: Kalay–Gangaw Road Section (148.2 km)

From Kalay, the road heading south leads to Gangaw: 133.6 km from Kalay to the junction of Gangaw and Harka, and another 14.5 km from that junction to Gangaw (Figure 35). The road is 18-feet wide and covered with asphalt at the exit point of Kalay, but it becomes only 6 feet after Chinsaing Village 6.4 km away from the exit point. The road traversing Tharyargone, Kyarinn, and Sithar villages is in very bad condition. After the intersection of the road and the Kalay–Gangaw Railway, the road up to Nat Chaung Idol Village is being repaired. After passing through Nat Chaung Village, the road reaches the junction leading to Phalam and Gantgaw. A toll gate in the Chaung Kwa Bridge at the 66th mile post) collects fees for use of the bridge. During the season when the Yar Gyi road is

Figure 34: Kalay–Tamu Road Section

km = kilometer, NSEC = North–South Economic Corridor.
Source: ADB. GMS Economic Corridor Assessment Team.

open, the traffic volume on Gangaw road is, on average, only 6 trucks, 10 buses, and 15 cars.

The road then passes through several villages, including Aungchanthar, Pe`lote, Thanpo, Yangyiaung, Khontoe, Myauk Si, Kyaw, Taung Si, Chan Kin, and Se` Taw villages. The inter-village roads are in good condition, but the outer-village roads are in poor condition, and undergoing repair and upgrading. At several points, the road crosses the railway line along the road section between Kalay and Gantgaw. The road passes through Kabar Bridge on the Myit Thar River, where a gate collects fees for the use of the bridge. The number of vehicles going through the gate daily is around 15 in the open season. This 595-foot long and 14-foot wide bridge was opened in 1995. A gravel road is after the bridge.

After traversing Pantaw and Kyanthar villages, the road heads toward Handtharwaddy village, which marks the border between Sagaing and Magwe regions, Public Construction (Kalay district) administers the road in the Sagaing Region, while Public Construction (Gangaw district) manages the Magwe Region on the other side. The road then leads to Tawwin Wall, Hnam Khar Village, and Shwe Le` Village. After passing Yayshinma Village, the road begins an uphill climb until the highest point and another junction is reached, one way going to Kan Village and the other to Gangaw Village. A 300-foot long bridge (Longuard Bridge) and a bailey bridge are at Hte` Pyaw Kyauk village.

The road then finally reaches the 0 mile post, which marks the junction of Kalay, Gangaw, and Harkar. It takes 14.5 km to Gantgaw and 124.3 km to Harkar. The road sections in the Magwe Region are mostly soil and gravel roads. The road is sloped with slight ups and downs, so it is difficult to negotiate in the rainy season. The road section between the junction and Gangaw is in better condition due to the bituminous surface treatment applied in 2012–2013. Although the road is sloping in many places, the road surface is smooth, except for some damaged parts caused by mountain torrents. The road arrives in Gangaw after passing the 600-foot Saidu Bridge that crosses the Myit Thar River.

Figure 35: Kalay–Gangaw Road Section

AH = Asian Highway, km = kilometer.
Source: ADB. GMS Economic Corridor Assessment Team.

Section 7: Gangaw–Monywa Road Section (180.2 km)

The road linking Gangaw and Monywa traverses the towns of Palae and Yinmarpin (Figure 36). The road section between Gangaw and Mintainpin Village is mountainous, passing through Ponenyar and Ponetaung Mountains, while the road section between Mintainpin Village and Poneyaw is flat. After exiting Gangaw, the road passes a toll gate and goes uphill on a 12-foot wide asphalt road. Khaung Tone Village, Nyaung Le` Village, and the junction between Toe Lin–Gantgaw–Htee Lin are then reached. Gangaw is 37 km, while Htee Lin is 45 km from this junction. The road passes through a hilly area where landslides are common during the rainy season. The road then heads toward Yay Pote Village and Ponnyar Mountain, which is the highest point along this road section. On the way down the mountain, the road goes through a railway tunnel after which it goes into the highway toward Pauk. The construction of this highway is part of the project linking Thailand's border to India's border.

The 66/2 mile post is the border of Gangaw and Monywa Districts. The road goes downhill and traverses Khin Aye, Kyat Yin, A-Mae, Dhamma, Le`. Wanbae` Dai, Kan Daunt, and Mintainpin Gyi villages. There is a wood production station at Mintainpin Gyi Village. From this station to Palae, the terrain is level, and the road is in good condition. Wheel tax fees are collected in the Palae

town. The majority of vehicles along the Gangaw–Palae Road are trucks and lorries carrying logs. Because the Palae–Monywa road section is flat and near the Pho Win Mountain (a religious site), the Pokkoku junction, and the Pathein–Monywa junction, the traffic volume in that section is high. The next point is Yinmarpin where an 800-foot long bailey bridge over the North Yamar Creek has to be crossed to reach Monywa. All in all, there are 17 bailey bridges and three concrete bridges between Gangaw and Monywa along this route.

Table 26: Average Daily Number of Vehicles Passing through Su Htoo Pan Toll Gate
(as of 7 June 2017)

Type of Vehicle	Number of Vehicles	
	Up	Down
Cargo truck	87	56
Bus	229	128
Light truck or passenger car	504	482
Others (three-wheel motorcycle, farm truck, and trailer G)	103	135
Total	**923**	**801**

Source: Department of Highways, Ministry of Construction.

Figure 36: Gangaw–Monywa Road Section

AH = Asian Highway, km = kilometer.
Source: GMS Economic Corridor Assessment Team.

E. Dawei-Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau Subcorridor

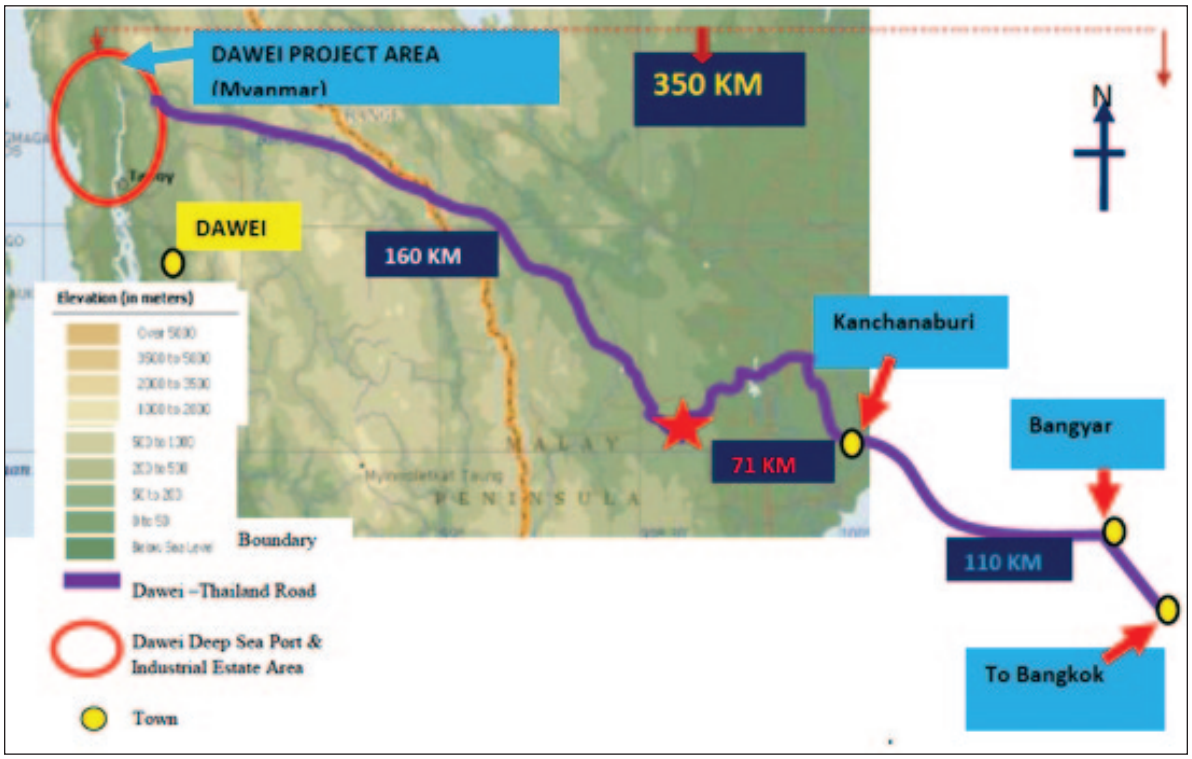
Htee Khee–Dawei Road

The Dawei–Kanchanaburi route in SEC-1, which was opened in May 2013, is the latest trade route between Myanmar and Thailand that further connects to Cambodia and Viet Nam via the GMS Southern Economic Corridor. Based on the planned development of the Dawei Special Economic Zone (SEZ), the Dawei–Htee Khee Road will be upgraded to a 156.5 km highway (Figures 37 and 38). A B4.5 billion equivalent to $144.54 million loan from the Neighboring Countries Economic Development Cooperation Agency under Thailand's Ministry of Finance was approved by Myanmar's Parliament in March 2018.

Figure 37: Htee Khee–Dawei Road Section

SEZ = special economic zone.
Source: ADB. GMS Economic Corridor Assessment Team.

Figure 38: Dawei Special Economic Zone to Bangkok Road Link Plan



km = kilometer.
Source: Ministry of Construction.

Current condition of Htee Khee–Dawei road. This road will soon be upgraded to a 156.5 km highway.

IV. BORDER FACILITIES

The major trading partners of Myanmar are its neighboring countries. In terms of trade volume, the largest in 2016–2017 is with Thailand, followed by the PRC and India.

A. Muse Border Trade Zone

The efforts to establish the Muse Border Trade Zone started in 2005 for which a Zone Establishment Committee was formed. Initially, the target was to reclaim 1,000 acres of land for use of the zone, but this was reduced to only 370.83 acres because of mountainous terrain in Mongyu Village (Table 27). To establish the zone, land plots were reclaimed, established, and then sold. The proceeds from the sale of the land plots were then spent on land leveling; construction of a vehicle inspection area, main office, building for commodity inspection, X-ray building, and roads and inspection gates; and installation of an online system, closed-circuit television, and weight bridge. The Muse Border Trade Zone was opened in April 2006. The Myanmar–PRC Border Crossing Agreement designated the Muse border crossing point as a border entry and exit point.

Table 27: Formation of Muse Border Trade Zone

No.	Block Category	Size of Block (acre)
1	Land for vehicle inspection carried out by Border Trade Department	48.56
2	Rest area for vehicles owned by Border Area or Township Development	22.00
3	Company, trading, brokerage house (172) blocks	300.27
	Total	**370.83**

Source: Directorate of Trade.

Muse Border Trade Zone area. The Muse Border Trade Zone accounts for the largest trade value of all border posts in Myanmar.

Brokerage houses, warehouses, fruits brokerage houses, storage plants for fisheries, trading center for fruits, and a trading center for eel and crabs were also built. In December 2010, the Zone Establishment Committee handed over the Border Trade Zone to the Department of Township Development. Every day, 700–800 vehicles carrying exported or imported goods, 800 light trucks, and 1,500 buses and small cars pass through the Muse Border Trade Zone. The required services are provided to avoid unnecessary delay, especially for cargo vehicles. There is a rest area for 100 vehicles carrying export goods and a rest area for 100 vehicles carrying import goods. Cargo vehicles can obtain a permit to keep their cargo in warehouses rather than unloading them. The PRC–Myanmar Trade Fair is held alternately in Muse of Myanmar or Jiegao of the PRC every 2 years.

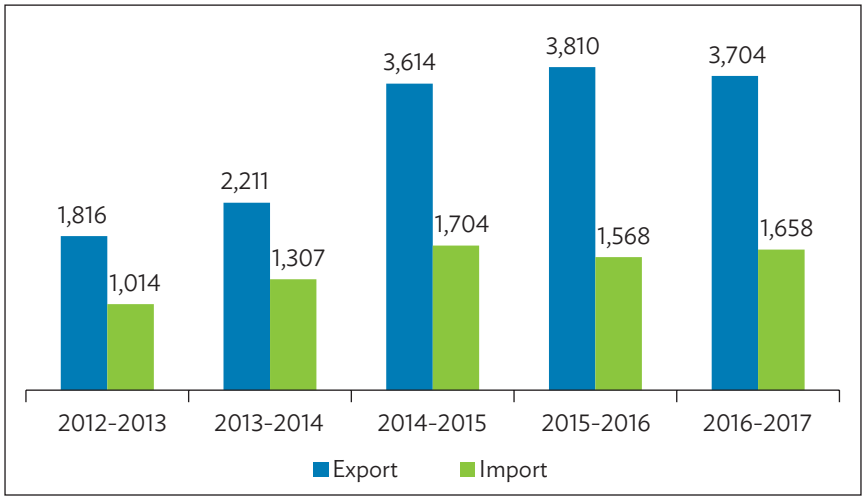
The Muse Border Trade Zone accounts for the largest trade value of all border posts in Myanmar, with an average 77% contribution over the last 5 years. However, the contribution of the Muse border post to the country's total border trade has been declining due to ethnic conflict in the area and changes in the policies of the PRC's government. In 2016–2017, the contribution of the Muse border post stood at 69%, the lowest since 2012–2013 (Table 28 and Figure 39).

Table 28: Trade Volume at the Muse Border Trade Zone

Year	Trade at Muse Border Trade Zone ($ million)	Total Border Trade ($ million)	Contribution to Total Border Trade (%)
2012–2013	2,829.86	3,372.53	84
2013–2014	3,517.68	4,588.09	77
2014–2015	5,318.16	6,787.12	78
2015–2016	5,377.88	7,153.87	75
2016–2017	5,410.06	7,777.07	69

Source: Department of Trade, Ministry of Commerce.

Figure 39: Trend in Export and Import Values at the Muse Border Post
($ million)



Source: Department of Trade, Ministry of Commerce.

The main export commodities of Myanmar to the PRC are primary products, while the major import items are machinery and industrial goods (Table 29).

Other Border Gates between Myanmar (Muse) and the People's Republic of China

There are three official border gates and one unofficial border gate in Muse town. The official border gates are discussed below.

Nan Taw Gate

This is the main gate located in the middle of two other official gates. This gate houses the office issuing temporary entrance permits to passengers and buses to enter the PRC. Those permitted to enter the PRC have to pass through a disinfectant pond. There is no disinfectant pond on the inbound road to Myanmar.

Nan Taw Border Gate in Muse. This gate houses the office issuing temporary entrance permits to passengers and buses to enter the People's Republic of China.

Table 29: Main Exports at the Muse Border Trade Zone, 2016–2017

No.	Item	Volume (ton)	Value ($ million)
1	Natural gas	2,734,978.47	1,241.491
2	Sugar	1,777,320.07	1,000.874
3	Jade	190,754.66	265.230
4	Maize	1,020,544.60	194.777
5	Rice	536,848.49	180.840
6	Rubber	72,809.17	103.177
7	Diesel	142,455.76	74.853
8	Watermelon	616,935.20	61.386
9	Crabs	13,208.49	38.134
10	Varieties of fish	15,796.29	29.408
11	Broken rice	88,356.45	26.172
12	Honeydew or muskmelon	123,970.50	25.300
13	Green grams	25,899.54	19.186
14	Jewelry	1,444.48	13.351
15	Onion	40,774.30	11.452
16	Dried fish	18,889.52	11.188
17	Mango	29,349.50	9.984
18	Cotton	4,289.80	9.438
19	Eel	2,785.59	9.043
20	Plum seeds	2,011.69	8.034

Source: Department of Trade, Ministry of Commerce.

Table 30: Main Imports at the Muse Border Trade Zone, 2016–2017

No.	Item	Unit	Volume	Value ($ million)
1	Vehicles and machinery	unit	45,700.00	463.851
2	Brand new motorcycles	unit	575,787.00	173.922
3	Fertilizer	kg	814,566.30	132.186
4	Oranges	kg	89,469.42	31.315
5	Aluminum, multistructure frames	kg	4,872.93	13.830
6	Three-wheel cycles	unit	11,137	13.675
7	Iron pipes (round or square)	kg	22,846.76	11.985
8	Ceramic tiles	m^2	1,850,426.45	10.577
9	GI pipes	kg	18,972.72	10.492
10	ACSR conductor wire electric	kg	5,036.10	9.321
11	Porcelain plate or bowl	kg	9,755.60	9.059
12	Bicycles	unit	292,312.00	7.275
13	Vacuum flasks	kg	3,333.96	7.055
14	Apples	kg	14,979.69	6.741
15	U/H beam	kg	9,741.48	4.187
16	Iron angle	kg	8,363.48	4.111
17	GI sheets in coil	kg	6,012.92	3.325
18	Iron nails	kg	6,323.25	3.262
19	Cement	kg	40,035.08	3.204
20	Computer compact discs	unit	77,213,208.00	3.077

ACSR = aluminium conductor steel-reinforced cable, GI = galvanized iron, kg = kilogram, m^2 = square meter, U/H = universal beam with an H-shaped cross-section.
Source: Department of Trade, Ministry of Commerce.

Sinbyu Gate

The Sinbyu Gate is to the right side of Nan Taw Gate. It is known as Sinbyu Gate because of white elephants built near the gate. Close to the gate are shopping malls, company offices, and a parking area for buses, all constructed by the Ngwe Sin Company. There is also a disinfectant pond on the road to the PRC.

Manwein Gate

Manwein Gate is on the left side of the main gate. This is only for the use of big trucks. On the road going to the PRC, each truck is sprayed with disinfectant. On the PRC side is a parking area for trucks.

Sinbyu Border Gate in Muse. Close to the gate are shopping malls, company offices, and a parking area for buses in the PRC.

Manwein Border Gate in Muse. This gate is only for the use of big trucks.

Besides these gates, there is an unofficial gate to the PRC. It is at the right side of the road to Namkham, some distance from the Bailey Bridge. The site is on a boat jetty, so anyone can go by boat to the PRC side without passing a checkpoint. This route has been used for illegal trade; most motor bikes illegally entering Myanmar go through this gate.

B. Myawaddy Border Trade Zone

Myawaddy plays a significant role among the four border trade posts of Myanmar with Thailand. From 2012–2013 to 2016–2017, the trade value at the Myawaddy Trade Zone increased by 6.4 times. At the same time, the contribution of the Myawaddy border post to the total border trade of Myanmar in value rose from 4% in 2012–2013 to 12% in 2016–2017 (Table 31). The Myanmar–Thailand Border Crossing Agreement designated Myawaddy as an international border checkpoint.

On the value of imports and exports between the two countries, imports from Thailand predominate over exports to Thailand (Figure 40). In fact, the trade deficit at the Myawaddy Trade Zone, which increased by 24 times in the last 5 years, is the largest of all border trade posts in Myanmar.

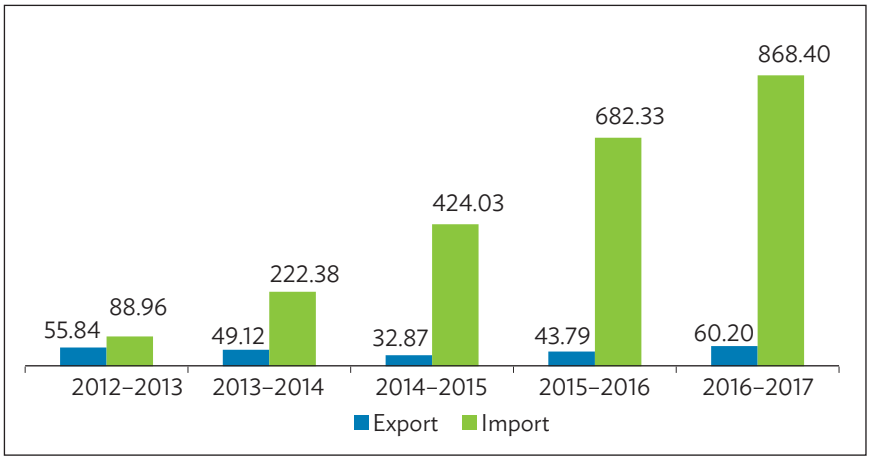
The pattern of trade at the Myawaddy border post is not very different from the trade transactions at the other border posts, with agricultural and primary products as the major exports to Thailand, and vehicles and machinery as the main import items from Thailand (Tables 32 and 33).

Table 31: Trade at the Myawaddy Border Trade Zone, Myanmar–Thailand Border

Year	Trade at Myawaddy Trade Zone ($ million)	Total Border Trade Value ($ million)	Contribution to Total Border Trade (%)
2012–2013	144.80	3,372.53	4
2013–2014	271.50	4,588.09	6
2014–2015	456.90	6,787.12	7
2015–2016	726.11	7,153.87	10
2016–2017	928.60	7,715.51	12

Source: Department of Trade, Ministry of Commerce.

Figure 40: Trend in Export and Import Values at the Myawaddy Border Post
($ million)



Source: Department of Trade, Ministry of Commerce.

Table 32: Main Exports at the Myawaddy Trade Zone, 2016–2017

No.	Item	Volume (tons)	Value ($ million)
1	Groundnut (without husks)	20,430.75	23.454
2	Dried chili	3,566.68	6.396
3	Onion	12,876.91	4.218
4	All sorts of fish	3,689.44	4.088
5	Mung beans	2,067.86	2.700
6	Apparel	32.11	2.576
7	Green grams	2,508.77	2.039
8	Groundnut (with husks)	2,081.87	1.658
9	Crab	794.901	1.457
10	Sesame (black)	838.92	1.194
11	Tamarind (with seeds)	2,779.59	1.180
12	Cashew nuts (without husks)	125.76	0.958
13	Prawn	103.63	0.807
14	Metal and ore	779.28	0.763
15	Cashew nuts (with husks)	51.00	0.291

Source: Department of Trade, Ministry of Commerce.

Table 33: Main Imports at the Myawaddy Trade Zone, 2016–2017

No.	Item	Value ($ million)
1	Motorcycles	145.149
2	Automobiles and parts	120.290
3	Agriculture machinery and other vehicles	87.488
4	Beverages	43.048
5	Tractors	28.901
6	Petroleum products	20.962
7	Construction materials (except metals)	16.359
8	Cosmetics	13.203
9	Fertilizers	10.422
10	Machinery	9.898
11	Pharmaceuticals	9.211
12	Tires and tubes	8.155
13	Cotton	7.769
14	Other paper	7.259
15	Soap	6.713

Source: Department of Trade, Ministry of Commerce.

No. 1 Friendship Bridge Gate between Myanmar and Thailand, Myanmar side. The Myanmar–Thailand Border Crossing Agreement designated Myawaddy as an international border checkpoint.

C. Tamu Border Trade Zone

The two border trade posts along the Myanmar–India border are Tamu in the Tamu district of Sagaing Region and Reed of Falam Township in Chin State. Recognizing its importance to Myanmar–India trade, the Tamu border trade post was opened on 12 April 1995. Goods traded through this border trade post are mostly transported by passenger cars and small vehicles instead of large cargo trucks carrying a big amount of goods. Bilateral border trade involves a variety of commodities, with many exchanges being conducted in Nanphalon market on the Myanmar side, and shops and shopping malls in Moreh on the India side. The Myanmar–India Border Crossing Agreement is expected to designate the Tamu border crossing point as an international border checkpoint, when it is signed.

About 300–500 people from either side of the border cross to the other side to buy and sell commodities from respective sides. For instance, people from India go to the Namphalon market of Tamu to buy goods, including goods in transit from the Muse border post, which include blankets, footwear, electronic products, consumer goods, and machinery. At shops in Moreh, India-made steel products; cloths; many kinds of food, such as cookies, cakes, and crackers; cosmetics; and toilet articles are traded by merchants from India and Myanmar. The annual trade value of trade at the Tamu border trade post is in Table 34. Although the contribution of Tamu border trade is less than 1% of the total border trade of Myanmar, the trade value at the border post has been increasing in the last 5 years (Figure 41).

The Tamu Border Trade Zone has an office that extends one-stop service and a designated area for vehicle inspection. The Tamu Border Trade Department, Customs Department, Immigration Department, Myanmar Police Force, and Internal Revenue Department work together to facilitate import and export activities.

Table 34: Trade Value at the Tamu Border Trade Zone, Myanmar–India Border

Year	Trade Value at Tamu Border Trade Zone ($ million)	Total Border Trade Value ($ million)	Contribution to Total Border Trade (%)
2012–2013	23.94	3,372.53	0.71
2013–2014	30.84	4,588.09	0.67
2014–2015	45.62	6,787.12	0.67
2015–2016	45.56	7,153.87	0.64
2016–2017	47.52	7,715.51	0.62

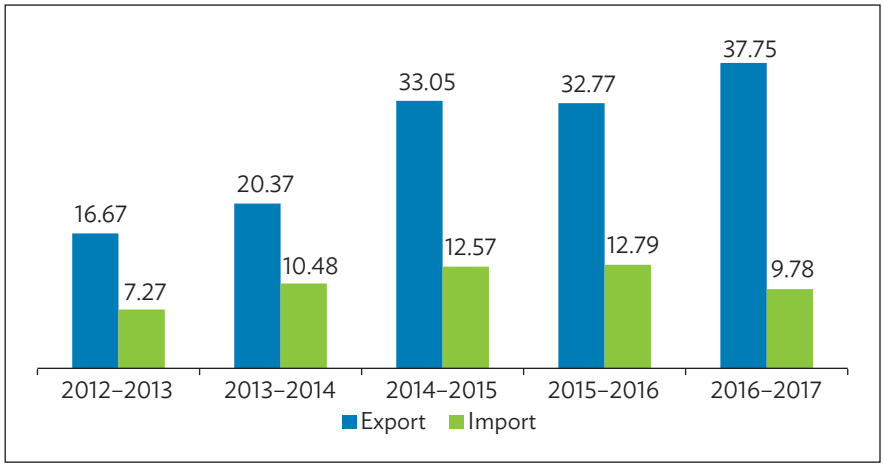
Source: Department of Trade, Ministry of Commerce.

Tamu Border Trade Zone. This has an office that extends one-stop service.

Tamu Border Trade Zone inspection facilities. The Tamu Border Trade Zone has a designated area for vehicle inspection.

Motorcycles, green peas, and flour are the top three imports of Myanmar from the PRC; while areca nut, cigarettes, and cut-make-pack (CMP) footwear are the top three exports of Myanmar to India (Tables 35 and 36).

Figure 41: Trend in Export and Import Value at the Tamu Border Trade Zone



Source: Department of Trade, Ministry of Commerce.

Table 35: Main Exports at the Tamu Border Trade Post, 2016–2017

No.	Item	Unit	Volume	Value ($ million)
1	Betel nut or areca nut	kg	24,616,660	24.7
2	Cigarette	kg	1,314,520	4.2
3	Varieties of shoes	pair	1,516,641	1.5
4	Betel nut (reexport)	kg	879,340	1.4
5	CMP shoe	pair	420,000	1.3
6	Plastic bag	kg	1,450,283	0.6
7	Mosquito repellent coil	kg	129,469	3.4
8	Women's blouse (underwear)	piece	177,974	0.3
9	Sardine can	kg	608,162	0.3
10	Glass	kg	235,755	0.2

CMP = cut-make-pack, kg = kilogram.
Source: Department of Trade, Ministry of Commerce.

Table 36: Main Imports at the Tamu Border Trade Post, 2016–2017

No.	Item	Unit	Volume	Value ($ million)
1	Motorcycle	unit	3,756	4.41
2	Garden peas	kg	6,490,350	2.77
3	Taung Lone Kyaw	kg	55,950	1.09
4	Flour	kg	1,926,575	0.77
5	Lentil	kg	896,040	0.56
6	Chickpea	kg	641,520	0.43
7	Yarn	kg	159,230	0.39
8	Plastic water tank	kg	6,675	0.02
9	Paddy seeds	kg	5,208	0.01
10	Bleaching powder	kg	38,000	0.01

kg = kilogram.
Source: Department of Trade, Ministry of Commerce.

V. INVESTMENT AND BUSINESS OPPORTUNITIES

A. East–West Economic Corridor

The EWEC passes through two states and three regions of Myanmar: Kayin State, Mon State, Bago Region, Yangon Region, and Ayeyarwady Region. These states and regions have significant potential for development with many investment opportunities in the tourism, manufacturing, and value-adding activities in agriculture and forestry. In 2016–2017, they had a combined contribution of 49.1% to the country's economy (Figure 42).

Kayin State

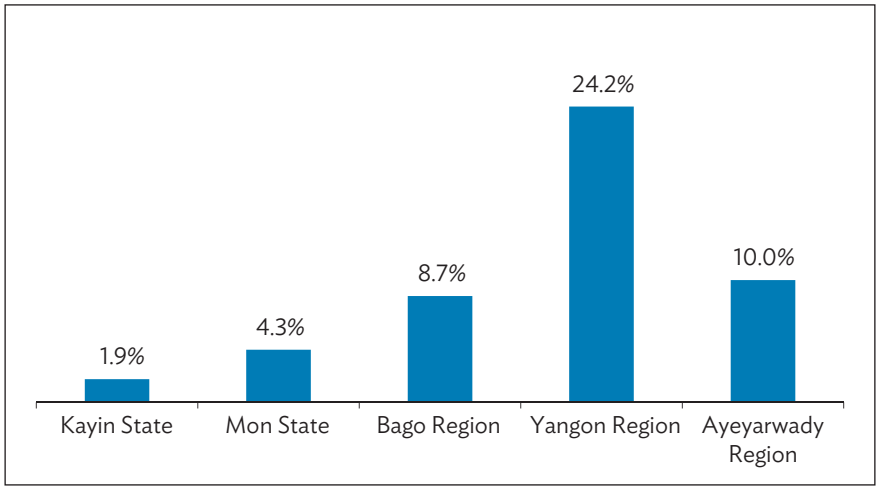
Kayin State has 4 districts, 7 townships, 11 towns, 84 wards, and 376 village tracts covering a land area of 30,383 square kilometers. With a population of over 1.5 million, it is home to the Kayin, Mon, Bamar, and Pa-O ethnic groups. At the Myanmar–Thailand border, Kayin State has substantial business and investment opportunities, especially around the Hpa-An and Myawaddy areas.

Industrial Zones in Kayin State

There are three industrial zones in Kayin State, one each in Hpa-An, Myawaddy, and Phayathonesu. Hpa-An industrial zone is 7 miles from the northeast of Hpa-An City. It was set up on 969 acres in 2011 and divided into four zones. Zone 1 covers almost 135 acres with 59 plots designated for foreign investors. Zone 2 covers the largest area of 470 acres, Zone 3 covers around 90 acres, and Zone 4 covers around 60 acres. In all, 643 plots were developed. Although there are 40 registered manufacturers of soft drinks, garments, furniture, consumer goods, and minerals, only 10 small-scale factories are in operation.

The production of existing factories is worth MK431.64 million, as of December 2016. Another 14 factories, mostly garment factories, are in various stages of construction. The growth of the zone was hampered mainly by power outages and farmland disputes. Thus, in December 2016, government officials vowed to accelerate the development

Figure 42: Contribution of States and Regions Traversed by East–West Economic Corridor to Myanmar's Economy, 2016–2017



Source: Ministry of Planning and Finance.

of the zone and announced a strategy to attract entrepreneurs and to boost its contribution to the economy of Kayin State. This strategy involved training workers, improving infrastructure, and ensuring 24-hour electricity supply and high-tech support.

The Myawaddy industrial zone (MIZ) is 11 km away from the Myanmar–Thailand border. MIZ granted Yaung Ni Oo Company an investment permit to develop the 201-acre wide industrial zone in 2015. Due to its proximity to the Myawaddy–Maesot border trade zone and its access to the Asian Highway, MIZ is expected to attract more local and foreign investors, much more than the Hpa-An industrial zone. As of 2015, MIZ received 15 applications from garment and consumer goods investors. There is a plan to establish an industrial zone in Phayathonesu Town, Kyarinseikkyi Township when the conditions are favorable.

Tourist Attractions around Kayin State

Hpa-An has become a top tourist attraction since late 2014 when the Myanmar Tourism Federation initiated the plan to promote Hpa-An as a major tourism attraction. Transport to Hpa-An is convenient because it is just a 5-hour drive from Yangon. There are many pristine locations to visit in and around Hpa-An. Among them, the most popular are Bayintnyi Cave, Kawcoon Cave, Yathaepyan Cave, Zwegapin Mountain, Taungwyne Mountain, Shwe Yin Myaw Pagoda, Kyaukkalap Pagoda, Kawkathaung Cave, Saddan Cave, and Kyone Htaw Waterfall. The hotel and associated businesses, and community-based tourism activities (such as hiking, rock climbing, homestay) are promising investment opportunities in Kayin State.

Mon State

Industrial Zones in Mon State

Mon State is in the southeastern part of Myanmar with a land area of 12,297.26 square kilometers. It is bounded by Kayin State and Thailand to the east, Bago Region to the north, Mottama Gulf to the west, and Tanintharyi Region to the south. The Kayuktan industrial zone, officially opened on 26 March 2016, is being developed on a land area of 254 acres. The industrial zone features a variety of business enterprises, including zinc, barbed wire, ready-mix cement, food and drinks, textiles, gold refining, ice factories, shoes, furniture, plastic and plastic products, seafood storage, and car accessories. As of March 2016, 59 businesses had invested in the zone.

Tourist Attractions around Mon State

Mon State is blessed with a good climate and beautiful beaches, with traditional villages in the mountainous areas. The most prominent tourist attraction site in Mon State is Kyaikhtiyo Pagoda, also known as the Golden Rock. It is one of the most famous Buddhist pilgrimage sites in Myanmar. The Golden Rock receives hundreds of thousands of local and foreign visitors every year. It is near the Kyaikto town of Mon State, which is a 5-hour drive from Yangon.

As the pagoda is on the mountain with an altitude of 3,600 feet, visitors can enjoy the scenic view of the area surrounded by lush green mountain ranges interspersed with valleys. Its most amazing feature is that it looks about to fall off the edge of Mount Kyaikto and roll down the sweeping landscape of Myanmar. Yet the enormous granite boulder has dangled precariously there for as long as the land's recorded history. The whole edifice is said to be balanced on a single strand of Buddha's hair. Another place worth visiting in Mon State is Thanbyuzayat War Cemetery and Death Railway Museum in Thanbyuzayat, which is 60 km south of Mawlamyine. It is called "Death Railway" due to an estimated 100,000 people who died constructing the 415 km long railway for the Japanese Imperial Army. The victims include Australian, Dutch, American, and British prisoners of war, as well as laborers from Myanmar, Thailand, and Malaysia.

While visiting Death Railway, people can continue to Kyaikkhame, which is famous for its "Pagoda Amidst Water." The pagoda's name derives from its location on a reef about 274 meters from the seashore. It is enshrined with 11 Buddha hair relics. The well-known beach area in Mon State is "Setse," which is 24 km south of Kyaikkhame. Located at the Gulf of Mottama of the Andaman Sea, it has served as a resort since the 19th century and is popular among local people. There is one highly promising beach area with unspoiled beauty in Yay of Mon State, a 3-hour drive from Mawlamyine. Yay was a "grey area" for many years until 2012, when the government and local armed groups signed a ceasefire accord. In 2015, the state government awarded a permit to Myanmar Aurum Company to develop 50 acres of virgin land at the beach. Offering a glimpse of Myanmar's untouched natural beauty, these beach resorts are expected to attract more visitors when convenient accommodation and facilities become available there.

Bago Region

Industrial Zones in Bago Region

There is one industrial zone in Pyay, a foreign investment industrial zone in Bago, and a construction material industrial zone in Indagaw. The Pyay industrial zone, opened in 1992, has a land area of 204.29 acres. It features a variety of business enterprises, including food and beverages, construction materials, and machinery and equipment. As of March 2016, 65 business firms had invested in the zone. Previously, the Bago Region's economy relied highly on the timber trade. There are now many wood-based industries in Bago, such as plywood and wood factories, that are adding value to the traditional timber trade.

Tourist Attractions around Bago Region

Bounded by the Bago mountain ranges, the region is the home of elephants. Myana Timber Enterprise established elephant camps for recreation of locals as well as tourists, and to create job opportunities for the enterprise's staff and their families. The elephants have caught the attention of tourists, especially those who want to observe the habitat of elephants. The most recent camp, Wingabnaw Elephant Resort Camp, was opened in Payagyi in November 2016. The other elephant camps in the Bago Region are Phoekyar in Taungoo, and Hmawyawgyi and Myainghaywun near mile post 105 on the Yangon–Mandalay Highway.

The Bago Region's government is trying to transform the Moeyungyi Wetland Wildlife Sanctuary into an ecotourism site. It is just 2.5 hours drive from Yangon, on the Yangon–Mandalay highway in the Waw township of Bago Region. Being home to a hundred different species of water birds, Moeyungyi is a haven for people who love bird watching. They can stay overnight at the Moeyungyi Wetland Hotel, which is a cluster of boat-shaped houses built on the wetlands.

Yangon Region

Industrial Zones in Yangon Region

Yangon Region has the largest number of industrial zones, has the most developed infrastructure facilities, and serves as Myanmar's international gateway. According to the Myanmar Industry Association, of the 24 industrial zones in Yangon, Hlaing Thar Yar is the largest. This industrial zone has the greatest number of large-scale, labor-intensive, and export-oriented enterprises. By type of industry, pulse and beans, toiletries, foodstuffs, garments, and construction materials factories top the list.

Thilawa Special Economic Zone

The Thilawa SEZ, developed by Myanmar–Japan Thilawa Development Ltd., is the first of its kind in Myanmar. Covering an area of approximately 2,400 hectares, it is located 23 km southeast of Yangon and 30 km from the Yangon International Airport. One of the main ports in the country, Myanmar International Terminals Thilawa, is right next to the Thilawa SEZ. By shortening the transporting of people and freight (both exports and imports), these features definitely provide a geographical advantage to its investors.

As an SEZ, investors enjoy various tax exemptions in accordance with the 2014 Myanmar Special Economic Zone Law. Businesses in both the Free Zone and Promotion Zone are exempted from income tax (corporate tax) for the first 7 years (Free Zone) and 5 years (Promotion Zone). This exemption continues at 50% for another 5 years after the initial period. A further extension of the 50% tax exemption is possible. Investors in the Thilawa SEZ are also exempted from customs duties and other taxes on the capital goods they import. The Free Zone investors are exempted from customs duties and commercial tax, including for the import of raw materials. These exemptions allow firms to keep both their administrative and construction costs low. Zone A has received investments from 82 companies worth about $1 billion. The Thilawa SEZ is being extended to Zone B where construction of the required infrastructure is expected to be completed by mid-2018.

Tourist Attractions around Yangon

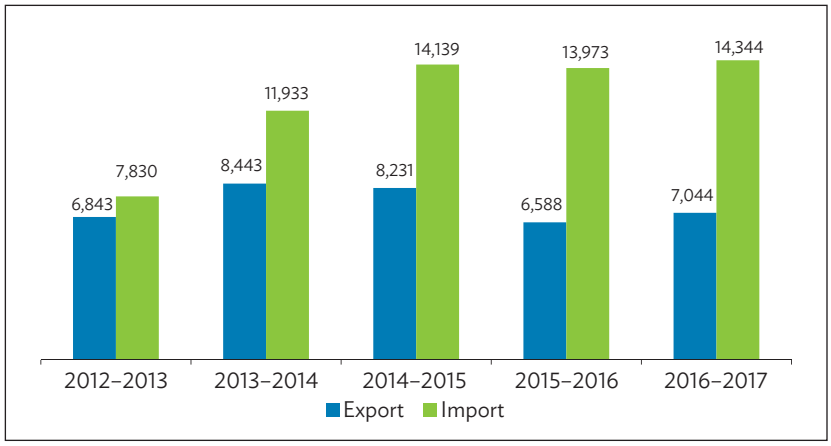
When it comes to Myanmar, Shwedagon Pagoda is always the first stop for the majority of tourists. It is not only a sacred religious site for Buddhists, but also the site for those who want to observe Myanmar's cultural heritage. Other religious sites worth visiting are Sule Pagoda in downtown area, Chaukhtatgyi Pagoda (Reclining Buddha), and Ngahtatgyi Pagoda. The architectural beauty of the colonial era may be seen by simply going around the city where there are many old buildings. The most prominent ones are the Secretariat Office on Theinphyu Road, City Hall in downtown Yangon, Bogyoke Market, St. Mary's Cathedral (the largest cathedral

in Myanmar), Judson Chapel in Yangon University Compound, Emmanuel Baptist Church near City Hall, and Htauk Kyant War Cemetery. The night market of Yangon City is also not to be missed as it gives further insights on the people in Yangon. Globe-trotters should also try to join the tour of the homes of Myanmar's well-known leaders, General Aung San and U Thant.

Trade

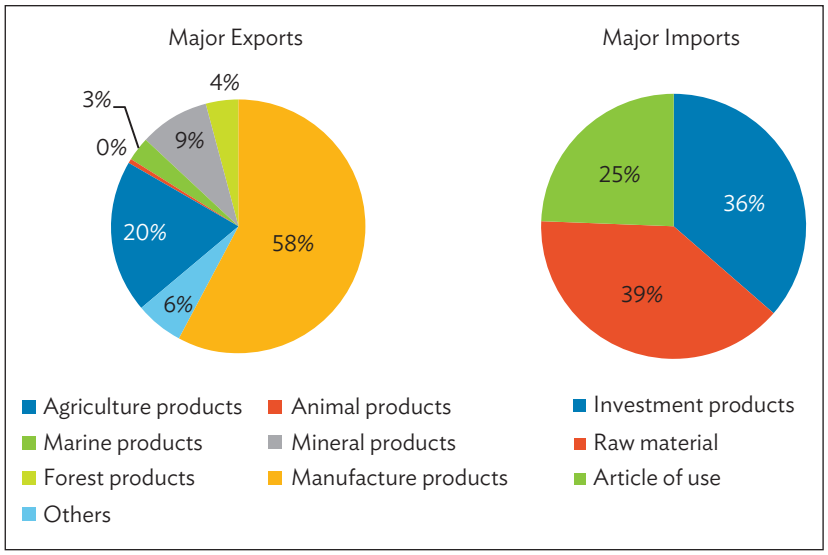
All overseas trade, accounting for an average 77% of total annual trade, is carried out in Yangon, as it is the only international gateway of Myanmar. Figure 43 shows the trend of overseas trade of Myanmar from 2012–2013 to 2016–2017. During this period, the trade account was continuously in deficit, with the deficit growing by more than seven times in 5 years. One reason for this situation is the liberalization of imports in 2013. Another reason is the growing investment projects in the country, including in infrastructure, with imports associated with these projects representing over one-third of import commodities. The major exports and imports of the country via overseas trade are shown in Figure 44.

Figure 43: Trend of Overseas Trade ($ million)



Source: Department of Trade, Ministry of Commerce.

Figure 44: Major Exports and Imports, 2016–2017



Source: Department of Trade, Ministry of Commerce.

Ayeyarwady Region

Industrial Zones in Ayeyarwady Region

Since around 1993, the government has established three industrial zones in the Ayeyarwady Region, one each in Pathein (106 acres), Myaungmya (58 acres), and Hinthada (86 acres) to enhance the socioeconomic status of local people and improve the regional industrial sector. However, the development of the zones has been slow, with almost all industries in the zones being more like cottage industries.

In 2012, garment firms showed interest in basing their operations in Pathein because of fewer labor disputes there and more reliable electricity supply than the industrial zones (IZs) in Yangon. As of March 2017, five garment factories were set up in the Pathein IZ. The Maubin Industrial Park was initiated by the Maubin Development Company in joint venture with Shanghai Yangon Investment Co., Ltd. The park will be established on 250 acres of land, and is expected to create over 77,000 jobs for the local people. Around 80% of factories to be established in the park will be garment-related. This project is slated to be completed by 2020. Ayeyarwady Development Public Co., Ltd. is developing the Pathein Industrial City. Zone A will cover around 600 acres and Zone B will cover around 550 acres. It will target investment in the food processing industries, labor-intensive industries, and agriculture-based and forestry-based industries. This is planned to be completed by March 2019.

According to the Myanmar Agribusiness Public Corporation Ltd. a new industrial zone will be built in 2017 in Myaungmya Township. It will cover 221 acres of wide land areas and will be focused on investments in agriculture, including livestock.

Tourist Attractions around Ayeyarwady Region

Ayeyarwady Region is famous for its two beautiful beaches and Pathein Umbrella, a traditional umbrella made of cotton, silk, or satin with attractive designs. Ngwe Saung beach is just a 5-hour drive from Yangon, while it takes around 7 hours to reach Chaung Thar. Both places are accessible by bus or car. Receiving increasing numbers of local and foreign visitors alike, the hotel facilities and tourism services there are well developed with a wide range of services, from five-star to budget. According to the regional government, more than 450,000 local and foreign visitors visited Ayeyarwady Region last year, increasing by 69% compared to the previous year. Ayeyarwady Region earned more than MK13 billion and $1.66 million last year from the tourism sector.

B. Kunming–Muse–Mandalay–Yangon–Thilawa Subcorridor

NSEC-5 traverses Muse and Lashio of the northern Shan State, Mandalay, and Yangon, passing through Meikhtila, Nay Pyi Taw, and Bago. NSEC-5 traverses one state and four regions, which contributed 49.1% of Myanmar's economy in 2016–2017 (Figure 45). The composition of economic activities varies depending on the geography of state and region.

Northern Shan State

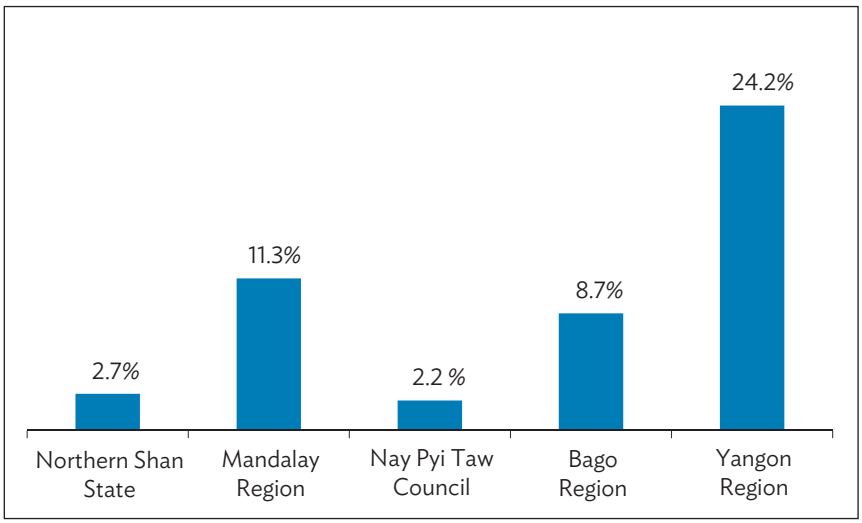
The major economic contribution of the Northern Shan State is in the services sector, which accounted for 41.3% of the state's gross domestic product. Within the service sector, the transport sector generates the highest production value. Agriculture contributes over one-third of the state's economy due to the large area of cultivated land and a diversified group of commercial crops, including maize, pulse and beans, tea, mandarin orange, potatoes, mangoes, and coffee.

Muse Central Business District Project Plan

Muse's Central Business District project started development in fiscal year 2013–2014, jointly handled by the Shan State Regional Development Project Committee and Maw Shan Development Public Company Ltd. on the PRC–Myanmar border to strengthen border trade, commercial activities, and industrial production; improve logistics and employment opportunities; and to enhance the socioeconomic condition of the local communities. The Memorandum of Understanding for the project has been assigned.

The Muse Central Economic industrial zone and New Star Light Construction Company Ltd. have jointly established businesses in the following categories in Muse on 86,000 acres of land in the Mong Ko subtownship: (i) light industries; (ii) trading zone and warehouses; (iii) training, educational, and cultural institutions; (iv) leisure and entertainment enterprises; (v) administration and banking; (vi) hotels and resorts; (vii) commodities transport; (viii) environmental

Figure 45: Contribution of Northern Shan State, Mandalay Region, Nay Pyi Taw, Bago Region, and Yangon Region to Myanmar's Economy in 2016–2017



Source: Ministry of Planning and Finance.

protection; (ix) international travel agencies; (x) forestry and gardening; and (xi) hydropower enterprises.

Tourist Attractions around Northern Shan State

Shan State is one of the largest in Myanmar in land area. There are 34 ethnic communities residing in the state, including the Palaung's and the Maw Shan's. One of the main tourist attractions in Shan State is the exploration of the lifestyle, traditions, and culture of these communities. The scenic views, such as natural caves, rivers, and waterfalls have been preserved and promoted to attract international tourists. In 2016, the Northern Shan State had 111,461 local and international visitors. Lashio, Muse, and Hsipaw are the most popular destinations, receiving 86% of tourists visiting the state.

Mandalay Region

Industrial Zones in Mandalay Region

Mandalay Region is located in the middle of Myanmar and considered the center of trade and transport in Myanmar. Mandalay Region has three industrial zones: Mandalay industrial zone, Myingyan industrial zone, and Meikhtila industrial zone. There is also an industrial park, the Mandalay Myotha Industrial Park, near Myotha (Ngazun Township), which is approximately 36 miles away from Mandalay and 28 miles from Mandalay International Airport. Developed by Myotha Industrial Development Public Co. Ltd., the industrial park covers 10,337 acres and includes areas designated for industrial, warehouse, and logistics development; residential development; road and transport; commercial public facilities; and amenities. It is strategically located, being easily accessible to all industrial and economic activities in the region. It was established to generate employment opportunities, help alleviate poverty in the Mandalay Region, and create and maintain an effective, pro-business and service-oriented investment environment for local and foreign Investors. It is open to all types of industries, such as the foundry industry, hi-tech and capital-intensive industry, consumer, and product service industries, except heavy industries. The project will continue its phased development: Phase 1 with 2,500 acres (2013–2017), Phase 2 with 4,500 acres (2017–2022), and Phase 3 with 3,500 acres (2022–2025).

Tourist Attractions around Mandalay City

Tourism forms a substantial part of Mandalay's economy. While Yangon is famous for its colonial architecture, Mandalay is known for its Myanmar

architecture and fine arts. The last two kings of Myanmar resided in Mandalay, and the city was an important center for religious studies. Its 19th century Myanmar architecture represents the city's romantic side, while the famous Maha Muni image and Kuthodaw Pagoda epitomize its religious side. Visitors can get a glimpse of the famous fine gold and silver crafts, wood and marble carving, silk thread weaving and ancient tapestry, and traditions of dance, music, and drama around Mandalay.

The temples and ruins of Bagan and Amarapura are also very popular tourist destinations. Built between the 11th and 13th centuries, Bagan symbolizes the significance of Buddhism and its impact on Myanmar. The charm of this ancient religious kingdom filled with 2,200 stupas and pagodas is often cited as the most interesting place to visit in Myanmar and its main tourist attraction. Bagan's economy depends mainly on tourism. Hot air balloons serve as observatories to take photos of the sky at sunrise and sunset. It is also the center of Myanmar's renowned unique ancient lacquerware industry that is distinct from those in Japan, the Republic of Korea, Thailand, and Viet Nam. Tourists can visit lacquerware workshops to learn how the products are made. Day trips to nearby Mount Popa, the center of *nat* (spirit) worship in Myanmar are also popular as part of the cultural tour. Bagan can be reached by over an hour's flight from Yangon to Nyaung Oo airport. Hilly regions of Pyin Oo Lwin and Mount Popa are potential ecotourism destinations.

Trade

Due to its strategic location in the middle of the country, Mandalay City has a strong border trade with the PRC and India. Primary goods, such as rice, beans, and vegetables are transported to resellers in Yangon or exported to the PRC or India through Mandalay.

Nay Pyi Taw Council

Being an administrative capital, Nay Pyi Taw is under the direct control of the President of Myanmar, and is made up of two districts: Dekkhina District and Ottara District. Both districts have four townships each: Pyinmana, Lewe, Zabuthiri, and Dekkinathiri townships in Dekkhina District; and Tatkon, Zeyathiri, Pobbathiri, and Uttarathiri townships in Ottara District.

Tourist Attractions around Nay Pyi Taw

The Water Fountain Park is worth a visit and is best seen at sunset. The main attraction is a fountain show, where the fountains dance in time with music. There is also a big play area, and a tower that offers good views of the city. The huge Uppatasanti Pagoda, a replica of Yangon's Shwedagon Pagoda built in 2009, is impressive with the added attraction of people being able to walk inside its domed interior. The Pyidaungsu Hluttaw, Myanmar's vast 31-building parliament, is a sight to behold. A guided tour of the buildings is possible with a pre-arranged permit. Permits must be obtained at least 10 days in advance.

A 45-minute drive to the northeast of Nay Pyi Taw, near the town of Yezin, are many interesting sites to visit and see: a zoo, safari park, planetarium, the site of the Southeast Asian (SEA) Games athletics complex, and the Defense Services museum. The National Landmark Garden, a 400-acre park to the south, is built in the shape of Myanmar, thus enabling a view of the country's famous sights in a short time. The Zoological Garden (Nay Pyi Taw), that opened on 26 March 2008, is on 1,062 acres of land. It houses 39 species of mammals, 30 species of birds, and 12 species of reptiles on display in 27 booths. Rare and endangered species of wildlife are shown at the booths that include icy land inhabitants, such as penguins and white tigers.

C. Mandalay–Tamu Subcorridor

NSEC-6 provides a link to India from Myanmar passing through Tamu in the Sagaing Region.

Sagaing Region

Monywa is a major center of trade and commerce involving agriculture products, such as beans, pulses, oranges, and palm sugar, due to its location on the Chindwin valley. Its local industries—such as those that produce cotton, noodles, flour, and edible oils—are thriving. One of the signature products of Monywa, called Budalon longy, is widely known for its checked patterns and fabric strength. Monywa provides 80% of Myanmar's supply of blankets. Cane and bamboo products, agricultural implements, and bullock carts are other crafts in Monywa, while bicycle parts and items of clothing are common products from India.

Tourist Attractions around Monywa

The most popular site to visit in Monywa is the Thanbuddhay Pagoda, which is 20 km away from the town center. The temple complex is settled on 37 acres of land that is part of the Mohnyin Forest Monastery retreat. It contains over 500,000 images of Buddha. Thanbuddhay Pagoda is the only pagoda in the whole Myanmar with a square temple base about 166 feet on each side. Unlike other pagodas, the statues of a pair of white elephants, symbolizing the auspicious and sacredness of Buddhism, guard the entrance instead of the usual mythical lions. This place is usually crowded during the festive season around November, when the annual pagoda festival is held for several days.

Another place worth visiting is Twin Taung, 6 miles from Budalin Township. There is a natural lake at the summit of this area where growing spirulina can be found. It is one of the major tourist attractions due to the breathtaking scenery around the lake. A spirulina factory is at the base of the hill where medical products and cosmetics are produced using spirulina. Another interesting site is the Alaungdaw Kathapa National Park, the largest national park in Myanmar, well known for the herds of large Asian elephants roaming in the park. There are also other wildlife creatures, including the Burmese brow-antlered and barking deer, various jungle cats such as clouded leopards and civets, giant monitor lizards, and several species of bears, including the Himalayas brown bear and sun bear. Alaungdaw Kathapa Pagoda is in the middle of the park. In the dry season, thousands of worshippers go on a pilgrimage to this pagoda. The Alaungdaw Kathapa festival is held annually around the lunar month of Tabodwe (February).

D. Dawei–Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau Subcorridor

Unlike subcorridors, SEC-1 traverses only one region in Myanmar: the Tanintharyi Region in the southernmost part of Myanmar. Bounded by Mon State to the north, Thailand to the east and south, and the Andaman Sea to the west, the region has a land area of 43,000 km. The capital city of Tanintharyi Region is Dawei.

Dawei Special Economic Zone

Dawei SEZ is the largest of its kind in Myanmar, located 20 km north of Dawei, and 350 km of Bangkok in Thailand. The Dawie SEZ project started in 2008 with the major shareholder at that time being the Ital–Thai Development Public Co., Ltd. (ITD) with 75% ownership, and locally owned Max Myanmar with 25%. The government granted a 60-year concession to develop a deep seaport, industrial estate, and road and railway links to Thailand's Kanchanaburi province. Max Myanmar withdrew its investment in 2012, followed by ITD's withdrawal in 2013. Since then, the project was delayed due to lack of funding. The project resumed in 2015 with the agreement of Japanese investors to join the project. The current Dawei SEZ investment consortium includes ITD, Japanese–Thailand joint venture, Rojana Industrial Park Public Company, and Thailand-based LNG Plus International Company.

When completed, Dawei SEZ will serve as a primary industrial estate with (i) three deep seaports; (ii) one liquefied natural gas terminal; (iii) three heavy industrial zones consisting of coal-fired power plants, steel mills, oil refineries and petrol chemical plants; (iv) one medium industrial zone for vehicle assembly; and (v) tire and construction material factories. The zone will have basic infrastructure, such as water reservoirs with a capacity of 500 cubic meters and telecommunications facilities. The most important feature is the 130 km long highway that will link Dawei to Bangkok and the rest of the GMS. The deep seaport will link Cambodia, Thailand, and Viet Nam to Africa, Europe, India, and the Middle East, thereby shortening the distance by eliminating the need for ships to go around Singapore through the Straits of Malacca.

Tourist Attractions around Tanintharyi Region

The major tourist attraction in the Tanintharyi Region is the Mergui Archipelago, also known as Myeik Archipelago. It consists of more than 800 untouched islands lying in the Andaman Sea. Inhabited by Salons, also known as sea gypsies, the area has become famous due to the exceptional swimming skills and unique ways of life and customs of these sea gypsies. Apart from witnessing the traditional culture of the Salon tribe, tourists can also visit Mergui Archipelago for its beautiful landscapes along the coast, such as coral reefs, mangroves, and diverse species of birds and aquatic animals. Visitors can go to the country's first marine national park on Lampi Island. The area holds substantial potential for adventure tourism, such as diving, snorkeling, sailing, beachcombing, and kayaking. In fiscal year 2016/2017, the region received over 150,000 local and foreign visitors, and earned more than MK1.6 billion.

VI. OVERALL ASSESSMENT OF ROAD TRANSPORT INFRASTRUCTURE

A major objective of this assessment is to help in (i) identifying bottlenecks in road transport infrastructure in the Myanmar component of the GMS economic corridors, and (ii) prioritizing interventions. In this regard, the role of Myanmar's Ministry of Construction is crucial. The Ministry of Construction is responsible for constructing, upgrading, and extending union highways and main roads across the country. It has developed a 30-year National Transport Development Plan covering 2001–2031, with 3–5-year plans in between. The plan includes the construction of international linkages and new roads. In discharging its functions, the ministry has allowed private companies to implement road transport projects under the build–operate–transfer (BOT) modality since 1996.

The problem of damaged roads due to overloading was cited in the assessment of road infrastructure in the different routes in Myanmar, which are parts of the GMS economic corridors. Overweight vehicles were allowed on the roads until 31 March 2017. Starting on 1 April 2017, after an education campaign against overloading, overweight vehicles are no longer allowed on the roads. The axle load limits defined by the Ministry of Construction are in Table 37.

A. Yangon–Myawaddy

On the whole, the roads along the Yangon–Myawaddy route on the East–West Economic Corridor are surfaced with asphalt and in good condition. A few parts are damaged and need repairs. Some parts are being upgraded. Bottlenecks in intercity roads, which tend to be narrow, need to be addressed. In particular, the construction of a bypass road in Thaton is important. Cars can go at a speed of 60–80 kilometers per hour in the road sections in good condition.

Max Highway Co. is undertaking the construction of the Yangon–Payagyi road section. The Payagyi to Hpa-An Myaingkalay road section is under the management of Shwe Than Lwin Highway Co., while the First Azure Co. is responsible for the Hpa-An to Eindu road section under a BOT scheme. The condition of the road along this route has improved due to the annual road renovation and extension. With ADB support, the China Road and Bridge Corporation was given the task of upgrading the Eindu to Kawkareik road section to ASEAN Class II in January 2017. When completed, this road section, together with the Kawkareik to Myawaddy road built by Thailand's See Sang Co., Ltd., can be considered the best roads in Myanmar.

Table 37: Axle Load Limits in Myanmar

No.	No. of Axles	No. of Wheels	Load Limit (ton)
1	6	22	55
2	5	18	46
3	4	14	34
4	4	12	25
5	3	10	21
6	2	6	16

Source: Department of Highways.

The bypass road in Bago is paved but has to be repaired due to damage incurred during the rainy season. When going through Thaton from Kyaikto, the inner city road is only about 14-feet wide, causing difficulty for trucks to pass through. Traffic volume is also high in downtown Thaton as the Hpa-An and Mawlamyine feeder lane is in the city. A bypass road needs to be constructed. Another bottleneck is the Gyine Bridge on the way to Kawkareik, with a capacity of only 25 tons, so that vehicles weighing more than 25 tons have to use a pontoon bridge to pass through the Gyine River.

There are adequate road signals along the Yangon–Myawaddy route. The weakness of the drainage system is a major deficiency in many places. This needs to be addressed in conjunction with the ongoing repairs and upgrading of some sections along this route.

B. Mongla–Kengtung–Tachileik

NSEC-1 in Myanmar traverses Mongla, Kengtung, and Tachileik. The Mongla–Kengtung road section is in poor condition, although it is good enough to pass through. Moreover, this road section is often closed due to safety concerns in the area. The Kengtung–Tachileik road section is in a hilly area, but the road is in generally good condition. Although dangerous curves and turns narrow the lane for trucks, renovation is still not needed due to the low volume of traffic. The road section from Mongla to Kengtung needs to be upgraded when the local security conditions improve.

C. Muse–Mandalay–Yangon–Thilawa

NSEC-5 in Myanmar traverses Muse in the border with the PRC, Mandalay, and Yangon, and ends in the Thilawa SEZ. In general, the roads along this route are in good condition, as upgrading of several sections has been carried out and regular maintenance works are conducted. However, there are bottlenecks in some segments, particularly in intercity roads and in the mountainous areas.

The Muse–Mandalay–Yangon route is used mainly by heavy trucks carrying cargo. Bypass roads are necessary so they can avoid going through the inner city streets, which are usually already congested. In the Mandalay–Muse road section, bypass roads around Pyin Oo Lwin and Lashio have made it easier for trucks to go through. The construction of detour roads in Kut-kai and Muse are necessary.

The Gote Twin turn near Naungcho has 21 turns, so drivers need to be careful. Often, this causes traffic congestion. The construction of a new bridge is in the planning stage to resolve the traffic congestion in the Mandalay–Lashio–Muse road section. It is usual for traffic to build up when something happens on the mountain roads that, in many cases, is caused by vehicles, especially 22-wheel articulated trucks.

Some parts of the roads in the mountainous areas have to be 48-feet wide in accordance with ASEAN standards. However, land is not sufficient for expansion in certain places. Because the Mandalay–Muse road section is on hilly terrain, the soil revetment wall tends to collapse frequently. These should be upgraded to stone walls.

D. Mandalay–Tamu

The road condition in the Mandalay–Tamu road section in NSEC-6 is good, but the road gets flooded during the rainy season, causing bottlenecks. In the Monywa–Kalay road section, Gangaw road is passable in all seasons, but Yargi road cannot be used by trucks during the rainy season.

The improvement of the bridges along the Kalay–Tamu road section is urgently needed because the existing bridges have a capacity of only 13 tons and the road width is only about 10 feet. Hence, 69 bridges in the Kyeekone–Tamu main road, at mile posts 0/0 to 90/0, will be upgraded with $54.21 million assistance from the Government of India. The Memorandum of Understanding between the India and Myanmar governments was signed, and land survey for the project commenced in 2017. The Kalay–Kyeekone highway road is beside the Myitthar River, so the land around the riverbanks tends to collapse in the rainy season. A retaining wall is being constructed in the area with the assistance of machinery and equipment from the Japan International Cooperation Agency.

Although the condition of the Monywa–Kalay–Gangaw road section is good, the road from Kalay to Gangaw is only 12-feet wide. This road needs to be widened. Similarly, the road from Kalay to Tamu is in good condition, but needs to be widened, and the bridges along this route should be commensurately upgraded to carry heavier loads.

E. Dawai–Htee Kee

The current route on SEC-1 will be replaced by a four-lane 130 km long road from Dawei in Myanmar to Htee-Khee in Myanmar's border with Thailand. The project to develop the Dawei SEZ, including the road to Thailand's border has been delayed due to funding constraints that led to the withdrawal of the project sponsors in 2013. The project resumed in 2015 with the agreement of Japan investors to join the project consortium.

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About the Assessment of Greater Mekong Subregion Economic Corridors

The transformation of transport corridors into economic corridors has been at the center of the Greater Mekong Subregion (GMS) Economic Cooperation Program since 1998. The Asian Development Bank (ADB) conducted the Assessment of Greater Mekong Subregion Economic Corridors (the Assessment) to guide future investments and provide benchmarks for improving the GMS economic corridors. The Assessment reviews the state of the GMS economic corridors, focusing on transport infrastructure, particularly road transport, cross-border transport and trade, and economic potential. This assessment consists of six country reports and an integrative report initially presented in June 2018 at the 22nd GMS Subregional Transport Forum.

About the Greater Mekong Subregion Economic Cooperation Program (GMS)

The GMS consists of Cambodia, the Lao People's Democratic Republic, Myanmar, the People's Republic of China (specifically Yunnan Province and Guangxi Zhuang Autonomous Region), Thailand, and Viet Nam. In 1992, with assistance from the Asian Development Bank and building on their shared histories and cultures, the six countries of the GMS launched the GMS Program, a program of subregional economic cooperation. The program's nine priority sectors are agriculture, energy, environment, human resource development, investment, telecommunications, tourism, transport infrastructure, and transport and trade facilitation.

About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 67 members—48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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