ERIA RESEARCH PROJECT REPORT 2020 NO. 02b

The India–Myanmar–Thailand Trilateral Highway and Its Possible Eastward Extension to Lao PDR, Cambodia, and Viet Nam: Challenges and Opportunities

Background Papers

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List of Abbreviations

ACMECS	Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy
ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
AEP	Act East Policy (India)
AFAFGIT	ASEAN Framework Agreement on Facilitation of Goods in Transit
AFAFIST	ASEAN Framework Agreement on the Facilitation of Inter-State Transport
AFAMT	ASEAN Framework Agreement on Multimodel Transport
AH	Asian Highway
AHN	ASEAN Highway Network
AIC at RIS	ASEAN-India Centre at RIS
ASEAN	Association of Southeast Asian Nations
ATM	Automatic Teller Machine
BBIN	Bangladesh, Bhutan, India, and Nepal
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BOT	Built-Operate-Transfer
BRO	Border Roads Organisation
BTA	Border Trade Agreement (India and Myanmar)
CBTA	Cross Border Transport Agreement
CLMV	Cambodia, Lao PDR, Myanmar, and Vietnam
CVD	Countervailing Duty (India)
DFQF	Duty-Free Quota-Free (India)
DGFT	Director General of Foreign Trade (India)
DoH	Department of Highway (Thailand)
EDI	Electronic Data Interchange
EH-CBTA	Early Heavest of the CBTA
EPC	Engineering Procurement Construction (India)
ERIA	Economic Research Institute for ASEAN and East Asia
EWEC	East-West Economic Corridor
FSSAI	Food Safety and Standards Authority of India
FTA	Free Trade Agreement

GMS	Greater Mekong Subregion
GR	Guarantee Receipt (India)
GSM	Geographical Simulation Model
ICP	Integrated Check Post (India)
IDE-JETRO	Institute of Developing Economies, Japan External Trade Organization
IEC	Importer Exporter Certificate (India)
II-CBTA	Initial Implementation of the CBTA
IMF	International Monetary Fund
IMFR	India-Myanmar Friendship Road
JICA	Japan International Cooperation Agency
KNU	Karen National Union
L/C	Letter of Credit
LCS	Land Customs Station (India)
LDC	Least Developed Country
LoA	Letter of Agreement
LPAI	Land Port Authority of India
LSPs	Logistic Services Providers
MDoNER	Ministry of Development of North Eastern Region (India)
MFN	Most Favoured Nation
MMK	Myanmar Kyat
MoRTH	Ministry of Road Transport and Highways (India)
MoU	Memorandum of Understanding
MPAC	Master Plan on ASEAN Connectivity
MUDRA	Micro Units Development and Refinance Agency (India)
MVA	Motor Vehicles Agreement
NABL	National Accreditation Board for Testing and Calibration Laboratories (India)
NCTF	National Committee for Trade Facilitation (India)
NEDA	Neighbouring Countries Economic Development Cooperation Agency (Thailand)
NER	North Eastern Region (India)
NHAI	National Highway Authority of India
NHIDCL	National Highway and Infrastructure Development Corporation Limited (India)
NPCC	National Project Construction and Cooperation (India)
NSEC	North-South Economic Corridor

ODA	Official Development Assistance
PDR	People's Democratic Republic (Lao PDR)
RCEP	Regional Comprehensive Economic Partnership
RFID	Radio Frequency Identification
RIS	Research and Information System for Developing Countries
SAARC	South Asian Association for Regional Cooperation
SBI	State Bank of India
SEC	Southern Economic Corridor
SEZ	Special Economic Zone
SOP	Standard Operating Procedure
TAR	Trans-Asian Railway
THB	Thai Baht
TIR	*Transports Internationaux Routiers* (International Road Transport)
TLH	Trilateral Highway
UBI	United Bank of India
UNECE	United Nations Economic Commission for Europe
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USD	United States Dollar
VND	Vietnamese Dong
WHO	World Health Organization
WTO	World Trade Organization

The Trilateral Highway and Northeast India: Economic Linkages, Challenges, and the Way Forward

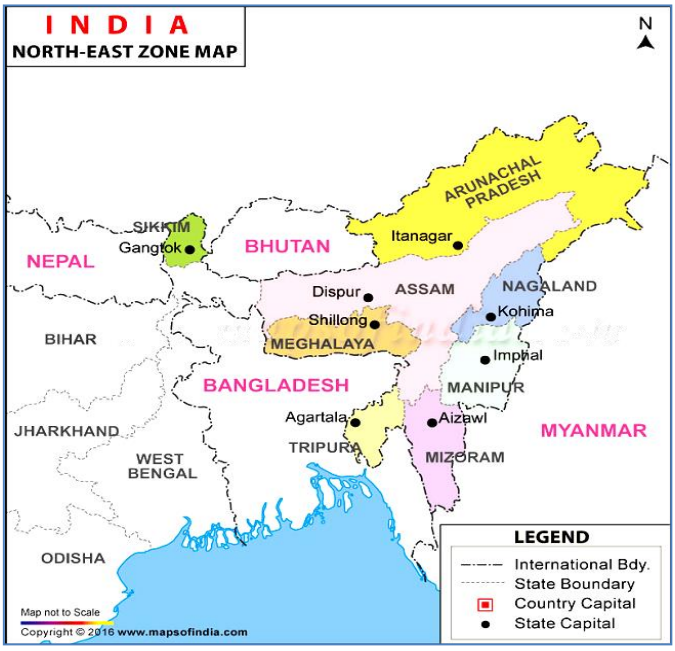
Background paper

By Prabir De, Priyadarshi Dash, and Durairaj Kumarasamy

1. Introduction

The North Eastern Region of India (NER), consisting of the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim (Figure 1), is India's natural resource powerhouse. The region is endowed with not only vast natural resources, such as oil, natural gas and hydropower, but also agro-climatic conditions that help the region to grow some of the country's best agro-forestry products. A well-educated labour force, relatively high literacy rate, and access to clean water are some of its unique strengths over other Indian states. The NER is also surrounded by an international border, serving as India's gateway to the east. Against these strengths, there are weaknesses and threats that emanate to a large extent from the difficult terrain of the region and inadequate infrastructure.[1] These pose some of the greatest constraints to economic growth, thereby nullifying the NER's border advantage. Transport and logistics bottlenecks have long been identified as serious constraints to the growth of the NER.[2]

Figure 1: North Eastern Region of India



Source: Maps of India (www.mapsofindia.com).

[1] See, for example, Sarma and Bezbaruah (2009).

[2] See, for example, De (2011), Brunner (2010), RIS (2012a), and De and Kunaka (2019), to mention a few.

Overall, trade and transportation infrastructure in the NER is dominated by the distribution of goods and products that are sourced mostly from the rest of India. The region lags behind the rest of India in the pace of economic growth and has a relatively small regional market.[3] Trade has special significance for the economies of the NER states. However, the region's growth potential is considerably high due to its geographical proximity to the growing Southeast and East Asian markets. Given its geographical location, an enhanced engagement with the Association of Southeast Asian Nations (ASEAN) under the Act East Policy (AEP) may generate new economic opportunities, thereby fuelling growth in the NER, ceteris paribus.[4]

The NER is central to the AEP. The AEP is designed to provide economic opportunities to the NER to benefit from its vast border and vibrant neighbours. The NER's value chain potential can be unlocked if border infrastructure and transportation networks, in particular, are improved.[5] In other words, improvements in the border infrastructure coupled with enhanced transportation networks with Southeast Asia may provide new economic opportunities to the NER.[6]

To strengthen the connectivity between India and ASEAN, the Trilateral Highway (TLH) between India, Myanmar, and Thailand is being developed, and there is a plan to extend the TLH to Cambodia, the Lao People's Democratic Republic (Lao PDR), and Viet Nam.[7] Completion of the TLH is likely to facilitate faster movement of goods and people between India and ASEAN[8] and add growth impetus to the NER.[9]

The aim of this study is to shed light on the economic principles underlying the NER market and to offer new ideas on how its potential can be better exploited in view of the TLH development. As the NER will be at the forefront of the TLH on the Indian side, this study aims to assess the status of the economic linkages of the NER, identify the constraints behind and at the India–Myanmar border, and recommend policy measures to augment the linkages between the NER and Southeast Asia. This study also reviews the institutional arrangements and identifies key elements that may hinder the movement of goods and people across the India–Myanmar border along the TLH.

The rest of the study is organised as follows. Section 2 discusses the rationale for an integration synergy for the NER, followed by a presentation of the trade scenario between India and Myanmar with particular focus on the NER in Section 3. Section 4 reviews the physical and institutional infrastructures profile of the NER in view of current and envisaged infrastructure linkages between the NER and Myanmar. Section 5 then discusses the developmental impact of the Trilateral Highway on the NER. Challenges to development and integration are then briefed in Section 6 along with a set of recommendations. Finally, Section 7 concludes.

[3] The total population is around 46 million (2011 census), with 70% living in Assam alone.
[4] See, for example, Kathuria and Mathur (2019)
[5] See De and Majumdar (2014), Singh (2020), and Das (2020).
[6] See, for example, Sarma and Choudhury (2018).
[7] At the ASEAN–India Informal Breakfast Summit on 15 November 2018, the Leaders welcomed India's proposal for a study by the Economic Research Institute for ASEAN and East Asia (ERIA) on developing an economic corridor along the TH and the feasibility of its extension to Cambodia, the Lao PDR and Viet Nam. See https://asean.org/chairmans-statement-asean-india-informal-breakfast-summit/.
[8] See Kimura and Umezaki (2011), Kumagai and Isono (2011), and De (2016), to mention a few.
[9] See, for example, De et al. (2019).

2. Rationale of an Integration Synergy for the NER

The NER is a US$43 billion economy, contributing about 2% to Indian GDP. Assam is the largest economy in the NER; the state alone contributes 57% of the NER's gross domestic product (GDP) (Table 1). Services are the mainstay of the economies of the NER states, accounting for 62% of the region's GDP and comprising a major source of employment and livelihood in the region. Except for Sikkim, the remaining NER states are services-driven, which is very much consistent with the national trend. The agriculture sector contributes almost 27% to the NER's GDP, which is another lifeline to the region's economy.

In contrast, industry has a small share (10%) in the NER's economy. The existing industries of the NER include coke and refined petroleum products, food products, and a range of manufactured products including wood, furniture, beverages, pharmaceuticals, metal products, rubber, and plastics products.[10] Industries requiring large-scale production, such as petrochemicals, cement, steel, and sugar, are not present despite the fact that the region is a rich source of the basic raw materials required as inputs for such industries.

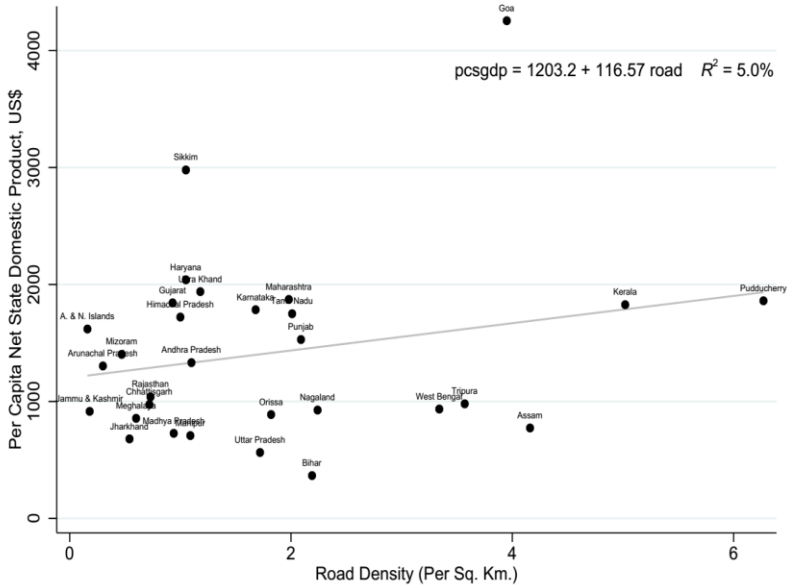
Table 1: Economic Profile of the NER

State	Per Capita NSDP$ (2017–18)	NSDP$ (2017–18)	Share of GSDP#			Annualised Growth Rate of NGDP (2011–12 to 2017–18)
			Agriculture	Industry	Services	
	US$	US$ billion	%			%
Arunachal Pradesh	1,528.0	2.29	38.84	3.78	57.37	6.7
Assam*	781.5	24.45	30.68	14.60	54.72	6.2
Manipur	784.9	2.48	16.78	3.44	79.78	5.9
Meghalaya	989.1	2.91	27.25	6.89	65.86	1.6
Mizoram	1,590.6	1.87	29.97	0.86	69.18	10.6
Nagaland*	947.8	1.94	29.69	1.57	68.73	4.7
Sikkim	3,073.9	2.10	7.80	48.05	44.13	6.2
Tripura	2,151.2	4.84	37.11	5.57	57.32	10.6
NER**	1,480.88	42.88^	27.27	10.10	62.14	6.5
India	1533.8	2,018.60	20.29	17.84	61.87	6.7

Notes: GSDP = gross state domestic product; NSPD = net state domestic product.
*Values for 2016–17; # share of GSDP is based on 2016–17; $ taken at constant price at base 2011–12; ** simple average of eight NER states as applicable; ^ total of NER states.
Source: Calculated based on the Economic Survey of India, Ministry of Finance, Government of India; and The Handbook of Indian Economy, Reserve Bank of India

[10] Based on NEC Databank.

Figure 2: Per Capita Income vs. Infrastructure Development, 2016–17



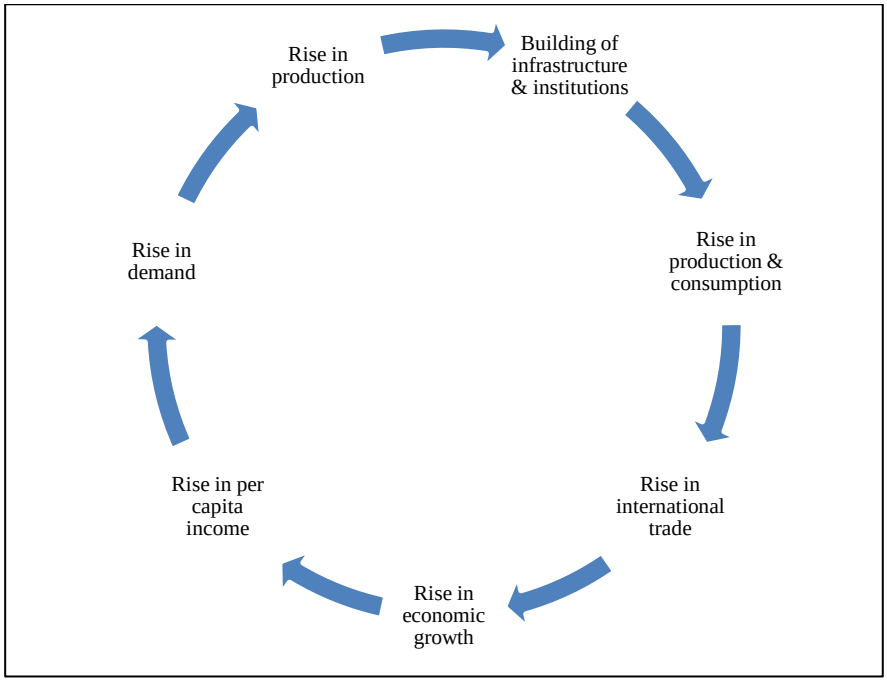
Source: Authors' own based on the Handbook of Indian Economy, Reserve Bank of India; and National Highway Authority of India (NHAI).

The per capita income of most of the NER states is relatively higher than the average for other Indian states, except Mizoram, Sikkim, and Tripura (Table 1).[11] In terms of per capita income, Sikkim is the richest state in the NER, followed by Tripura and Mizoram. The economic growth rates of most of the NER states are growing close to the average growth rate of other Indian states, except Mizoram and Tripura. Today, the rise in construction of public utilities in the NER is, thus, a manifestation of the NER's growth. The region is presently seeing the construction of roads and highways, bridges, railways, airports, land port, and many other such projects.[12]

However, the NER suffers from infrastructure deficits. The region requires more quality infrastructure, both physical and social. A high level of infrastructure investment is a precursor to economic growth.[13] The scatter diagram in Figure 1 shows a positive association between road density and per capita income amongst the Indian states, thereby suggesting enormous scope for further improving the income level of Indian states with higher capital accumulation. At the same time, the NER lags behind other Indian states in terms of technological progress and capital accumulation, which are essential for growth and development. The NER's capital accumulation base is abysmally low, and technological progress is rather slow. Infrastructure investment is, therefore, needed not only to build the national infrastructure but also to strengthen its capital accumulation.[14]

[11] The data are based on per capita NSDP in US dollars at the current price for the year 2017–18.
[12] See, for example, NITI Aayog (2018).
[13] See, Barro (1990), for example.
[14] Several studies argue that the NER needs major improvements in its border infrastructure, particularly to facilitate trade and investment with Bangladesh and Myanmar. See, for example, Das and Purkaystha (2010), RIS (2012a, 2012b), De and Ray (2013), De and Majumdar (2014), Dutta (2015), and Das (2020).

Figure 3: Removing Economic Isolation: Development Cycles for the NER



Source: De and Majumdar (2014).

From the supply side, strengthening the NER's current level of trade and economic linkages with the neighbouring countries would need infrastructure and institutional support, which gradually will facilitate growth and remove the region from economic isolation (Figure 2). Investment in physical and institutional infrastructure may augment production, both within and across borders, and enhance the growth of the region.

Considering the above, building infrastructure networks, such as the TLH and its potential extension to the Mekong subregion, may facilitate trade and integration between India and Mekong (CLMV-T) countries. Synergy between them may enable them to realise the benefits of economic integration and generate new growth potential for the NER.

3. India's Trade with Myanmar: Trends and the Changing Profile

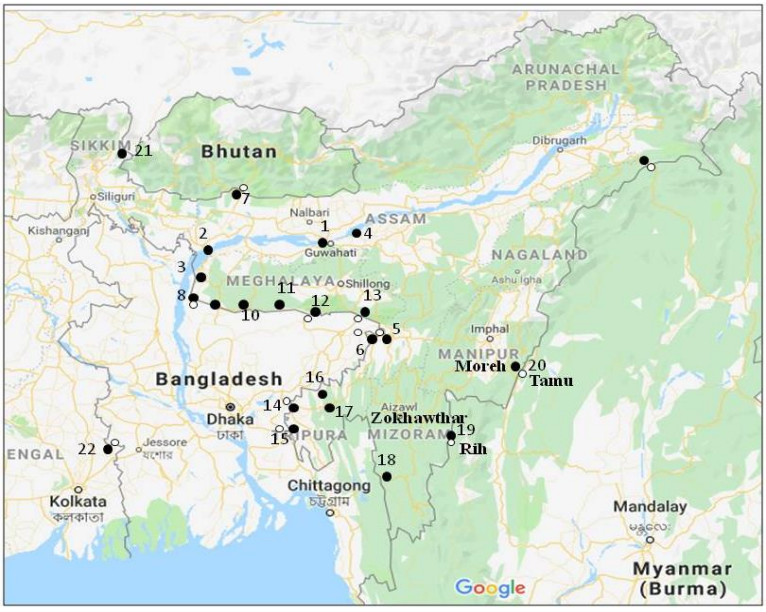
Trade has special significance for the NER's states. The NER's border is 98%, international with neighbouring countries like China, Bhutan, Myanmar, and Bangladesh (Table 2). Myanmar shares a 1,643 km international border with the NER in the states of Arunachal Pradesh (520 km), Manipur (389 km), Mizoram (510 km), and Nagaland (215 km). India and Bangladesh share 4,091 km of international borders, out of which the NER's share is almost 1,880 km (wherein 1,434 km is land border and 446 km is riverine tract). Four NER states, Assam, Meghalaya, Tripura and Mizoram, have international borders with Bangladesh. The NER conducts border trade with Bangladesh, through multiple land custom stations (LCSs), and also with other neighbouring countries such as Bhutan, Nepal, China and Myanmar, respectively (Figure 4). However, a large part of the NER's international border with Bangladesh is porous.

Table 2: Length of International Borders of NER States (km)

State/Country	Bangladesh	Bhutan	China	Myanmar	Nepal	Total
Arunachal Pradesh	-	217	1,080	520	-	1,817
Assam	263	267	-		-	530
Manipur	-	-	-	389	--	398
Meghalaya	443	-	-		-	443
Mizoram	318	-	-	510	-	828
Nagaland	-	-	-	215	-	215
Sikkim	-	32	220	-	97.8	350
Tripura	856	-	-	-	-	856
Total	1,880	516	1,300	1,643	97.8	-

Source: Ministry of Development of North Eastern Region, Government of India.

Figure 4: NER's Border Posts with Neighbouring Countries



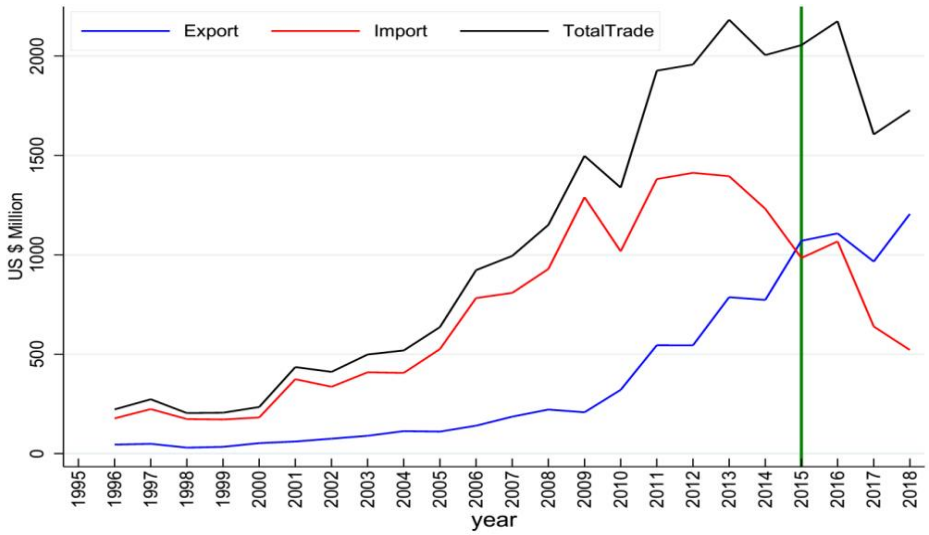
Note: ● Indian-side Land Custom Station (LCS); O Neighbouring country-side LCS. Refer to Appendix 1 for the list of border posts.
Source: ASEAN–India Centre (AIC), RIS.

Although four NER states share an international border with Myanmar, border trade with Myanmar only happens through Moreh in Manipur and Zokhawthar in Mizoram. The India–Myanmar Border Trade Agreement was signed on 21 January 1994, and trade started through the LCSs of Moreh in Manipur, Zokhawthar in Mizoram, and Nampong in Arunachal Pradesh. Out of the three LCSs, only Moreh and Zokhawthar are functional border posts. Border trade through Moreh in Manipur (India) to Tamu in Myanmar was formally started on 12 April 1995, while border trade through Zokhawthar in Mizoram began operating on 30 January 2004, with a new LCS built by the Border Roads Organisation (BRO) on 14 September 2007.

3.1 Trends in Bilateral Trade

India and Myanmar signed a trade agreement in 1970. Myanmar is India's FTA partner in ASEAN. In addition, India offers duty-free and quota-free market access to Myanmar. Bilateral trade between them has grown steadily and reached US$2.17 billion in 2016 (Figure 3). India's introduction of quotas on pulses imports and hikes in duty prices of about 40% on imports of betel nuts from Myanmar led to a decline in India's formal imports from Myanmar from 2016 onwards. Myanmar maintained a trade surplus with India until 2015, which turned into a trade deficit thereafter.

Figure 5: India's Exports to and Imports from Myanmar



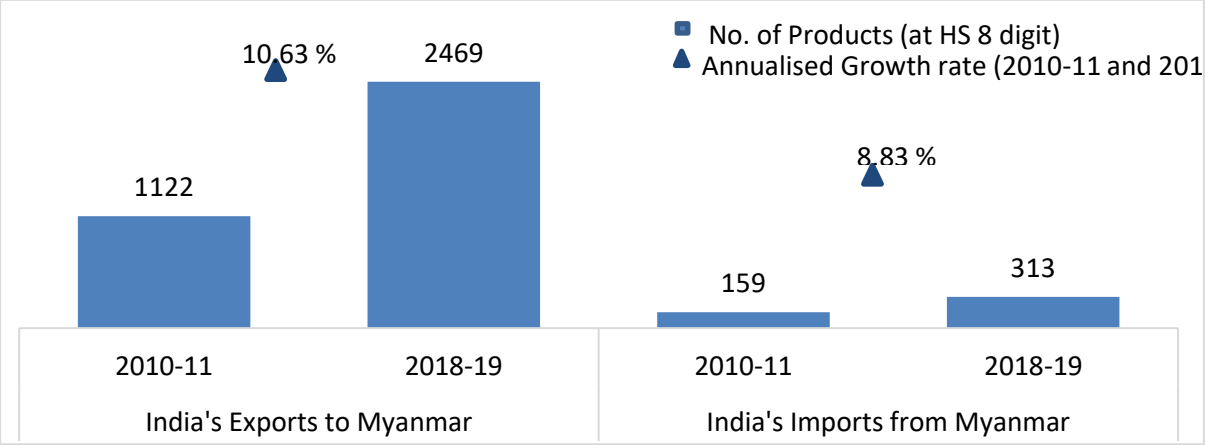
Source: Export–Import Databank, Government of India.

Notwithstanding the decline of bilateral trade in recent years, both India and Myanmar have significantly increased their exchange of goods. For instance, India has significantly increased its number of products exported to Myanmar from 1,122 in 2010–11 to 2,469 in 2018–19, showing a rise of 10.63% per annum between 2010–11 and 2018–19. Similarly, Myanmar has almost doubled the number of products exported to India from 159 in 2010–11 to 313 in 2018–19 (Figure 4). This suggests higher consumer confidence in the economies, thereby opening further scope for trade creation between the two countries.

The rising merchandise trade between the two countries also indicates that India's exports to Myanmar are relatively well-diversified, whereas India's imports from Myanmar are concentrated amongst a few products. India's exports to Myanmar at the HS 2-digit level primarily includes pharmaceuticals, iron and steel, electrical equipment, sugars and sugar confectionery, minerals,

machinery and mechanical appliances, cotton, and food processing, amongst others, which together accounted for about 84% of India's total exports to Myanmar in 2017–18 (Table 3). On the other, India's imports from Myanmar at the HS 2-digit level are edible vegetables, roots and tubers, wood and wood products, iron and steel, lead articles, coffee and tea, seafoods, medicinal seeds and plants, and rubber, amongst others, which together accounted for about 99% of India's total imports from Myanmar in 2017–18 (Table 4). Most of the bilateral trade is, however, routed through the ocean.

Figure 6: Number of Products Traded in India's Exports to and Imports from Myanmar (at the HS 8-digit level)



Source: Export–Import Databank, Government of India.

Table 3: India's Major Commodity Exports to Myanmar (at the HS 2-digit level)

HS Code	Commodity	2018–2019 (US$ million)	Share in 2018–19, %	CAGR (2010–11 to 2018–19), %
30	Pharmaceutical Products	199.67	16.56	15.76
27	Mineral Fuels, Mineral Oils and Products of Their Distillation; Bituminous Substances; Mineral Waxes	198.29	16.45	68.03
17	Sugars and Sugar Confectionery	126.12	10.46	25.10
2	Meat and Edible Meat Offal	124.11	10.29	7.14
87	Vehicles Other Than Railway or Tramway Rolling Stock, and Parts and Accessories Thereof	71.67	5.94	37.53
85	Electrical Machinery and Equipment and Parts Thereof; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and Parts	61.86	5.13	17.63
84	Nuclear Reactors, Boilers, Machinery and Mechanical Appliances; Parts Thereof	55.91	4.64	14.00
23	Residues and Waste from the Food Industries; Prepared Animal Fodder	46.66	3.87	13.65
52	Cotton	46.49	3.86	22.18
5	Products of Animal Origin, Not Elsewhere Specified or Included	26.94	2.23	34.54
72	Iron and Steel	23.95	1.99	1.21
61	Articles of Apparel and Clothing Accessories, Knitted or Crocheted	21.03	1.74	34.03
39	Plastic and Articles Thereof	16	1.33	13.31
73	Articles of Iron or Steel	15.62	1.30	8.01

Source: Export–Import Databank, Government of India.

Table 4: India's Major Commodity Imports from Myanmar (at the HS 2-digit level)

HS Code	Commodity	2018–19 (US$ million)	Share in 2018–19, %	CAGR (2010–11 to 2018–19), %
7	Edible Vegetables and Certain Roots and Tubers	370.43	71.03	-5.26
44	Wood and Articles of Wood; Wood Charcoal	92.25	17.69	-17.24
79	Zinc and Articles Thereof	12.05	2.31	-
72	Iron and Steel	8.86	1.70	-
40	Rubber and Articles Thereof	6.07	1.16	11.40
12	Oil Seeds and Olea. Fruits; Misc. Grains, Seeds and Fruit; Industrial or Medicinal Plants; Straw and Fodder	5.76	1.10	36.79
9	Coffee, Tea, Mate, and Spices	5.23	1.00	7.47
3	Fish and Crustaceans, Molluscs and Other Aquatic Invertebrates	4.08	0.78	57.09
76	Aluminium and Articles Thereof	3.94	0.76	77.49
41	Raw Hides and Skins (Other Than Fur Skins) and Leather	2.16	0.41	-8.89
62	Articles of Apparel and Clothing Accessories, Not Knitted or Crocheted	1.45	0.28	-
61	Articles of Apparel and Clothing Accessories, Knitted or Crocheted	1.4	0.27	-
64	Footwear, Gaiters and the Like; Parts of Such Articles	1.25	0.24	-
51	Wool, Fine, or Coarse Animal Hair, Horsehair Yarn and Woven Fabric	0.96	0.18	-
26	Ores, Slag, and Ash	0.91	0.17	21.63
87	Vehicles Other Than Railway or Tramway Rolling Stock, and Parts and Accessories Thereof	0.75	0.14	49.53
84	Nuclear Reactors, Boilers, Machinery and Mechanical Appliances; Parts Thereof	0.67	0.13	35.20
96	Miscellaneous Manufactured Articles	0.52	0.10	8.05

Source: Export–Import Databank, Government of India.

Table 5: India's Exports to Myanmar and the Potential in 2018 (at the HS 6-digit level)

HS Code	Product Label	India's Actual Exports to Myanmar	India's Export Potential
		(US$ million)	
	All products	1,234.65	1,447.1
871120	Motorcycles, incl. mopeds, with reciprocating internal combustion piston engine of a cylinder	6.23	249.5
210111	Extracts, essences and concentrates, of coffee	0.76	31.0
300450	Medicaments containing provitamins, vitamins, incl. natural concentrates and derivatives thereof	12.89	22.4
300420	Medicaments containing antibiotics, put up in measured doses, incl. those in the form of transdermal	18.96	21.3
870422	Motor vehicles for the transport of goods, with compression-ignition internal combustion piston	0.32	19.5
730820	Towers and lattice masts, of iron or steel	6.43	19.4
840890	Compression-ignition internal combustion piston engine 'diesel or semi-diesel engine'	0.05	18.7
390210	Polypropylene, in primary forms	5.99	15.4
842959	Self-propelled mechanical shovels, excavators and shovel loaders (excluding self-propelled)	1.58	14.3
670300	Human hair, dressed, thinned, bleached or otherwise worked; wool, other animal hair or other	2.99	13.8
050100	Human hair, unworked, whether or not washed or scoured; waste of human hair	24.79	12.9
300410	Medicaments containing penicillin or derivatives thereof with a penicillanic acid structure,	10.72	11.6
840999	Parts suitable for use solely or principally with compression-ignition internal combustion	0.40	10.8
721049	Flat-rolled products of iron or non-alloy steel, of a width of >= 600 mm, hot-rolled or cold-rolled	0.38	10.7
850421	Liquid dielectric transformers, having a power handling capacity <= 650 kVA	0.22	9.3

Source: ITC.

Overall, India's total export potential was about US$1.45 billion in 2018, compared to India's actual exports of US$1.23 billion to Myanmar. India has export potential in sectors such as automobiles, pharmaceuticals, food processing items, mineral products, and iron and steel (Table 5). This unmet potential may offer new business opportunities, provided the barriers to trade are removed.

Comparing the major exports and imports between India and Myanmar, there are very few products that are traded through the land borders of India and Myanmar. Border trade potential between India and Myanmar is yet to be unlocked. Myanmar is the entry/exit point to and from ASEAN. Therefore, the completion of the TLH may generate new demand for trade through the land border, particularly via Moreh and Tamu.

Trade improves the social and economic conditions of the people who are directly participating in the trade.[15] To boost exports from the NER in general and Manipur in particular, the northeastern states have to create adequate infrastructure for the promotion of export-oriented units and a business environment that facilitates cross-border linkages. For instance, some of the small and medium-sized enterprises (SMEs) located in and around Imphal city engaging in production activities such as for PVC pipes, plastics, garments, processed foods, electrical, etc. also export to Myanmar through the Moreh Integrated Check Post (ICP). Local industries may switch over to the land border for their trade with overseas partners once the TLH is completed. Therefore, assessing the current profile of border trade between India and Myanmar is important in order to make an appropriate strategy-driven connectivity programme for stimulating regional development in the NER.

3.2 Trade and Movement of Passengers at the India–Myanmar Border

Border trade started operating between the two countries in 1969. From 1990 to 1992, only Indian goods were exported to Myanmar. There were no exports coming from Myanmar to India. In 1992, legal trade based on barter systems on locally produced items within the radius of 40 km on either side of the border started between the two countries and continued till 2006. The agreement initially allowed 22 items to be traded under this system in 1995 (Table 6) with the mandate that imports and exports had to be balanced by exporting/importing goods of equivalent value within six months. Both exporters and importers trading up to US$20,000 had to produce an Importer Exporter Certificate from the Director General of Foreign Trade (DGFT), and complete Guarantee Receipt (GR) formalities (required only if the value exceeded US$1,000 and by way of head-load cargoes or a non-motorized transport system).[16] In addition, 18 more items in 2008 and 22 items in 2012 were added to the list of tradable items for border trade (Table 6). Since 2015, formal trade based on the most-favoured-nation principle started between the two countries. Even though normal trade started at the border, no duty drawbacks or trade preferences were extended to traders at the border.

[15] There is plenty of literature to show the relation between trade and poverty linkages. See, for example, World Bank (2018).

[16] See Kshetrimayum (2010) for more details.

Table 6: Number of Permitted Items for Border Trade between India and Myanmar

Sr. No.	Old and Additional Items Permitted for Border Trade
1	A total of 22 commodities/items notified by DGFT Public Notice No. 289(PN)/92-97 dated 10 April 1995
	1. Bamboo, 2. Betel nuts and leaves, 3. Chillies, 4. Coriander seeds, 5. Food items for local consumption, 6. Fresh vegetables, 7. Fruits, 8. Garlic, 9. Ginger, 10. Katha, 11. Minor forest products (excluding teak), 12. Mustard/rapeseed, 13. Onions, 14. Pulses and beans, 15. Reed brooms, 16. Resin, 17. Roasted sunflower seeds, 18. Sesame, 19. Soya beans, 20. Spices (excluding nutmeg, mace, cloves, cassia, and cinnamon), 21. Tobacco, 22. Tomatoes.
2	A total of 18 commodities/items notified by DGFT Public Notice No. 106(RE-2008)/2004-2009 dated 7 November 2008
	1. Agarbatti, 2. Bicycle spare parts, 3. Blades, 4. Bulbs, 5. Cosmetics, 6. Cotton fabrics, 7. Fertilisers, 8. Imitation jewellery, 9. Insecticides, 10. Leather footwear, 11. Life-saving drugs, 12. Menthol, 13. Mosquito coils, 14. Paints and varnishes, 15. Spices, 16. Stainless steel utensils, 17. Sugar and tomato, salt, 18. X-ray paper and photo paper.
3	A total of 22 new commodities/items added and notified by DGFT Public Notice No. 30 (RE2012)/2009-2014 dated 16 November 2012
	1. Agricultural machinery/equipment/tools, 2. Bicycles, 3. Bleaching powder, 4. Coal, 5. Edible oil, 6. Electrical and electric appliances, 7. Fabricated steel products, 8. Garments/readymade garments/cloths, 9. Handlooms and handicraft items, 10. Hardware/minor construction materials and electrical fittings, 11. Lime, 12. Medicines, 13. Milk powder, tea, edible oil, beverages, 14. Motor cycles and motor cycle spare parts, 15. Other items, such as electronic/musical instruments, stationery items, torch lights, 16. Plastic items: water tanks, buckets, chairs, plastic pipes and briefcase, 17. Rice, wheat, maize, millets and oats, 18. Scented tobacco, 19.Semi-precious stones, 20. Sewing machines, 21. Textile fabrics, 22. Two/three wheelers/cars below 100 CC.

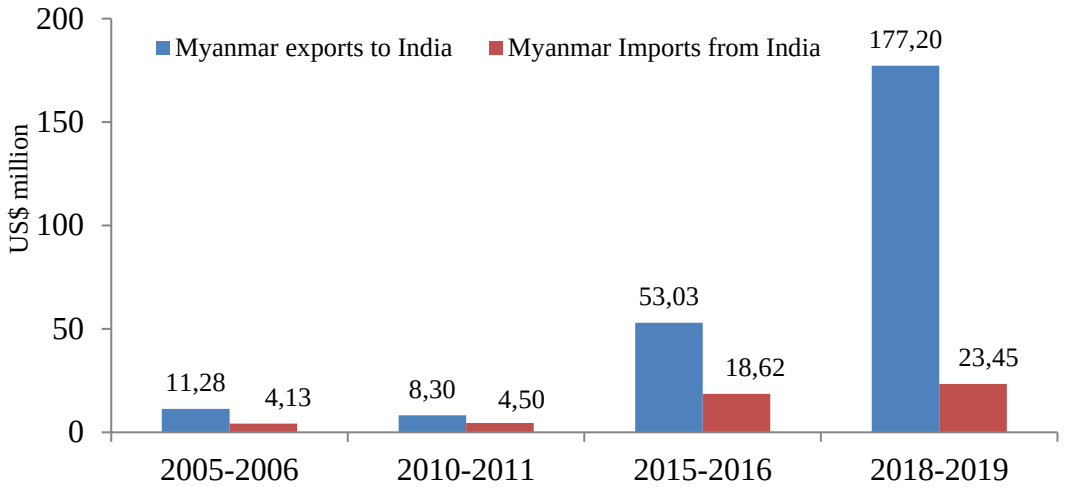
Source: Authors, based on secondary sources.

The border trade between India and Myanmar has increased significantly since 2005 (Figure 7(a)). However, the bilateral border trade volume between India and Myanmar is not substantial when compared with Myanmar's border trade with China or Thailand (see Figure 7(b)).[17] The bilateral border trade volume may go up if we factor in the volume of informal trade between India and Myanmar. A substantial part of the bilateral trade at the Moreh–Tamu border is carried out informally. In the formal sector, Myanmar's exports to India through the Tamu border have increased from US$11.28 million in 2005–06 to US$177.20 million in 2018–19. Meanwhile, India's exports to Myanmar through Moreh have increased from US$4 million in 2005–06 to only US$23.45 million in 2018–19. India's major exports to Myanmar through Moreh are high-speed diesel, wallpaper, wheat flour, methyl bromide, and fertiliser; whereas, India's major imports from Myanmar through Moreh are betel nuts, fresh vegetables, and fruits[18] (Table 7).

[17] See Annexe 2 for port trade and the growth in total trade between 2015 and 2018.

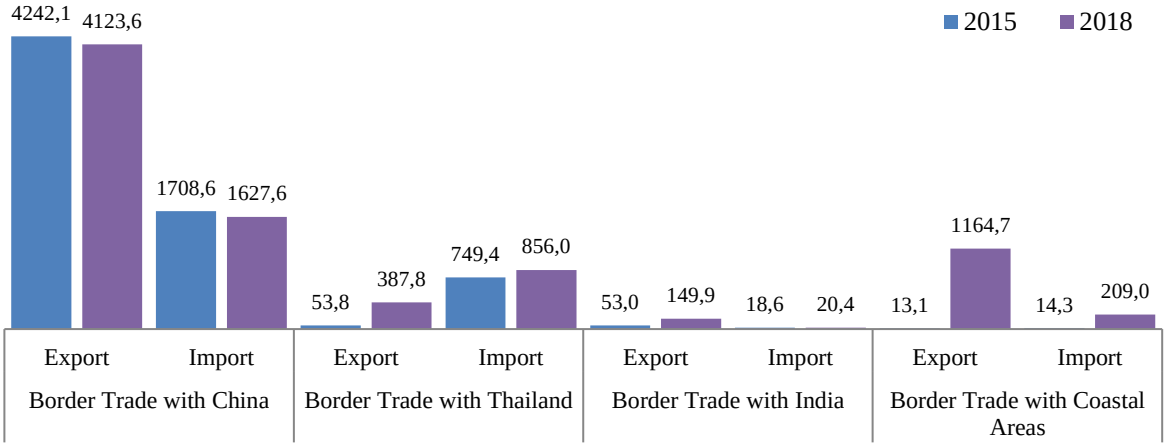
[18] Exports through the ICP in 2018–2019: (i) February 2019: pesticides (methyl bromide), one cargo of 5,000 kg, US$36,600; (ii) March 2019: wallpaper, one consignment of 940 kg, US$37,000; and (iii) April 2019: High-speed diesel, 16.95 metric tons, US$11,230

Figure 7(a): India–Myanmar Border Trade at the Moreh–Tamu Border



Source: Embassy of India, Yangon (from 2005–06 onwards) and 2018–19 data from Myanmar Customs, Ministry of Commerce, Myanmar.

Figure 7(b): Myanmar's Border Trade with Neighbouring Countries (US$ million)



Note: China: Muse, Lwejel, Chin Shwehaw, Kanpitetee, Kyaing Tong; Thailand: Tarchileik, Myawaddy, Mawtaung, Mese; India: Tamu and Rhi and Coastal Areas: Nabulae/Htee Khee, Mawtaung, Mese, Sittwe, Maung Daw.
Source: Ministry of Commerce, Government of Myanmar.

Table 7: Major Commodities Traded between India and Myanmar via the Land Border

India's Exports to Myanmar	India's Imports from Myanmar
High-speed diesel, wheat flour, wallpaper, methyl bromide, fertiliser, soya bean meal, pharmaceuticals, motorbikes, non-alloy steel, oil cakes, cotton yarn and auto parts	Betel nuts, dry ginger, green mung beans, turmeric roots, ginger, saffron, bay leaves, medicinal herbs, fresh vegetables and fruits, fishery items

Note: Data collected during January–December 2019.
Source: RIS Survey (2019).

Table 8: Indian Exports to Myanmar

Sr. No.	HS Code	Commodity	2018–19		2017–18	
			Value	Share in Total Bilateral Exports	Value	Share in Total Bilateral Export
			(US$ million)	(%)	(US$ million)	(%)
1	27101930	High-speed Diesel	46.210	3.833	21.000	2.173
2	38089122	Methyl bromide	0.070	0.006	-	0.000
3	48149000	Other wallpaper and wall coverings	0.010	0.001	0.020	0.002
		Total bilateral export	1,205.60		966.19	

Source: Export–Import Databank, Government of India.

Table 9: Trends in Indian Imports of Betel Nuts from Myanmar

Year	Import of Betel Nuts		Total Imports from Myanmar	Share of Betel Nut Imports in Total Imports from Myanmar
	HS 8028010 – Whole	HS 8028020 – Split		
	(US$ million)			(%)
2018–19	-	-	457.10	
2017–18	-	-	639.64	
2016–17	0.91	5.50	1,067.25	0.006
2015–16	2.05	12.65	984.27	0.015
2014–15	2.87	4.81	1,231.54	0.006
2013–14	0.64	0.70	1,395.67	0.001
2012–13	3.93	-	1,412.69	0.003
2011–12	0.20	-	1,381.15	0.000
2010–11	0.82	-	1,017.67	0.001
2009–10	1.71	-	1,289.80	0.001
2008–09	0.12	-	928.97	0.000
2007–08	3.14	-	808.63	0.004
2006–07	0.59	-	782.65	0.001
2005–06	0.62	-	525.96	0.001
2004–05	1.00	-	405.91	0.002
2003–04	1.49	-	409.01	0.004
2002–03	2.23	0.01	336.04	0.007
2001–02	1.18	-	374.43	0.003
2000-01	1.91	0.68	181.69	0.014

Note: Data are on imports through official routes.
Source: Export–Import Databank, Government of India.

Myanmar's exports to India do not pay any export duty for those items that are allowed to be exported to India. However, some of Myanmar's exports pay 2% duty to the Myanmar government. At present, 13 items are not allowed to be exported from Myanmar to India, and three items are not allowed to be imported from India to Myanmar. Out of the 10,000 tariff line export products, only 3,500 tariff line products need an export license. On the other hand, only 4,800 tariff line products need an import license. The rest of the products do not require any license and can be exported and imported without major documentation or compliance. The Tamu Chamber of Commerce is the nodal agency involved in facilitating Myanmar's trade with India through the Tamu border.

The major export item from Myanmar to India is primarily betel nuts (Table 9). Myanmar, being a least developed country (LDC), receives duty-free quota market access from India. However, India has raised the import duty on betel nuts from 0% to 40%. As a result, imports of betel nuts from Myanmar to India through formal channels has considerably fallen from US$1067.25 million in 2016–17 to US$457 million in 2018–19. However, this has encouraged the rise of informal trade of betel nuts through the land border.[19]

A major disadvantage to border trade is the lack of trade complementarities between India's NER and Myanmar. Both regions share very similar economic structures, where agriculture and resource extraction dominate. Northeast India produces mainly tea, coal, limestone, fruits and vegetables, etc. and lacks the industrial capacity to produce the manufactured goods that Myanmar needs.[20] This suggests that most of the border trade consists of informal trade (third-country goods), which brings arguably lower economic benefits to the region. Additionally, the overland route carries high transaction costs, which make it a far less desirable option compared to ocean transport.[21]

3.3 Passenger Movement between India and Myanmar through Moreh

Passenger movement through the Tamu and Moreh border has increased considerably over the last few years (Figure 8a). The passenger movement has picked up since the border was opened for passenger movement between the two countries at Moreh and Tamu on 8 August 2018.[22] The monthly passenger movement between Tamu and Moreh has increased significantly from about 200 in August 2018 to 800 in March 2019 (Figure 8b). Passenger movement at Moreh declined in 2019–20 compared to 2018–19. About 40–45% of annual visas have been issued by the Indian Missions in Myanmar to Myanmar nationals only to travel to India through the land border. Most of the Myanmar nationals visit India for the purposes of business, tourism, pilgrimage, medical, etc. Medical tourism between the two countries has been successful (e.g. the case of Shija Hospital in Imphal). People from Manipur, on the other hand, would like to visit Myanmar for the purposes of culture, tourism, business, etc. For Myanmar nationals, travel to India via Tamu is relatively cheaper. The movement of people via the Tamu border has gone up, particularly after the opening of the ICP at Moreh.

[19] Indian Customs claim that betel nut consignments that enter into India through Moreh are not necessarily of Myanmar origin. While Indian Customs insist on COO for imports of betel nuts, the Myanmar authority at Tamu claims that the green betel nut variety is produced in Kalay town in Sagaing region and areas along the Chindwin River (RIS Survey, 2019).
[20] See, for example, Nath (2018).
[21] See, for example, Chong (2018).
[22] This benefit was also extended to all other border points across Myanmar. Third-country nationals with valid visas can enter and/or exit from any land border post that has been notified by Myanmar.

Figure 8(a): Passenger Movement at the Moreh–Tamu Border

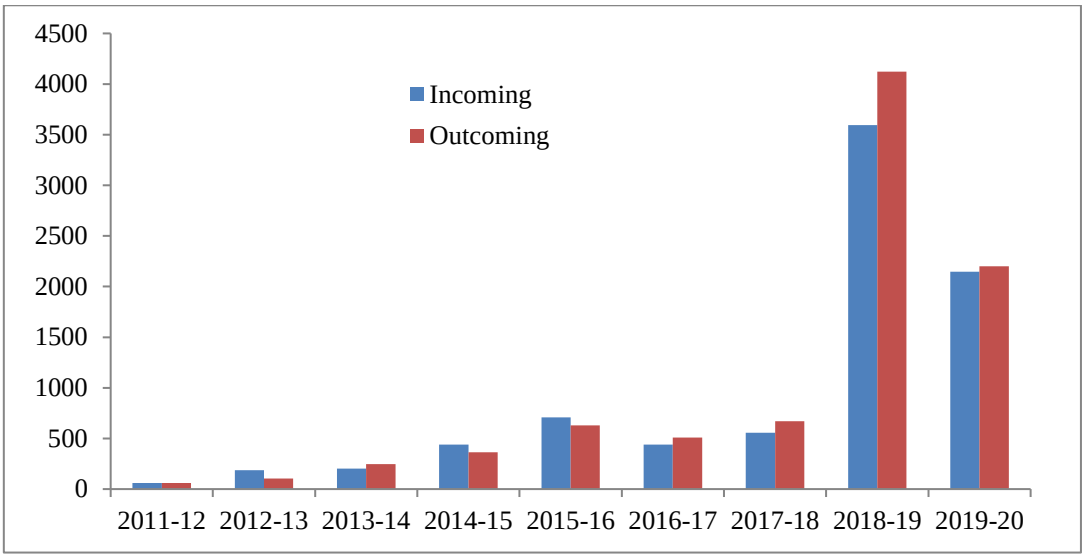
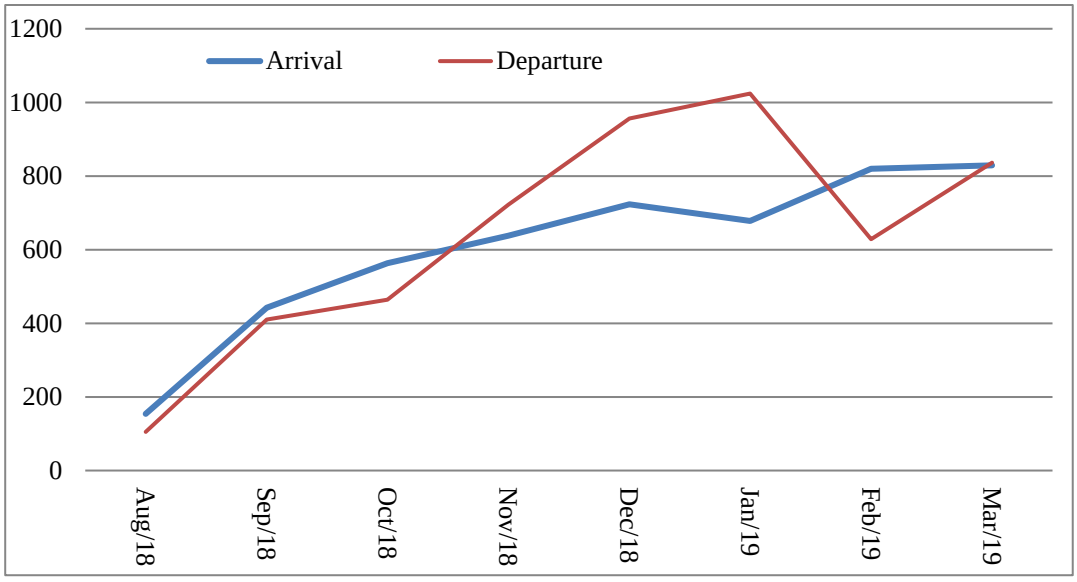


Figure 8(b): Passenger Movement at the Moreh–Tamu Border



Source: RIS Survey based on the Land Port Authority of India (LPAI), Government of India.

4. Border Infrastructure and Behind the Border Linkages

The distance between Moreh and Imphal, the capital of Manipur, is 110 km. Road is the only mode of transportation for goods and services. The widening of the highway linking Imphal to Moreh (NH 102) is under construction. This is the main highway that connects India with Southeast Asia and carries the trade between them.

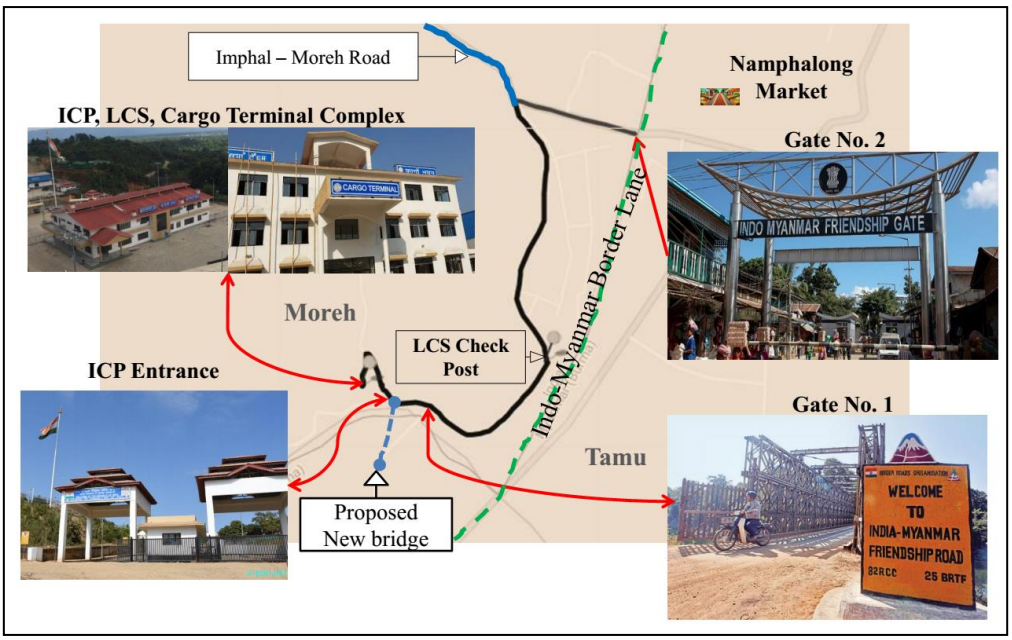
4.1 Border Infrastructure

Moreh and Tamu are two important border towns. India and Myanmar signed the Border Trade Agreement (BTA) on 21 January 1994, and the agreement came into effect on 12 April 1995. Under this agreement, border trade between the two countries is permitted for select items that attract a duty of 5% to be routed through designated trading points. The cross-border trade is fully functional between India and Myanmar in two LCSs they are LCS Moreh in Manipur and Tamu in the Sagaing Division of Myanmar and LCS Zokhawthar in Mizoram and Rih (or Rhi) in the Chin State of Myanmar.

4.1.1 Moreh Market

The border town Moreh is located in the Chandel district of Manipur. It lies to the southeast of Manipur on the Indo–Myanmar border. Tamu town in the Sagaing district in Myanmar is the corresponding border town of Moreh. About 81% of the local population is involved in non-agricultural activities.[23] Located on Asian Highway I, Moreh is India's entry point to Southeast Asian countries.

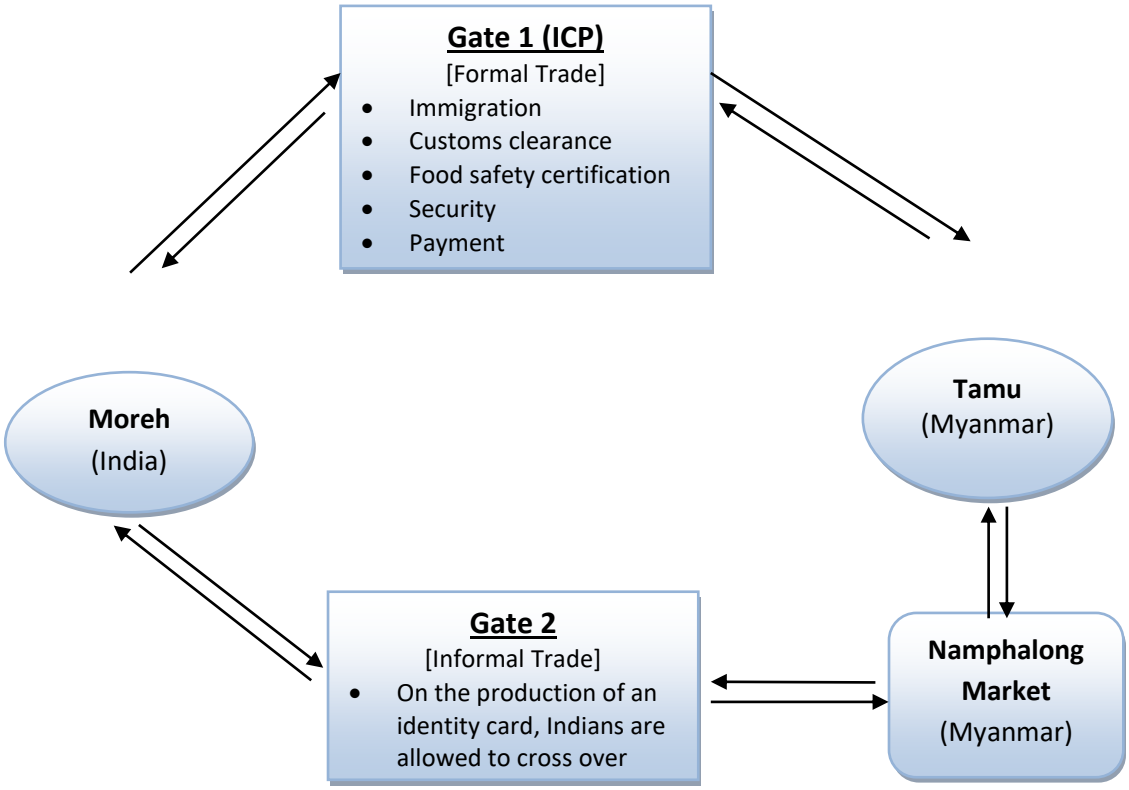
Figure 9: Border Infrastructure at Moreh, Manipur



Source: RIS Survey (2019).

[23] According to the 2011 census.

Figure 10: Trade Procedures at Moreh



Source: RIS Survey (2019).

The cross-border trade at Moreh takes place through Gate No.1 and Gate No. 2 (Figure 9). The current trade procedures are illustrated in Figure 10. Gate No.1 is the regulated trade route as per the standard operating procedure (SOP) between the two countries. LCS Moreh and ICP Moreh are located near Gate No. 1. Gate No. 2 is an entry or exit for passengers and head-load cargoes between India and Myanmar. Namphalong Market in Tamu is adjacent to Gate No. 2, and is a well-developed market. It sells not only goods from Myanmar but also goods originating from third countries, such as China, the Republic of Korea, Japan, and Thailand, amongst others. Namphalong market has active Indian buyers who take a permit from the gate for entry, pay for the goods purchased in Indian rupees, and return with head-loads. There is an absence of customs checks and a lack of health and safety checks of the products that are coming through Gate No. 2. Trade through Gate No. 2 is permitted for local residents who are settled within a radius of 40 km on both sides of the border of India and Myanmar. Moreh's main market, commonly known as the Morning Bazaar, is located near border Gate Number 2.

4.1.2 Tamu Market

Tamu, erstwhile Kabaw Valley, is situated in Sagaing Division in northwest Myanmar. It is an important commercial town for cross-border business between the two countries. It was also a hub for smuggled goods from Thailand and China that are transported to India. It is the counterpart LCS of Moreh. On average, 30 cargo trucks come to Tamu every day with export cargoes to India.[24] At Tamu, the border infrastructure is relatively sufficient. However, the infrastructure at Tamu should

[24] The weight of each truck is about 12–13 tons. Source: RIS Survey (2019).

be enhanced to meet the rising trade and passengers between the two countries in view of the operation of the TLH from 2021 onwards. In Tamu, there are only eight customs officials, which are sufficient at present, but the number must be increased once the TLH becomes operational. Tamu provides warehouses, cargo sheds, parking for vehicles, immigration, customs, and plant and quarantine facilities. Unlike the ICP at Moreh, Tamu does not have border infrastructures in one place. Nevertheless, both the countries need to work together for the improvement of the trading infrastructure at the border and to update the SOP to deal with the rising trade. The documents required for import are an invoice, packing list, sales contract, and company profile. Licenses for exports and imports are also needed. The items that do not need a license can go straight to customs and then can be exported to India.

4.1.3 ICP at Moreh

The Integrated Check Post (ICP) is a trade centre for the facilitation of bilateral trade between India and Myanmar as well as for the movement of passengers between the borders. The ICP started its operations from 8 August 2018. ICP Moreh is located on NH 102 on the India–Myanmar border in the Tengnoupal district, about 110 km from Imphal. The total area of the ICP is 38.34 acres. The Land Port Authority of India (LPAI) is yet to get physical possession of the ICP from the Government of Manipur. The Government of India has approved about Rs130 million for the development of ICP Moreh.

The operations at ICP Moreh commenced with the Passengers Terminal on 15 March 2018, and immigration facilities started functioning from 8 August 2018. Since then, Moreh ICP has started handling passengers coming to India. In 2018–19, ICP Moreh handled 1,436 incoming passengers from Myanmar and 1,620 outgoing passengers from India to Myanmar.[25] The majority of the Myanmar nationals come to Manipur for medical treatment, and some of them also enter India for tourism purposes. For example, when there is a sports festival (football), tourist flows from Myanmar to India go up. ICP Moreh is expected to generate employment, promote trade between India and Myanmar, and foster connectivity and trade facilitation with the neighbouring countries.

Table 10: Current Status of Facilities at ICP Moreh

Sl. No.	Facilities	Present Status
1	Warehousing	Cargo terminal construction is in the completion stage, with an 800 square metre capacity storage area for dry cargo. It will be ready by the end of 2020.
2	Cold Storage	Construction is ongoing with a 400 square metre capacity storage area for perishable goods.
3	Banking	Provision for a banking space is ready and rental free but not yet functional. The Land Customs Station (LCS) has invited State Bank of India (SBI) and Union Bank of India (UBI) to open a branch.
4	Foreign Exchange Facility	UBI is authorised to do foreign exchange.
5	Weighing Bridge	Completed

[25] See the Land Port Authority of India website (www.lpai.gov.in) for further details.

6	Plant Quarantine	Not ready yet
7	Food Safety and Standard Authority of India (FSSAI)	Space is allotted for the laboratory of FSSAI and is yet to come. FSSAI activities are managed by the Manipur State Food Safety Department. All the laboratories under the FSSAI should be National Accreditation Board for Testing and Calibration Laboratories (NABL) certified.
8	Internet Bandwidth	The current internet speed is only 8 Mbps, which has to be enhanced further. At present, trade at Moreh through the LCS is handled on a manual basis. The LCS is planning to introduce an Electronic and Data Interchange, which requires more internet speed.
9.	Human Resources	At ICP: one regular post and 13 people are presently working on a contractual basis. At LCS: 3 inspectors, 2 havildars, and 1 superintendent
10.	Security	Four security persons deployed by Assam Rifles
11.	Electricity	Power supply is available but with occasional power cuts. In the case of a power cut, a diesel generator is available.
12.	Medical facility	Not yet ready
13.	Public Conveniences	Space for public conveniences is available and already functional
14.	Parking Space	Available

Source: RIS Survey (2019).

The construction of the ICP is almost in the completion stage and includes a passenger terminal, cargo terminal, customs processing, immigration clearance, import warehouse, electric sub-station, parking, rummaging sheds, weighbridge, security and surveillance, banks/ATMs, drivers' rest area, public conveniences, and a monumental national flag. The current status of the facilities at ICP Moreh is given in Table 10.

LCS Moreh is housed in a departmental building located near Gate No. 1 but is under consideration to be shifted to the ICP complex. Plant and quarantine facilities are available at LCS Moreh. However, the plant and quarantine facilities are yet to be used. Moreh and Tamu border posts should be kept open 24/7 for trade and tourism purposes.

4.2 Financial Infrastructure

Four banks are currently operating in Moreh: State Bank of India (SBI), United Bank of India (UBI), UCO Bank, and Axis Bank. These four banks mostly cater to the demand for banking and other financial services. The four banks have one ATM each placed in different locations of Moreh town. Amongst the four, UBI is the officially designated foreign exchange dealer in Moreh. Banking and financial transactions are substantial, taking into account the level of economic activities in Moreh and the reported border trade taking place between the two countries through the Moreh–Tamu border.

Based on preliminary sources, the current average daily deposits of SBI and UBI are to the tune of between Rs4–5 million and Rs10 million, respectively. SBI has approximately 7,000 savings accounts and 300 current accounts, whereas UBI maintains 8,000 savings accounts and 300 current accounts. In the case of border trade, no special payment arrangement, including a letter of credit, exists between India and Myanmar. Although there is no provision of a letter of credit, trade-related transactions, which are mostly conducted through current accounts, constitute a substantial part of the banking business in Moreh. The RIS Survey (2019) found that around 90% of the total deposit mobilisation of UBI per day (approximately Rs9 million) is linked to border trade. Likewise, current account transactions of SBI are approximately Rs3–4 million per day.

Banks operating in Moreh expect that local business and trade will grow once the Trilateral Highway (TLH) becomes operational. While the need for more human resources is often highlighted, with technological modernisation and proper clearing and settlement mechanisms, the banks would be able to handle the possible rise in demand for financial services associated with higher border trade.

Banks also provide financing to local traders and businesses along with mandated commitments of priority sector lending and Micro Units Development and Refinance Agency (MUDRA) loans.[26] Loans extended by SBI are approximately Rs170 million, and about 100 SMEs are financed by the bank. Similarly, UBI has provided 300 MUDRA loans, mostly for the purpose of variety stores/shops. While the lending portfolio of UBI has grown over the years, the bank does not have any large exposure to a single borrower, thereby reducing the cumulative risk of default.

In the case of trade-linked banking services, both SBI and UBI are considering the proposal of opening extension counters at ICP Moreh, especially for foreign exchange-related services. Both SBI and UBI underscore the importance of improving the trade environment in the Imphal–Moreh region and suggest a number of policy and institutional reforms. As informal trade with Myanmar through Moreh continues to remain a challenge, banks believe in positive outcomes of incentives, like bank guarantees, letters of credit, faster payment settlement, bilateral banking arrangements, rupee trade, and so on. In particular, UBI is keen to provide bank guarantees for local traders engaged in border trade. Since foreign exchange transactions are likely to increase in the future, UBI needs proper technology for validating the foreign currency notes as the risk of fake currency circulation is high. Despite being the official dealer of foreign exchange, the bank does not sell any foreign currency to the traders. The customers and traders are only allowed to convert foreign currencies to the Indian rupee.

Summary

There are several challenges, including shortages of staff, lack of electricity, lack of good-quality internet, absence of accommodation for officials, and other social infrastructure. At the moment, only the passenger terminal has been opened. Moreh ICP has started accepting people coming from Myanmar to India and vice versa. The cargo terminal is not yet ready. However, construction is in the final stage. The biggest challenge is bank transfers. Trade does not happen through a bank Letter of

[26] MUDRA is a refinancing Institution. MUDRA does not lend directly to micro-entrepreneurs/individuals. Mudra loans under Pradhan Mantri Mudra Yojana (PMMY) can be availed from nearby branch offices of a bank, NBFC, MFIs, etc.

Credit (LC). There must be a formal banking facility. Transactions between the two countries should follow the LC system.

The Government of India may extend a transport subsidy to the exporters located in Imphal and Moreh. This subsidy would help them to compete with bigger exporters who are not from the region.

The Sagaing province of Myanmar is a big market for Indian goods. Greater cooperation to promote trade and investment is needed between Manipur and Sagaing. Completion of the construction of the TLH and the replacement of bridges will strengthen the trade and investment linkages between India and Myanmar.

Tourism is another potential for business and is yet to be unlocked. People from Myanmar would like to travel to Bodh Gaya. They can cross the border at Moreh and reach Imphal, then take a flight for Kolkata or Guwahati for their onward journey to Patna or Bodh Gaya. The Manipur government may also consider setting up a guest house for Buddhist travellers.

Greater linkages between SMEs in the two countries, particularly in the border areas, will pave the way for higher trade and value chains. Some potential exporters have been SMEs, which can do business between the two countries in the areas of processed foods, automobiles, steel items, textiles, and apparel, etc.

E-visas are yet to be accepted at the Moreh border by Indian Immigration. However, the border pass is pending from the Indian side, whereas the Myanmar side has already started the border pass.

An electronic mode of trade, instead of a manual system, must be introduced. India–Myanmar trade can also be conducted in the local currencies (rupee-kyat).

In view of international trade at Moreh and Tamu, food safety should be strengthened, both at the Moreh border and Imphal. The activities of the Food Safety and Standard Authority of India (FSSAI) are managed by the Manipur State Food Safety Department. All the laboratories under the FSSAI should be National Accreditation Board for Testing and Calibration Laboratories (NABL) certified. A microbiology section of the FSSAI Lab is not yet developed. A small office opened in Moreh last December 2018 to check the chemicals in processed food items. However, this office is now closed. FSSAI Manipur office is issuing NABL certificates from time to time.

A Joint Task Force between India and Myanmar should be created, and a Joint Trade Committee could be set up to give support to trade and connectivity.

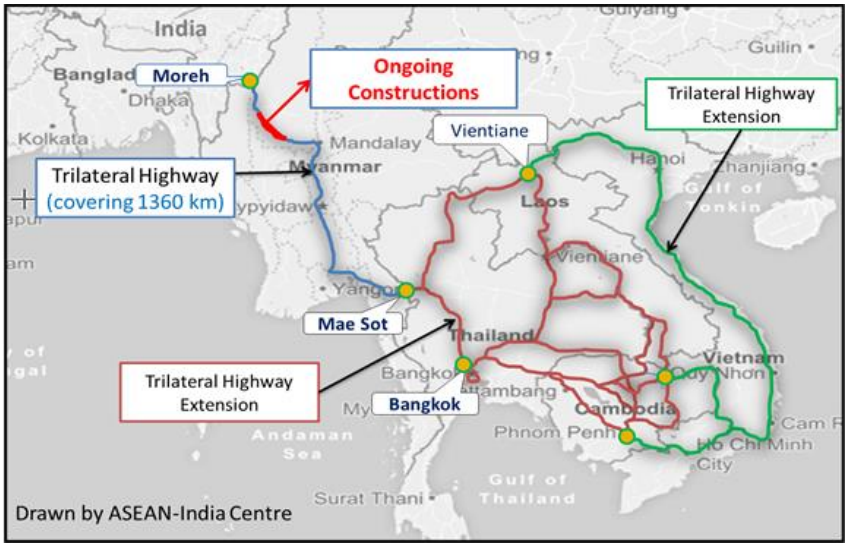
5. The Trilateral Highway and Its Extension to Cambodia, the Lao PDR, and Viet Nam

Enhancing connectivity between ASEAN and India is a major thrust of ASEAN's Master Plan on ASEAN Connectivity 2025 and India's Act East Policy. In order to foster regional cooperation and integration through deeper economic relations and people-to-people linkages, it is important to establish well-designed connectivity in the region by developing strategies to enhance economic, industrial, and trade relations between ASEAN and India. The current foundations of ASEAN–India connectivity are required to be updated and synced with the progress in physical connectivity within ASEAN, and between India and ASEAN. In this context, the ongoing connectivity project of the TLH between India, Myanmar, and Thailand and the proposed extension of the TLH towards Cambodia, the Lao PDR, and Viet Nam (CLV) would enable an increased exchange of goods, services, and the movement of people between India and ASEAN. Besides, connecting India's NER with Southeast Asia would contribute to higher trade and investment, strengthen regional value chains, create jobs, and increase people-to-people contact, amongst others, and the NER would further strengthen the relationship with Myanmar for enhancing ASEAN–India connectivity.

5.1 Trilateral Highway

The Trilateral Highway (TLH) is aimed to build connectivity from Moreh in India to Mae Sot in Thailand via Myanmar (Figure 11). The India–Myanmar–Thailand TLH project involves the construction of a 1,360 km highway connecting Moreh in Manipur to Mae Sot in Thailand through Myanmar. The cost of the construction of the Trilateral Highway is estimated at US$140 million. The TLH road is further proposed to be extended to Cambodia, Lao PDR, and Viet Nam.

Figure 11: Trilateral Highway and Its Extension



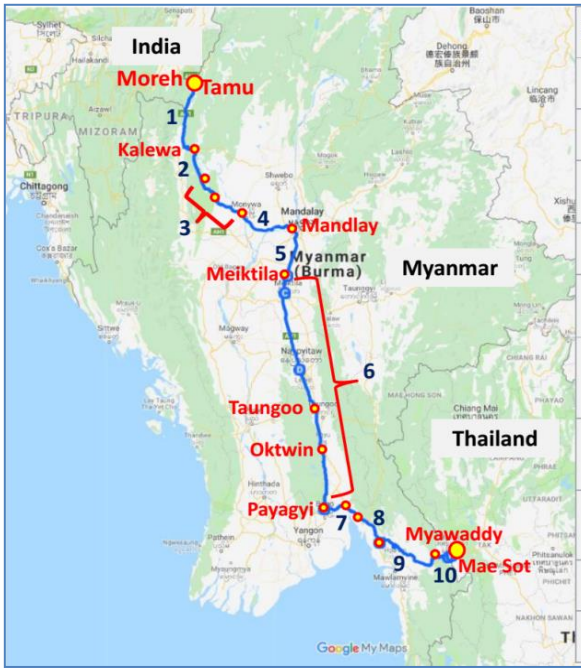
Source: ASEAN–India Centre at RIS.

5.2 Tamu–Kalewa–Kalemyo Road

The Tamu–Kalewa–Kalemyo road, or the India–Myanmar Friendship Road, was inaugurated in 2001. The road, built entirely by India, was a gift to Myanmar and is a part of the Asian Highway. The Tamu–Kalewa–Kalemyo Friendship Road has been built by the Border Roads Organisations (BRO) and was transferred to the Government of Myanmar in 2009. The related agreements between India and Myanmar suggest that India would widen and repave the existing roads in the area, while Myanmar would upgrade the single-lane bridges along the route. Myanmar, however, was unable to carry out the upgrading work. In 2012, India agreed to repave the existing highway and upgrade all 70 weak/vintage bridges along the road, of which only one has been repaired by Myanmar till date. The construction of the remaining 69 bridges in the Tamu–Kyigone–Kalewa section (149.70 km) of the highway and upgrading the Kalewa–Yagyi section (120.74 km) are being undertaken by India. It is a part of the Trilateral Highway, which is likely to be completed by May 2021. The route of the TLH is as follows (Figure 12): Moreh (India)– Tamu–Kalewa–Yargi–Monywa–Mandalay–Meiktila bypass–Taungoo–Oktwin–Payagyi–Theinzayat–Thaton–Hpaan–Kawkareik–Myawaddy–Mae Sot.

The National Highway Authority of India (NHAI) has issued a letter of award to Punj Lloyd and Varaha Infra joint venture for the construction of a two-lane highway in the Kalewa–Yargi section of the TLH. The 122 km road is estimated to cost Rs11.20 billion. The project is funded by the Ministry of External Affairs, Government of India. Out of a total 122 km road length, about 20–25 km of road falls in the hilly terrain. The project commenced on 28 May 2018 and is expected to be completed by 2021. The contractors under the NHAI's supervision would carry out the maintenance of the road until 2028. So far, they have made 11% progress on the project.[27] The project is primarily focused on improving the curves that would reduce the length by 50 km and also reduce the travel time by 1–2 hours from the present 6–7 hours and also increase the speed of the truck by 80 km per hour.

Figure 12: India–Myanmar–Thailand Trilateral Highway Route



Route	Stretch	Status
1	Moreh-Tamu-Kalewa	2017
2	Kalewa-Yagyi	2021
3	Yagyi-Chaungma-Monywa	201?
4	Monywa-Mandalay	201?
5	Mandalay-Meiktila bypass	2010
6	Meiktila bypass-Taungoo-Oktwin-Payagyi	2010
7	Payagyi- Thein Za Yat - Thaton	2017
8	Thaton-Mawlamyine-Kawkareik	2020
9	Kawkareik-Myawaddy	2015
10	Myawaddy-Mae Sot	2018

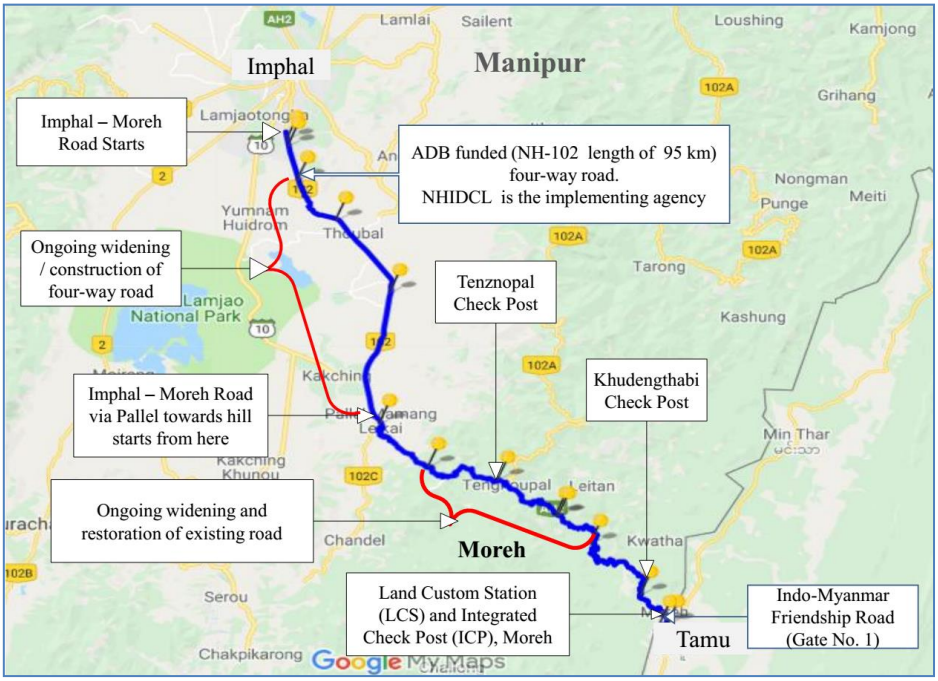
Source: AIC at RIS.

[27] As of May 2019. Source: RIS Survey (2019).

5.3 Imphal–Moreh Highway

The Government of India and ADB signed a US$125.2 million loan that has been used to upgrade the roads in northeast India. National Highway and Infrastructure Development Corporation Limited (NHIDCL) is implementing the ADB-funded highway project between Imphal and Moreh. The total estimated cost is Rs11.88 billion. About US$160 million is the loan agreement amount between ADB and the Government of India. The length of the road (NH 102, which was previously known as NH31) is 110 km. Construction of the first phase (Point 330 to Point 350) is under the tendering process. Construction of the second phase (Point 350 to Point 395) is undergoing construction. For the construction of the third phase (Point 395 – Moreh Border), the loan has not yet been sanctioned. The construction of the second phase is likely to be completed by October 2021, whereas the first and third phases are likely to be completed by 2022. Gurgaon-based GR Infrastructure has been awarded the construction of the second phase of the highway.

Figure 13: Project Status of the Imphal–Moreh Highway



Source: RIS Survey (2019).

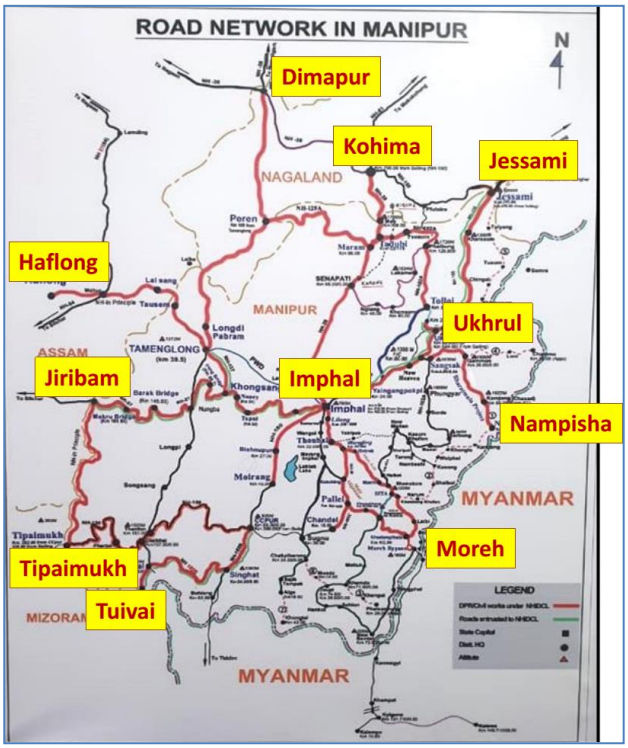
There are issues regarding the ongoing construction of the project; for example, land acquisition in some of the places between Imphal and Pallel. Another example is the old bridge (known as Lilong Bridge), which is a single lane at Lilong Bazar and is heavily congested and has to be reconstructed. Similarly, the bridge at Thoubal (Thoubal Bridge) and Wangjing is too narrow and have to be widened. The second phase of the ADB project starts from this place (Figure 13). Road construction under the ADB project from Kaching to Pallel Bazaar is ongoing. The hill starts from Pallel, and the bridge at Pallel Bazaar needs replacement. While on the hill between Pallel and Moreh there used to be seven check posts, now there are only two check posts in operation. The first vehicle check post is located at Tengnoupal, and the second check post is located at Khudengthabi. At the second check post, Assam Rifles has introduced a cargo scanner for the goods to be imported through Moreh and transported to Imphal. Under this project, there is a plan to build a bypass of 2 km in Moreh to avoid the congested part of the Moreh town. The bypass will connect NH 102 straight to the India–Myanmar Friendship Bridge. The Imphal–Moreh road connects the ICP at Moreh, which is close to

the Indo–Myanmar Friendship Road at Gate No.1. The current speed of vehicles is 40 km/hour in the valley and 20 km/hour on hills. Once the project is completed, the speed will be enhanced to 100 km in the valley and 65 km on hills for passenger vehicles.

5.4 Road Networks between Imphal/Moreh to Major Growth Centres in the NER

In the last 3–4 years, several road connectivity projects have been taken up in the NER under the Bharatmala project and economic corridor schemes. Under the Bharatmala Pariyojana, a 5,300 km long road will be developed as a border road and international corridors. Of this, about 2,000 km is being implemented under Phase 1, which started in October 2017. It is expected that by 2023, almost 80%–90% of the road connectivity in the NER under Bharatmala Pariyojana will be completed. It is important to consider the internal connectivity of the northeast to the border town of Moreh in Manipur. Moreh is connected to Imphal by NH 39. National Highways 36, 37, and 39 connect Imphal with Guwahati, which is the main hub of the NER (Figure 14). The journey from Imphal to Guwahati at present takes about 12 hours, with many sections of the road being in disrepair. Another option for travelling from Imphal to Guwahati via Haflong is also being considered, which is a shorter but more difficult route. Suggestions for upgrading the Imphal–Silchar road have also considered. In fact, a Detailed Project Report is under preparation for road connectivity between Imphal and Dimapur. Road connectivity between Imphal and Silchar is good and the expansion of two small bridges and one large bridge is ongoing. Internal connectivity would be vital for boosting bilateral links, and considerable attention should be given to this by both the state and central governments.

Figure 14: Growth Centres in the NER



Source: NHIDCL.

The NHIDCL has been awarded to complete the construction and maintenance of the National Highways in the NER. The NHIDCL is also working to improve the roads between Imphal to Kohima and Imphal to Jiribam. In addition, the NHIDCL is implementing the Aizawl to Tuipang (NH 54) road connectivity project of about Rs67.21 billion, which is funded by the Japan International Cooperation Agency (JICA). The project has realigned the existing 250 km and stretches for about 380 km in length. The project was approved in March 2019 and is being carried out through eight packages. So far, two packages have been signed, and the rest of the packages have been initiated for signing. The project is implemented under the Engineering Procurement Construction (EPC) mode through different contractors.[28] There is a possibility of connecting the TLH with the Kaladan Project. Imphal can be connected with Aizawl by road via Churachandpur and Tipaimukh in Manipur.

There are many challenges: (i) land acquisition and encroachment are the main challenge for development and highways. Although the land is acquired by the NHIDCL, it requires the support of respective state governments to take over the land for the road construction project; (ii) unlawful activities of insurgent groups, particularly between Imphal and Jiribam and between Imphal and Dimapur; (iii) high replacement costs of standing structure/horticulture/ forest land; and (iv) lack of cooperation from state line departments.

5.5 Imphal–Mandalay Bus Service

The proposed bus service is expected to take 14 hours to cover the 579 km distance between Imphal and Mandalay. The initial proposal for the bus service was submitted to the Ministry of Road Transport and Highways and the Ministry of Development of North Eastern Region (MDoNER) in 2009. The Imphal–Moreh section of the road is about 110 km, while the section from Moreh to Mandalay is about 469 km. The MoU for the bus service between India and Myanmar was amended in 2012, and in 2014, a technical committee meeting was held for the second time. A joint special team by members of both countries was formed, and it was found that the road between Imphal to Moreh is in good condition, but the route from Moreh to Yargi is not in good condition. There are three routes proposed for the bus service, of which the second route is not usable during the rainy season, whereas in the first route, there are about 70 bridges in the Yargi–Kalewa section that need repair.[29] In 2014, Route 1 from the three options was finalised, and the service was expected to begin in 2019.[30] Finally, an MoU was signed between Yangon-based Shwemandalar Express and Imphal-based Seven Sisters Holiday on 14 February 2020 for the commencement of a bus service between the two neighbouring countries by April 2020.[31] According to the MoU, the Shwe Mandalar Express will provide service from Mandalay to the border town of Tamu in Chin State, and Seven Sister Holidays will provide service from Tamu to Moreh and Imphal. The journey from Mandalay to Tamu will take about 11 hours, while the Tamu to Imphal journey may take about 2 hours and about an hour for security clearances at Tamu–Moreh, making a total 14-hour trip. Once the road repairs are completed in India and Myanmar, the trip from Mandalay to Imphal will take only 5 hours.[32] Tour

[28] Letter of Agreement (LoA) issued for seven phases in the EPC mode: one package for Gammon; three packages for ABCI; two packages for Bhartya; and one package for the National Project Construction and Cooperation (NPCC).
[29] See Chaudhury and Basu (2015).
[30] Ibid.
[31] See Myanmar Times (2020).
[32] Quoted in Myanmar Times (2020).

operators in Imphal have suggested that following Dhaka–Kolkata or Agartala–Kolkata bus services, immigration and check-in should be done on an end-to-end basis, which will drastically reduce the commuting time between the two cities.

5.6 Rail Connectivity

Establishing rail connectivity with Myanmar is important both in terms of increasing bilateral commerce and improving people-to-people contact. Rail links will significantly reduce journey times, especially for longer-distance cargoes and passengers. The study for a rail link from Jiribam in Manipur to Mandalay in Myanmar was conducted by Rail India Technical and Economic Service (RITES) in 2005. According to the study, the total length of rail line from Jiribam to Mandalay is 885.4 km, out of which the length of the Jiribam–Imphal–Moreh route is 219 km, and the length of Tamu–Kalay route is 127.4 km. This rail project is part of the southern corridor of the Trans-Asian Railway network.

Within India, there is no rail link between Jiribam and Moreh, while on the Myanmar side, there is also no link between Tamu and Kalay. Connectivity between these points in the respective countries would contribute to increasing communication and commerce. The Jiribam–Tupul–Imphal broad gauge line is expected to be completed by 2020. The route involves several minor and major bridges and tunnels, of which a special feature is the construction of Bridge No.164, which has a pier height of 141 metres and is the tallest girder rail bridge in the world.[33] Initial survey work on a broad gauge rail link between Imphal and Moreh was already completed by the North East Frontier Railway.[34] International bodies like the JICA and the Korea International Cooperation Agency have shown interest in improving the railway system in Myanmar.

5.7 Air Connectivity

Air connectivity between India and Myanmar needs to be improved to promote religious and medical tourism. For instance, people from Myanmar are interested in visiting Bodh Gaya. The present air connectivity is a direct flight from Kolkata to Yangon and between New Delhi to Yangon via Gaya. During the months of October to March every year, Myanmar Airways and another privately operated service, the Myanmar Golden Airlines, operate flights thrice a week from Yangon to Gaya for the Buddhist pilgrimage in Myanmar.[35] Myanmar Airlines is slated to begin a new flight on the Kolkata–Bodh Gaya–Yangon route, mainly targeting religious tourism. The Indian diaspora is concentrated mainly in Yangon and Mandalay and employed in various fields like education, trade and commerce, and civil services. Many families are engaged in trading businesses and have families in India and Myanmar. Indigo has recently started daily flights between Kolkata and Yangon.

Air connectivity will play an important role in fostering multi-modal connectivity in the region. According to an RIS Study, 'with Imphal now becoming an international airport, it will be important to include it as an option in the Bilateral Air Services Agreement to enable airline companies to consider operating flights between Imphal and Mandalay. Likewise, by the time the Zokhawthar border trade point begins to show greater levels of activity and the Rhi–Tiddim road gets going,

[33] See Financial Express (2018).
[34] See Chaudhury and Basu (2015).
[35] See Myanmar Times (2019).

flights from Aizawl to Kalemyo and Mandalay would help in further promoting trade. It has already been indicated that the Myanmar government would be further strengthening the Kalemyo airport.'[36]

There are no flights between Imphal and Mandalay or Imphal and Yangon. There are nine flights between Mandalay and Yangon. It is possible to connect Imphal with Mandalay and Imphal with Yangon by air, and there was a trial run in the past. Air KBZ and KB Enterprises are likely to start Imphal to Mandalay flights. The Government of India may consider extending the E-visa to Myanmar citizens for coming to India through Moreh and Tamu. In addition, a Visa Collection Centre may be set up at Moreh and Tamu. Direct air connectivity between Imphal and Mandalay is likely to be started soon.

5.8 Digital Connectivity

Myanmar has set up cross-border fibre optic links with many of its neighbouring countries, including India. The first cross-border fibre optic link between India and Myanmar was set up in February 2009, running from Moreh in Manipur to Mandalay in Myanmar, for a distance of 500 km. The 640-km-long link passes through Tamu, Kampatwa, Kyi Gone, Shwebo, Monywa, and Sagaing. The optical fibre link is a high-speed broadband link for voice and data transmission.[37]

5.9 Trade Facilitation, Cooperation on the Trilateral Motor Vehicle Agreement, and Technical Assistance

The Trilateral Motor Vehicle Agreement (MVA) is crucial for the TLH. In particular, the TLH MVA is important for facilitating trade, economic cooperation, and people-to-people contact through enhanced regional connectivity, including through the facilitation of regional cross-border road transport. Without the MVA, the TLH will be non-operational. In general, the MVA protocols allow the safe and secure movement of vehicles along the TLH. Three countries have to reach consensus and reaffirm their understanding that the TLH MVA safeguards the rights and obligations of all parties under other international agreements (e.g. the World Trade Organization (WTO) Trade Facilitation Agreement) and bilateral/regional agreements within the group. However, the reality is that progress in the negotiation of the MVA between India, Myanmar, and Thailand for the TLH has been slow.

[36] See RIS (2014: 42).
[37] See Global Times website (www.globaltimes.com).

Table 11: World Trade Organization Trade Facilitation Agreement

Country	Ratified	Notified on					
		Category A	%	Category B	%	Category C	%
India	22 April 2016	23 March 2016	72	23 January 2017	28	-	0
Myanmar	16 December 2015	27 February 2018	6	27 February 2018	9	27 February 2018	85
Thailand	5 October 2015	25 July 2014	92	24 May 2017	8	-	0

Notes: Developing and LDC members can request more time and capacity-building support to implement the agreement. To benefit from these flexibilities, they must designate all measures into categories A, B and/or C, which have the following implementation timings: Category A = Developing Members will implement the measure by 22 February 2017 and LDCs by 22 February 2018; Category B = Members will need additional time to implement the measure; Category C = Members will need additional time and capacity-building support to implement the measure.
Source: www.tfadatabase.org.

The objective of trade facilitation at the Moreh border should be to transform the cross-border clearance ecosystem through efficient, transparent, risk-based, coordinated, digital, seamless, and technology-driven procedures that are supported by state-of-the-art land border crossings, roads, and other logistics infrastructure; and also to bring down the overall cargo release time.[38] While India and Thailand have opted for Category A of the WTO TFA (Table 11), Myanmar selected Category C, thereby indicating that it needs additional time and capacity-building support. Given that all three TLH countries have ratified the WTO TFA, they may resume the MVA negotiations at the earliest possibility and complete the negotiations before the TLH comes into operation. In many areas, the WTO TFA and TLH MVA are interrelated. Myanmar's progress in implementing the WTO TFA has been slow. Myanmar needs technical assistance and capacity building while implementing the WTO FTA. Both India and Thailand shall offer adequate technical assistance and capacity building to Myanmar while implementing the TLH MVA. The technical assistance to Myanmar will also serve the WTO TFA obligations. To effectively implement the technical assistance, India's National Committee for Trade Facilitation may be engaged to design an appropriate strategy for technical assistance.

[38] See the Vision Report, CBIC, Government of India.

6. Illustration of the Developmental Impacts of the Trilateral Highway on Northeast India

6.1 Benefiting from Trade–Development Linkages

The extension of the Trilateral Highway (TLH) to Cambodia, the Lao PDR, and Viet Nam may further strengthen road connectivity between the NER states and Southeast Asian countries. The operationalisation of the TLH will have an immediate impact on businesses and commercial activities in the Moreh–Tamu area at the India–Myanmar border as a spin-off of the improved connectivity, and, hence, faster transportation of goods between Moreh and Imphal on the Indian side of the border and subsequently to the Myanmar side. As a result of the reduced cost of transportation and faster processing of documents at the ICP Moreh, Indian exports to Myanmar, Thailand, and other countries are likely to increase. Increased trade between India and the Southeast Asian countries would propel economic activities along the TLH. The trade-induced rise in business in Moreh–Imphal has the strong potential to generate a centripetal force around Imphal and attract exports from other parts of the NER, which is possible because of notable progress in rail connectivity in the NER connecting all the capitals of the NER states. This spurt in commercial activity would then require improved supply chains and the strengthening of existing corridors in the region. Moreh could become a critical node in the growth corridor that has been emerging with the TLH and its possible extension to Mekong countries.

6.2 Leveraging the Growth Corridor Advantage

The larger developmental gains from the TLH and its extension to the Mekong subregion can be visualised from the growth corridor perspective. In a growth corridor, connectivity facilitates the integration of urban centres/growth centres/nodes with the hinterland/less-developed areas. Connectivity-led integration in the form of a growth corridor has the potential to expand economic activities along the Moreh–Imphal zone. Very often, local industrialisation, especially SMEs, is affected due to a lack of technical know-how, uncertainty of markets, and lack of scale. Rural markets in most cases are fragmented and thereby offer little scope for the growth and diversification of local businesses. Therefore, improved and faster connectivity may unleash new dynamism in the rural economy in the NER. It may generate wider economic benefits through new enterprises, jobs, and greater inclusion. However, to gain such welfare, countries have to invest in transport, agriculture, tourism, energy, urban development, and other multi-sector/border zone development.

6.3 Gaining from the Trade–Industry Linkages

The most immediate impact anticipated from the operationalisation of the TLH is the rise in bilateral trade amongst the partner countries. Once export possibilities increase, it would be cost-effective for the exporters in Manipur and other states in the NER to use the land corridor to trade with Myanmar and other Southeast Asian countries. Sagaing Province of Myanmar is a big market for Indian goods. Along with higher exports, the TLH may generate a conducive business environment for the growth of industries in the NER. This is based on the logic that local firms in the NER would not only be able to export to Southeast Asian countries and beyond without the hassle of transporting goods to ports and waiting long for meeting formalities and customs clearances but

also to source raw materials and intermediates from the neighbouring countries at cheaper prices. In view of such a scenario, a strong case for trade-induced industrialisation is being visualised in the NER. To assess the potential of the industrialisation that could be attributed to the TLH, it is imperative to examine the trends and patterns in industrialisation in the NER states.

6.4 Sectors Offering Business Opportunities

The sector that is significant for the NER states is the food processing industry. The NER is known for agriculture and horticulture crops, including organic farming. In recent years, the region has witnessed significant growth in the production of fruits, spices, and plantation crops. Amongst the NER states, Assam and Tripura have more units in food processing than other states.[39] There are several challenges that food processing industries face in the NER, including a lack of transportation, inadequate cold storage facilities, lack of post-harvest technologies and processing of farm produce, lack of market access, and other factors.[40]

The central and state governments have implemented several schemes for the promotion and development of food processing industries in the NER. The schemes cover an entire spectrum of issues, such as food parks, cold chain, value addition and preservation infrastructure, food testing laboratories, research and development, and the modernisation of food processing industries. The number of projects sanctioned under two schemes, the National Mission on Food Processing and Technology Upgradation and Modernization of Food Processing Industries schemes are higher than other schemes. For instance, there are only one or a few projects under the Mega Food Parks scheme, Integrated Cold Chain, Value Addition & Preservation Infrastructure and Research & Development for all the northeastern states, except for 19 projects for Assam under the Research & Development scheme.[41]

In terms of the potential for industrial development, the NER is well-endowed with natural resources. In particular, the rich mineral resources of the northeastern states can be harnessed properly for planned industrial development in the region. The mineral resources in the NER include coal, limestone, petroleum, natural gas, chromite, zinc, lead, copper, iron ore, and others.

In view of a possible spurt in economic activity post-implementation of the TLH extension, a number of steps can be taken to promote industrial development in the NER. Manipur State could develop Special Economic Zones (SEZs) for timber, food processing, and other sectors. For the ease of payments and settlements in bilateral trade, normal banking facilities between Myanmar and Manipur should be opened. Some of the sectors having high business potential in Manipur are health care, education, tourism, infrastructure development, construction, and food processing.

The business opportunities are likely to trickle down to the entire NER through better connectivity and business marketing. There is a possibility of connecting the TLH with the Kaladan Project and Imphal with Aizawl by road via Churachandpur and Tipaimukh in Manipur. This would perhaps boost industrial development in the neighbouring states, such as Mizoram, Assam, and Tripura.

[39] Based on NEC (2019).
[40] See Rais et al. (2014) and Kathuria and Mathur (2019).
[41] Based on NEC (2019).

In addition, the industrial units in and around Imphal have witnessed significant growth and have the potential to grow further. The industrial units broadly cover sectors such as garment making, including fabric, tailoring, embroidery, papad making, PVC pipe manufacturing, electrical transformer manufacturing, plastics products, drinking water, bread, and so on. Although the industries' department in Manipur has provided industrial sheds in the designated industrial estates, local firms face a number of challenges in expanding their businesses, which including a lack of on-time availability of working capital, uncertainty in the delivery of raw materials and finished goods, power supply interruptions, logistics problems, and insurgency.

Table 12: Major Tourist Attractions in the NER

State	Major Tourist Places
Arunachal Pradesh	Tawang, Dirang, Bomdila, Tipi, Itanagar, Malinithan, Likabali, Pasighat, Along, Tezu, Miao, Roing, Daporijo, Namdapha, Bhismaknagar Kund and Khonsa
Assam	Kamakhya Temple, Umananda, Navagraha, Basisth Ashram, Dolgobinda, Gandhi Mandap, State Zoo, State Museum, Sukreswar Temple, in Guwahati, Kaziranga National Park, Manas, Orang, Sibasagar, Tezpur, Bhalukpung, Hajo, Batadrava
Manipur	Imphal, Bishnupur, Loktak Lake, Sirori Hills, Keibul Lamjao National Park
Meghalaya	Shillong, Jowai, Cherrapunji
Mizoram	Aizawl, Champhai, Tamdil, Thenzawl
Nagaland	Kohima, Dimapur, Khonoma, Dzukou Valley, Dzulekie, Japfu Peak, Tseminyu, Longkhum, Ungmaveda Peak, Shilloi LakeMount Tostu
Sikkim	Gangtok, Bakhim, Yamthang, Dubdi, Dzongri, Varsey, Tashiding
Tripura	Agartala, Old Agartala, Tripura Sundari Temple

Source: NEDFi Databank.

6.5 Tourism Opportunities

The geographical location of the NER states, surrounded by the Himalayas and vast natural flora and fauna, makes the region attractive to tourists, both for the domestic and foreign visitors. There are numerous tourist locations spread over the eight different states in the NER. Some of the major tourist attractions in the region are listed in Table 12. Tourism is also a key income-generating activity in the region, which offers employment and people-to-people linkages. Completion of the TLH and the strengthening of air connectivity with neighbouring countries will certainly expand tourism in Manipur and other neighbouring states in the NER. Amongst the factors that are likely to accelerate tourist flows, the ease of travel between the border towns of both India and Myanmar would open greater people-to-people interactions and attract tourists from Thailand, Viet Nam, Cambodia, and the Lao PDR.

The operationalisation of the TLH and its extension to Cambodia, the Lao PDR, and Viet Nam would yield promising results for Indian tourism. In addition to the TLH is the remarkable progress in road and rail connectivity as a result of the successful completion of road projects under the *Bharatmala* economic corridor programme and the railway projects connecting the state capitals in the NER. The Ministry of Tourism, Government of India, introduced two new schemes in 2014–15 called Pilgrimage

Rejuvenation and Spiritual Augmentation Drive (PRASAD) and Swadesh Darshan, i.e. Integrated Development of Theme-Based Tourist Circuits. Kamakhya in Assam has been identified as a project under the PRASAD scheme. Likewise, the North-East India Circuit is one of the 15 thematic circuits that have been identified under the Swadesh Darshan scheme.[42] The Government of India also offers certain incentives to promote tourism in the NER. These include the provision of complimentary space for the northeastern states in India Pavilions to set up at major international travel fairs and exhibitions, 100% financial assistance to organising fairs and festivals, and special campaigns on the NER on TV channels to promote tourism in the region. Two tourist circuits that link Manipur with other states in the NER are Guwahati–Kaziranga–Kohima–Imphal–Moreh–Guwahati and Kolkata–Imphal–Moreh–Kolkata. The initial effects of the TLH would be generated in Manipur and, subsequently, other tourist circuits in the region would either strengthen feeder tourists to Manipur from other parts of the region for the India–Southeast Asia route via Moreh or would increase the movement of Southeast Asian tourists to the NER and other parts of India through the Moreh–Tamu border. The National Highways and Infrastructure Development Corporation (NHIDCL) have been improving the roads from Imphal to Kohima and Imphal to Jiribam that would connect different places in the NER.

In the context of the TLH, several steps are warranted to address the connectivity challenges with an aim to promote tourism. A Motor Vehicle Agreement (MVA) between India, Myanmar, and Thailand should be signed at the earliest. India may consider providing on-arrival visas at Moreh, which could facilitate tourism between India and Myanmar, and between India and Southeast Asian countries. Visa Collection Centres may be set up at Moreh (India) and Tamu (Myanmar). There have been strong historical and cultural linkages between Manipur and the Sagaing province of Myanmar. Both sides share a geographical border, and people of Sagaing province visit Manipur for health care, tourism, and trade, and vice versa. People from Myanmar also participate in sports festivals on the Manipur side every year. Regular bus services (private) have started from Tamu to Mandalay, Yangon and Naypyidaw in Myanmar, which will pick up the demand once the TLH is completed. Completion of the TLH will also resume point-to-point bus services between the two countries, such as Imphal and Mandalay or Yangon and Imphal through the Moreh border. In particular, people from the Sagaing region can travel to Bodh Gaya via Imphal. Further travel to Kolkata and Patna is possible either by road or by air. Therefore, Buddhist pilgrimages will receive a fillip with the completion of the TLH and the MVA between the three countries.

Medical tourism between India and Myanmar is another services sector that offers immense business opportunities in the NER. Today, a good number of patients from Myanmar visit Imphal for the treatment of health ailments. For instance, about 600 patients from Myanmar have been treated at the Shija Hospital in Imphal in the past few years.[43] Medical tourism will expand further once the TLH comes into operation.

Despite a good number of initiatives taken by the governments, there are several challenges to promoting tourism activities in the NER. Amongst others, a lack of proper infrastructure, lack of road-side amenities, lack of comprehensive marketing and promotion, uncertain law and order situation due to insurgency, negative travel advisories, and blockades affect tourism in the NER.

[42] See PIB (2020).

[43] Based on discussions had with Shija Hospital in Imphal.

6.6 Employment Generation

The creation of adequate employment opportunities, including self-employment as well as wage-employment, is being viewed as the most tangible and desirable output of the TLH and related projects. As argued above, trade at the India–Myanmar border at Moreh would act as a regional gateway for higher trade, investment, and other forms of economic engagement between the NER states and Southeast Asia. The growth corridor impact of the TLH in the NER is likely to yield positive results drawing on the success stories of economic corridors in the Greater Mekong Sub-region (GMS), SASEC and CAREC countries, the Indonesia–Malaysia–Thailand Growth Triangle, and others. Although the size of the employment impact cannot be measured at this stage, the historical trends in employment in the NER may shed more light on the likely impact of the TLH-inspired rise in economic activities and/or the nature of government intervention required to activate the regional value chains for job creation.

6.7 Education and Skill Development

The TLH will certainly raise the demand for higher education and better-skilled resources. The issues of industrialisation, trade, and development in the NER require a comprehensive approach to addressing education and skill development. Skilling is a big challenge in the NER. The short-term response to the opening of the TLH would be mostly demand-side measures. For instance, given the current and envisaged trade liberalisation, any possibility of an export rise can be met with higher production utilising existing industrial capacity and human resources. However, in the long run, the supply side measures would matter most. Two important areas need special attention in this regard. Formal education, especially technical and vocational education, would ensure the sustained flow of a trained workforce in different industrial fields. At the same time, focus on skilling, both for fresh candidates and for the augmentation of the existing workforce, is vital.

Skill development may exclusively focus on food processing, garment manufacturing, small and village industries, tourism, trading of goods and services, and construction activities, amongst others. Women self-help groups can be suitably employed in the mission of skilling and contributing to income-generating activities. As part of long-term entrepreneurship development, technical and management graduates from the northeastern states may be offered technical guidance and credit support to explore the establishment of SMEs.

7. Dealing with the Challenges and Recommendations

7.1 Improvement of the Road Infrastructure, Completion of the TLH, and the Replacement of 69 Bridges

The road between Imphal and Moreh should be made into a six-lane road. In particular, the Moreh–Pallel section of the road has to be improved. Widening of the road in Monwya–Yargi section in Myanmar should be carried out to make it a four-lane road. Road conditions in Manipur, particularly those connecting neighbouring countries, should be made higher quality. Timely completion of the TLH and the replacement of 69 bridges is critical to the NER's linkages with Southeast Asia and vice versa. At present, the 122 km road of the TLH is under construction under the supervision of the NHAI. The project was commenced on 28 May 2018 and is expected to be completed by May 2021. The replacement of 69 weak/vintage bridges along the Tamu–Kyigone–Kalewa Road section of the TLH was suspended due to a legal case at the Manipur High Court. The Government of India won the case in October 2019, and the work for the rehabilitation of the bridges is about to start. Without the completion of the bridges, the TLH cannot be made operational for cargo vehicles and passenger bus services between India and Myanmar.

7.2 Completion of the Negotiation of the Trilateral Motor Vehicle Agreement

Progress in the negotiation of the Motor Vehicle Agreement (MVA) between India, Myanmar, and Thailand for the TLH has been slow. Given that all the three countries have ratified the WTO Trade Facilitation Agreement (TFA), TLH countries may resume the MVA negotiations at the earliest time and complete the negotiations before the TLH comes into operation. In many areas, the WTO TFA and TLH MVA are interrelated. Myanmar's progress in implementing the WTO TFA has been slow. Myanmar needs technical assistance and capacity building while implementing the WTO FTA. Both India and Thailand may offer adequate technical assistance and capacity building to Myanmar while implementing the TLH MVA.

7.3 Promotion of Tourism

Myanmar and Manipur have strong cultural and civilizational links. The people of Myanmar, particularly from the Sagaing region, would like to travel to Bodh Gaya via Imphal. They can come in groups by road to Imphal and then fly to Bodh Gaya via Kolkata or Patna. Once the bus service between Mandalay to Imphal is started, tourism will expand drastically.

In the case of health tourism, about 600 patients from Myanmar were treated in Imphal's Shija Hospital in the last few years. Shija Hospital has been receiving patients from Mandalay and several parts of Myanmar. Shija Hospital has conducted health missions in Myanmar. Jointly with Monywa General Hospital in Myanmar, it has conducted 179 operations. Through this mission, several surgeons and nurses were also trained. Health care facilities may also be developed at Moreh. Tamu General Hospital in Myanmar provides basic health care facilities. Therefore, the development of a super-speciality hospital in Moreh will promote health services between the two countries. In this case, patients would not need to go to Imphal for treatment. At the moment, visa collection takes 10–15 days. To facilitate the health services, the E-visa at the Moreh border shall be extended to Myanmar citizens for entering through the Moreh and Tamu border.

More hotel rooms will be added as tourism is promoted. At the moment, Manipur does not have any five-star hotels, whereas Manipur has high tourism prospects in the medium-to-high range.[44] Most of the foreign tourists in Manipur are from Japan and the United Kingdom.

Manipur does not have any economic zones. Manipur State may consider developing a Special Economic Zone (SEZ) for health and education, etc. There are many challenges, such as bad road conditions and a lack of infrastructure, particularly roadside amenities, which are very poor in quality and limited in number. In addition, a lack of comprehensive marketing and promotion, the law and order situation, negative travel advisories, *bandh* and blockades, and the low image in the market are also negatively affecting tourism activities. These are vital challenges that must be addressed while promoting tourism in the NER.

The Manipur government is planning to set up an empowered team for the facilitation of trade, people-to-people contact, and economic interactions between the Manipur and Myanmar governments under the overall guidance of the Government of India under its Act East Policy.

7.4 Improvement of Border Infrastructure

There are several challenges associated with the Moreh LCS and the newly opened ICP. These include a shortage of staff, lack of constant electricity, absence of good quality internet, and the absence of accommodation for officials and other social infrastructure. During the time of the field survey, the cargo terminal of Moreh ICP was not operational. The Friendship Bridge near Gate 1 at the Moreh–Tamu border has to be redeveloped so that cargo vehicles use the bridge and for direct shipments through Moreh ICP. The number of good hotels and homestay facilities at the Moreh border should be increased. India may consider building a guest house for Buddhist travellers at Moreh.

Passengers and traders face harassment at the border, which must be stopped. A full-body cargo scanner (for containers) shall be introduced at the Moreh ICP for export and import consignments. At the moment, there has been no container movement at the Moreh–Tamu border between the two countries. In addition, the Moreh border requires facilities, such as border fencing, additional warehousing facilities for refrigerated goods, cargo vehicle yards, warehouses for seized items, plant and quarantine facilities, and a controlling office for drugs and narcotics, etc.

Land acquisition and encroachment have been major challenges to the development and construction of highways. Meanwhile, local businesses and people face unlawful activities from insurgent groups, particularly between Imphal and Jiribam and between Imphal and Dimapur.

7.5 Ease of Travel between Moreh and Imphal

The Myanmar government has allowed third-country nationals to move through the Tamu border, which has led to the facilitation of passengers' movement between the two countries through the Moreh and Tamu borders. After the clearance of immigration at Moreh ICP, in-coming nationals (mostly from Myanmar) face multiple security checks between Moreh and Imphal, causing time

[44] In 2018, 5,247 foreign tourists arrived (Manipur Chamber of Commerce). As present, Classic Hotels in Imphal (two hotels) has only 527 rooms.

delays and costs. The travel of foreign nationals should be made comfortable. Some of the people, particularly businesspeople, should not face such trouble, and they should be handled nicely. Besides hotels and other amenities at Moreh, there should be adequate transportation facilities between Moreh and Imphal.

7.6 Safety and Security and Smart Border

With the opening of the TLH, there are concerns with issues of illegal immigration, informal trade, and terrorism. Therefore, both India and Myanmar should introduce more scrutiny at the Moreh–Tamu border as well as other borders connecting both the countries. There is no denying that the border dispute between India and Myanmar has been forcing illicit trade and transportation to happen, which needs to be resolved before the TLH becomes operational. The border at Moreh should be fenced with watchtowers, night-vision cameras, and radar cameras so that trade can take place with sufficient security and safety. Completion of the Imphal–Moreh road will help improve the tracking of the safety and security of vehicles with the help of digital technology, such as radio-frequency identification (RFID). An Electronic Data Interchange should also be introduced at Moreh customs, and human resources should be scaled up at Moreh ICP.

7.7 Removing Informal Trade at the Border

Border agencies should assure that imports passing through Moreh or Tamu illegally do not take place. Once a formal payment system is introduced, the current arrangement of informal payments at the borders will disappear. In parallel, all illegal trade routes at the border have to be closed, such as through fencing of the border and introducing border passes with the help of new technologies. The government's support is needed for promoting and building the capacity of the human resources who will be deployed to check the illegal payment and trade. Large informal trade (from neighbouring countries) has been negating the growth of industrial activities in Manipur and other parts of the NER. Formal trade at the Moreh–Tamu border is crucial for promoting industrialisation in the NER.

7.8 Supporting SMEs at the Border

Trade is mostly handled at Moreh by SMEs. Supporting these SMEs will then lead to involving the local youth and ethnic communities. Innovative measures, such as Mudra loans of about US$7,000 per individual that are currently extended to SMEs, should be continued to help expand activity in the local markets. The Government of India may also consider extending transport subsidy to the exporters located in Imphal and Moreh, which would help them to compete with bigger exporters who are not from the region.

7.9 Opening of International Flights from Imphal

There are no flights between Imphal and Mandalay or Imphal and Yangon, whereas there are several flights between Mandalay and Yangon. Connecting Imphal with Mandalay and Imphal with Yangon will pave the way to enhance tourism and trade. Myanmar's Air KBZ and Imphal-based KB Enterprise are considering opening a direct flight between Imphal and Mandalay. If air connectivity is allowed, we need to make sure that flights from Imphal go straight to Mandalay and not via Aizawl. Besides,

Imphal may also be connected with Bodh Gaya by direct flight. The airport in Imphal has to be upgraded to accommodate international flights.

7.10 Streamlining Banking Facilities

Normal banking facilities between Myanmar and Manipur should be opened. Presently, there are only cash transactions between Indian and Myanmar traders. Both countries need to move from informal payments to formal payments through bank transfers. India can implement special incentives and training programmes on formal trade procedures for local traders and youths.

7.11 Maintaining Law and Order

Law and order is a critical issue for peace and prosperity in the region. The problems faced by local traders and the problems faced by manufacturers are different. Trade and violence cannot go together. The movement of vehicles between Moreh and Dimapur and Moreh and Silchar with high security is very much needed. Moreh town and Imphal city should be protected from the occurrence of *bandhs* (general strikes), theft, violence, and disturbances of the peace.

7.12 Branding

Massive image building and awareness campaigns are needed. Manipur being at the border of Myanmar, and in view of the rising flow of Myanmar nationals to Manipur, the Government of Myanmar may like to open a consul office in Imphal. Both the state and central governments must invest in promotion, publicity, and the marketing of the NER states abroad. In addition, roadshows, online and electronic advertisements, participation in international trade fairs, and travel meets, etc. are required. NER states may appoint brand ambassadors and consider targeted approaches for domestic and international tourists.

7.13 Food Testing Laboratory at Moreh

All the laboratories in the NER under the FSSAI should be NABL certified, which is not the case in Imphal so far. At present, the food testing (FSSAI) activities are managed by the Manipur State Food Safety Department. A micro-biology section is not yet developed at the food testing laboratory in Imphal. A small office was opened in Moreh since last December 2018 to check the chemicals in processed food items, but it has since closed down. In view of the international trade at Moreh and Tamu, food safety must be strengthened, and food testing laboratories should be reopened with adequate capacity and human resources.

7.14 Narrowing the Infrastructure Gap between Moreh and Tamu

Moreh has set up an ICP, and several border improvement projects, both behind and at the border, are ongoing or proposed. The trade infrastructure at Moreh has witnessed drastic improvements in recent years, but the same improvements in Tamu are missing. Appendix 3 presents a comparison of the facilities at the two border posts. The current infrastructure at Moreh and Tamu is not adequately equipped to handle the future trade that we envisage when the TLH comes in operation. To meet such a target, the priority should be to narrow down the infrastructure gap between Moreh and Tamu. Some of the projects worth considering are ratifying an SOP for the handling of goods and passengers, the interoperability of customs EDI systems, and the handling of container cargoes, etc. at the border.

7.15 Building Partnerships between NER and Myanmar

There has been a strong and steady economic linkage between Manipur and Myanmar's Sagaing province. Not only do they share borders but people from Sagaing province visit Manipur for health care, tourism, and trade. Some of the sectors offer high business potential, such as the health care, tourism, education, infrastructure development, construction, and food processing sectors. Similarly, the NER's Mizoram, Nagaland, Tripura, and West Bengal states have cultural and economic linkages with Myanmar. Strengthening the NER–Myanmar partnership will then not only reinforce the bilateral foundation but also scale the relations to new heights. A new study may be conducted on the state–province level partnership between India, Thailand, and Myanmar.

8. Conclusions

Trade has special significance for the economies of the NER states. However, transport and logistics bottlenecks have long been identified as serious constraints to the growth of the NER. The growth potential is considerably high in the NER when one considers its geographical proximity to the growing Southeast Asia and East Asia markets. Given its geographical location, enhanced engagement with ASEAN under India's Act East Policy could generate new economic opportunities, thereby fuelling growth in the NER, ceteris paribus.

The NER's value chain potential can be unlocked if the border infrastructure and transportation networks, in particular, are improved. To strengthen the connectivity between India and ASEAN, the TLH between India, Myanmar, and Thailand is being developed with a proposed extension to Cambodia, the Lao PDR, and Viet Nam. Completion of the TLH is likely to facilitate the faster movement of goods and people between India and ASEAN and add growth impetus to the NER.

The NER's connectivity with ASEAN has seen good progress with the construction of the TLH. As the NER is at the forefront of the TLH on the Indian side, this study presents the status of the economic linkages of the NER, identifies the constraints behind and at the India–Myanmar border, and recommends policy measures to augment the linkages between NER and Southeast Asia. Imphal and Moreh are strategic locations. Moreh should be developed as a centre for trade and business. Development should be achieved at both Moreh and Tamu, otherwise there is only transit trade.

The study also reviews the institutional arrangements and identifies key elements that may hinder the movement of goods and people across the India–Myanmar border along the Trilateral Highway. This study concludes that the NER will gain enormously if these challenges are taken care of and the needed mitigation measures are implemented throughout the region.

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Appendix 1: Major Functional Land Custom Stations (LCSs) in North East India and Neighbouring Countries

Sl. No.	India		Neighbouring Country	
	State	LCS	LCS	Country
1	Assam	Gauhati Steamerghat		Bangladesh
2		Dhubri Streamerghat	Rowmati	Bangladesh
3		Mankachar		Bangladesh
4		Silghat		Bangladesh
5		Karimganj Steamer Ghat	Zakiganj	Bangladesh
6		Sutarkhandi	Sheola	Bangladesh
7		Hatisar		Bhutan
8	Meghalaya	Mahendraganj	Dhanua Kamalpur	Bangladesh
9		Dalu	Nakugaon	Bangladesh
10		Baghmara	Bijoypur	Bangladesh
11		Borsora	Borosora	Bangladesh
12		Shellabazar	Sonamganj	Bangladesh
13		Dawki	Tamahil	Bangladesh
14	Tripura	Agartala	Akhaura	Bangladesh
15		Srimantapur	Bibir Bauar	Bangladesh
16		Khowaighat	Balla	Bangladesh
17		Manu	Chatlapur	Bangladesh
18	Mizoram	Demagiri	Rangamati	Bangladesh
19		Zokhawthar	Rih	Myanmar
20	Manipur	Moreh	Tarnu	Myanmar
21	Sikkim	Sherathang (Nathu La)	Renginggang	China
22	West Bengal	Petrapole (ICP)	Benapole	Bangladesh

Source: Authors.

Appendix 2: Myanmar's Border Trade with Neighbouring Countries

Station	Exports (US$ million)		Imports (US$ million)		Total Trade (US$ million)		CAGR of Total Trade (%)
	2015	2018	2015	2018	2015	2018	(2015–2018)
China	**4,242.12**	**4,123.56**	**1,708.56**	**1,627.61**	**5,950.68**	**5,751.17**	**-1.13**
Muse	3,809.52	3,465.47	1,568.36	1,542.8	5,377.87	5,008.27	-2.35
Lwejel	64.34	143.31	12.62	12.83	76.96	156.14	26.59
Chin Shwehaw	332.99	368.36	52.79	49.41	385.78	417.77	2.69
Kanpitetee	28.79	145.55	67.45	20.86	96.24	166.4	20.02
Kyaing Tong	6.48	0.88	7.35	1.72	13.83	2.6	-42.71
Thailand	**53.84**	**387.81**	**749.35**	**856.05**	**803.19**	**1,243.86**	**15.70**
Tarchileik	9.66	13.38	64.93	63.08	74.59	76.45	0.82
Myawaddy	43.79	97.65	682.33	675.42	726.11	773.07	2.11
Mawtaung	0.4	134.11	2.1	31.72	2.49	165.83	305.34
Mese		142.68		85.83		228.51	
India	**53.03**	**149.85**	**18.62**	**20.43**	**71.65**	**170.28**	**33.45**
Tamu	32.78	112.6	12.79	1.72	45.57	114.31	35.87
Rhi	20.26	37.26	5.83	18.72	26.08	55.97	28.99
Coastal Areas	**13.127**	**1,164.747**	**14.34**	**209**	**27.47**	**1,373.74**	**268.42**
Nabulae/Htee Khee	2.01	940.63	11.18	137.11	13.19	1,077.75	333.93
Mawtaung	0.4	9.04	2.11	7.05	2.51	16.08	85.73
Mese		1.02		0.48		1.50	
Sittwe	5.35	205.58	0.98	64.33	6.33	269.91	249.36
Maung Daw	5.37	8.48	0.07	0.03	5.44	8.51	16.09

Source: Ministry of Commerce, Government of Myanmar.

Appendix 3: Comparison of Border Infrastructure Facilities at Moreh and Tamu

Sl. No.	Facilities	Moreh	Tamu
1	Warehousing	Yes, ongoing capacity of 800 square metres	Yes, two warehouses with capacities of 855 square metres and 485 square metres, respectively*
2	Cold storage	Yes*	No
3	Bank	Yes	Yes
4	Foreign exchange facility	No	Yes
5	Weighing bridge	Yes	Yes
6	Plant quarantine	Yes*	Yes*
7	Food testing lab	Yes*	No
8	Internet bandwidth	Moderate	
9	Human resources	• At ICP, one regular post and 13 people are presently working on a contractual basis. • At LCS, three inspectors, two havildars, and one superintendant	• Eight custom officials and one supervisor
10	Security	Yes	Yes
11	Electricity	Yes	Yes
12	Medical facility	No	Yes
13	Public conveniences	Yes	Yes
14	Parking Space	Yes	Yes
15	Weighbridge	Yes	Yes
16	Container-handling yard	Yes*	No
17	Hotel	Yes	No
18	Immigration	Yes	Yes
19	Customs EDI	Yes (SWIFT)	Yes (MACS)

* Not in operation at the time of field survey.
Source: RIS Survey (2019).

ERIA Trilateral Highway Study: Myanmar Country Report

Background paper

By Myanmar Survey Research

1. Introduction of the Trilateral Highway

The Trilateral Highway (TLH) is one of the crucial regional transportation projects to enhance connectivity between India and Southeast Asian countries for trade and commercial activities. The project was first realised at the ministerial level at the Trilateral Ministerial Meeting on Transport Linkages in Yangon in April 2002. It was agreed to construct a highway from Moreh, India, to Mae Sot, Thailand through Myanmar. Though the TLH project initially pertained to India, Myanmar, and Thailand, in recent years, there have been significant steps to extend it eastward to connect to the Lao People's Democratic Republic (Lao PDR), Cambodia, and Viet Nam.

The Indian government is keen to develop the TLH project, as it enhances the connectivity eastward with Myanmar and the Mekong subregions. This is intended to aid two of India's foreign policy initiatives known as 'Act East' and 'Neighborhood First'. To complement this, the Thai government adopted its 'Look West' policy to enhance the regional linkage between its western neighbours.

Implementing the project requires upgrading the road infrastructure and institutional arrangements to realise and encourage smoother trade flows. This research focuses on the current utilisation and existing and potential bottlenecks, as well as forwarding recommendations for implementation of the TLH project in Myanmar.

2. Historical Background of TLH in Myanmar

Myanmar has been working on the TLH project for nearly 2 decades. During the initial talks with the Indian and Thai governments in 2002–03, Myanmar's Ministry of Foreign Affairs, then headed by U Win Aung, who served as the Minister for Foreign Affairs from 1998 until 2004, took the leading role (Government of India, 2003). The plan was to construct a highway from Moreh in India and terminating in Mae Sot in Thailand. The route was initially planned to go through the city of Bagan in Myanmar and was to be completed within 2 years. In April of 2003, a technical field survey was completed of the 1,360 km long highway and a route alignment was agreed upon. At that time, General Khin Nyunt was the Prime Minister.

However, between 2004 and 2011, many of the infrastructure projects were put on hold or discontinued, and the TLH project was no exception.

During the reforms under Thein Sein's administration that extended from 2011–16, foreign relations were re-established, with investments coming into Myanmar through both private and public sources. In 2012, Myanmar and India held a top-level bilateral talk in Nay Pyi Taw during the State visit of Indian Prime Minister Dr. Manmohan Singh. Both parties agreed to emphasise improving the connectivity by re-establishing the joint task force that was in its initial stages. Specifically, India was to build the Kalewa–Yargi road segment to highway standard, while Myanmar would upgrade the Yargi–Monywa stretch to the same standard by 2016 (Government of India, 2012).

As part of the bilateral agreement in 2015, the Indian government under Prime Minister Modi approved the construction of 69 bridges, including approach roads to the 149.70 km long Tamu–Kyigone–Kalewa section of the TLH in Myanmar (InsightsIAS, 2019). The latest development of this plan will be mentioned in the relevant section of the report.

Building these bridges was conducted with a tender system. However, there were some issues between the Indian government and the Indian company that won the tender the first time. The Indian government called out the tender for second time, with the process restarting from the beginning, thus delaying the implementation.

3. Significance of the Greater Mekong Subregion and TLH for Myanmar

Myanmar plans to participate more actively in the regional framework, notably the Greater Mekong Subregion (GMS) agreement sponsored by the Asian Development Bank (ADB) to serve as a 'land bridge' between three regions of Southeast Asia, South Asia, and China. Myanmar emphasises the GMS programme because it brings six countries[1] together, five of which it shares a land border with. Myanmar constitutes the western part of the GMS's three designated economic corridors[2] and this western front is considered the missing link to connect the Association of Southeast Asian Nations (ASEAN) region with South Asia, particularly India and Bangladesh. Myanmar can stimulate economic activities along its routes through programmes such as the Cross-Border Trade Agreement. The TLH is one of the vital projects mentioned under the GMS plan (ADB, 2018a), and it is finally progressing with the acknowledgement of the current administration (UNESCAP, 2017), which considers it to be aligned with national logistic plans. The TLH project, along with other logistics development plans, is likely to be carried forward in the next administration as the NLD party is projected to keep its majority.

4. Current Status of TLH

The TLH route in Myanmar is assessed in four sections:

1. Tamu–Mandalay section;
2. Yangon–Myawaddy section;
3. Mandalay–Lao PDR border extension section; and
4. Yangon–Mandalay Highway Section.

The assessments examine the current road and physical infrastructure conditions, as well as border point trade and the existence of any institutional arrangements. The team conducted in-depth analysis and observation for the Tamu–Mandalay section, as there are upgrades that have taken place in recent years.

Methodology

The MSR team conducted field surveys and test runs from November 2019 to January 2020 to observe the current conditions. The road distance and daily number of vehicles passing have been referenced to the 'Assessment of Greater Mekong Subregion Economic Corridors (Myanmar)' report published by GMS in 2018.

[1] China, Lao PDR, Myanmar, Thailand, and Viet Nam.
[2] Myanmar is part of the East–West, North–South, and Southern economic corridors.

Assessment

As one of the main objectives of this field survey is to update the information relative to the GMS Secretariat (ADB) report 'Assessment of Greater Mekong Sub-Region Economic Corridors (Myanmar)' published in December 2018, the team made an assessment using the following criteria:

Physical condition is reported in five assessments, such as, 'very good', 'good', 'fair', 'bad', and 'very bad'. Observations regarding road conditions are based on factors such as the state of the road surface, road maintenance, and adequacy of road signs and drainage facilities.

The road classification is based on the Asian Highway Standard: Primary (four or more lanes, controlled 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.

4.1. Tamu-Mandalay Route

4.1.1. Overview of Routes

The 474 km route (through Yargi route) stretches from the cross-border point of Moreh (India) and Tamu (Myanmar) through Kalay, Kalewa, and Monywa in Sagaing region to Mandalay. The route can be divided into three sections as shown in Figure 1 Table 1: The first and shortest is the Yargi route, the second is the Gangaw route that runs south from the city of Kalay to Monywa then to Mandalay, and the third is the Ye U-Shwe Bo route, which runs north from Kalewa though Ye U and Shwe Bo, bypassing the city of Monywa.

Figure 1: Three Routes between Tamu–Mandalay Section

Source: Created by MSR based on ©googlemap2020.

Table 1: Comparison of Three Routes from Mandalay–Tamu

	Total Distance/Time (MDL→Tamu)[*3]	Road Utilisation	Pros (+) / Cons (-) Assessment
Gangaw Route (Mandalay–Monywa-Gangaw–Kalay–Tamu)	613 km (13 h 16 min)	Most used road amongst the three routes for both passenger vehicles and trucks. About 90%[*1] of the trucks use this route.	+) Road condition is good and logistic companies that carry goods from MDL–Tamu utilise the Gangaw Route.[*2] -) Longest distance amongst the three routes.
Ye U / Shwe Bo Route (Mandalay–Shwe Bo–Ye U–Kalewa–Tamu)	478 km (12 h 10 min)	About 10%[*1] of trucks are utilising it as the shortest route to Mandalay.	+) Shortest distance directly from Mandalay to Tamu through Ye U. +) Compared to the Yargi route, the road condition is better.[*2] -) Some sections are in poor condition, with difficult curves and unpaved surfaces.
Yargi Route (Mandalay–Monywa–Yargi–Kalewa–Tamu)	480 km (11 h 57 min)	Only used by inhabitants on the Yargi route or construction upgrade-related trucks and vehicles.	+) Shortest route from Mandalay going through the Sagaing state capital of Monywa. -) Many sections are in poor condition, with difficult curves and unpaved surfaces; logistics companies do not use the road. Inaccessible during the rainy season.

MDL = Mandalay.
*1: MSR interview with Ministry of Commerce official.
*2: MSR interview with logistics companies based in Mandalay.
*3: Measured with ©Googlemap from Mandalay to Tamu section, taking each route (January 2020).

The Gangaw route is the most common for commercial use because of its relatively well-maintained road. From interviews with logistics companies based in Mandalay,[3] about 90% use the Gangaw route when sending goods to Tamu. Logistics companies stay away from the Yargi route as there are hilly roads with many curves and unpaved segments that can damage vehicles. For the Ye U / Shwe Bo route, the section from Mandalay to Shwe Bo is easy to travel. However, Kaduma to Kalewa is difficult to travel due to its mountainous terrain.

During the rainy season, which generally runs from June to September, the Myanmar government does not prohibit vehicles taking any of its routes. The Ye U-Shwe Bo route is also accessible during the rainy season. Logistics companies, of their own accord, avoid the Yargi route in both seasons.

4.1.2. Overview of the Upgrade Plan

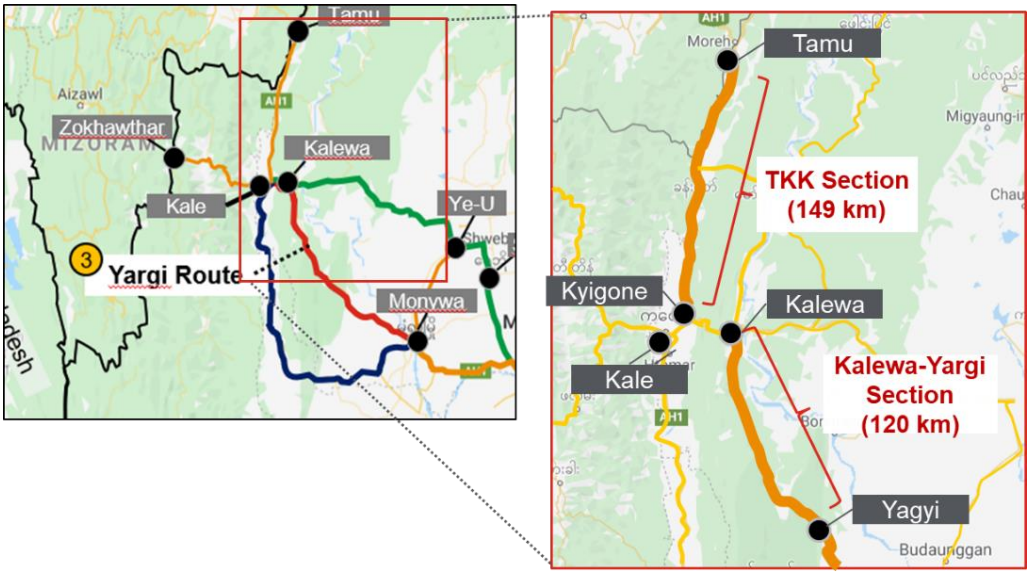
The upgrading plans for the road and bridge infrastructure from Tamu to Monywa missed their original deadlines and were modified in recent years. In 2012, during bilateral talks, former Myanmar President Thein Sein and Indian Prime Minister Singh agreed that India would repair and upgrade 71 bridges on the Tamu–Kalewa Friendship Road and the Kalewa–Yargi road segment to Asian Highway Standard. While Myanmar was to upgrade the Yargi–Monywa stretch to highway standard by 2016 (Government of India, 2012), that was not completed as planned.

The current Modi administration of India is aligned with the decisions made by the previous Singh administration, and, in 2015, it approved constructing 69 bridges on the Tamu–Kyigone–Kalewa section at the cost of 371 crores (US$52 million),[4] with a projected completion date of mid-2019 (Government of India, 2015); however, again, the route was not completed on schedule.

In 2019, the Ministry of Road Transport and Highways in India announced that it would upgrade and construct bridges and roads on the 149.7 km Tamu–Kyigone–Kalewa road section and upgrade the 120.7 km of the Kalewa–Yargi road section, as shown in Figure 2. This was planned in accordance with a grant from the Indian government (Government of India, 2019). According to information from a meeting with the Ministry of Construction's (MOC) Department of Highways, the Kalewa section was supported by India grant aid with INR11.77 billion (US$200 million). On the Myanmar side, the Yargi–Monywa section is being upgraded by Monywa Group of Companies under a build-operate-transfer (BOT) system.

[3] MSR team interviewed Mandalay-based logistic companies such as Shwe Pyi Tan Logistics, Tint Tine Aung Logistics, etc. in January 2020.
[4] Exchanged at 2019 rate of US$1=INR71.385.

Figure 2: Road Sections Planned to be Upgraded



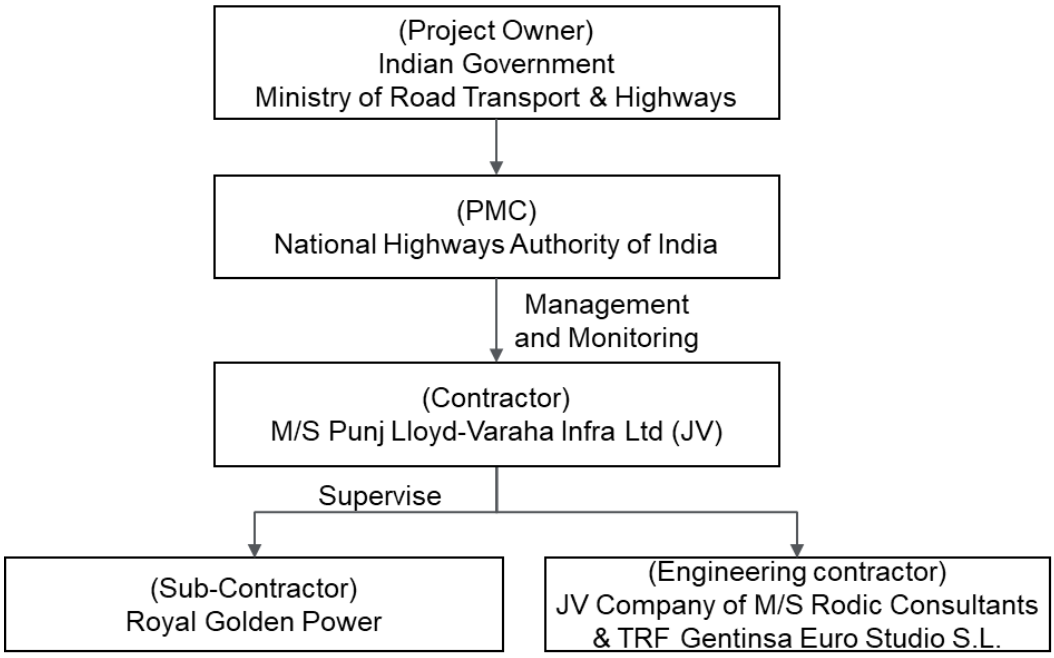
Source: Created by MSR based on ©googlemap2020.

The construction was scheduled to be completed 3 years from the date of commencement in 2018.[5] The Ministry of Road Transport and Highways in India approved 1,459 crores (US$205 million) for the Kalewa–Yargi section and 371.58 crores (US$51.8 million) for the Tamu–Kyigone–Kalewa section. From the total amount, in 2019, the Indian government fund has released 188.32 crores (US$26 million) for Kalewa–Yargi, and 4.84 crores (US$700,000) for the Kalewa–Yargi section (Government of India, 2019). The structure of the Kalewa–Yargi road section is shown in Figure 3 and Table 2 after it was decided that the project would be handled using the methods of both engineering procurement and construction and project management consulting.

The project owner, India's Ministry of External Affairs, hired the National Highways Authority of India as consultant and authority engineer for both the owner and client sides, and a contractor with engineering procurement and construction experience does all related work. Up to now, about 20% has been completed, leaving 1 year and 2 months to complete the project as scheduled. Although the Myanmar government asked India to provide a revised schedule for the remaining time, India has not done so. As a result, the Myanmar government has been asking India for monthly progress reports.

[5] The commencement date is according to the interview with the border official.

Figure 3: Kalewa–Yargi Road Construction Arrangements



PMC: project management contractor
Source: Created by MSR from various sources.

Table 2: Details of Organisations Involved in the Kalewa–Yargi Upgrades

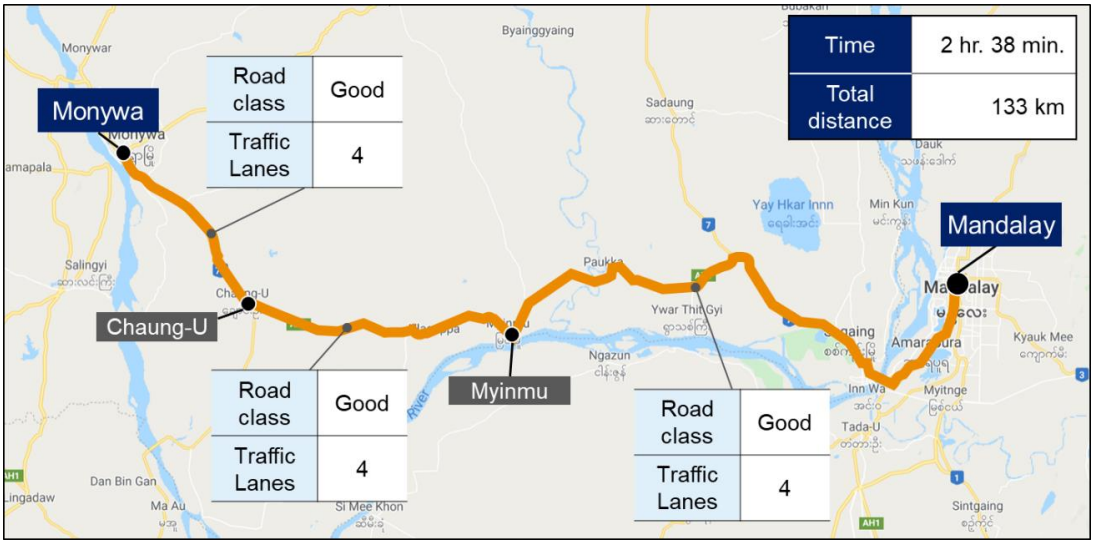
	Nationality	Remarks
National Highways Authority of India	India	Autonomous agency of the Government of India, set up in 1988. It is under the Ministry of Road Transport and Highways. Signed an agreement to upgrade the India–Myanmar Friendship Road in Myanmar.
M/S Punj Lloyd–Varaha Infra Ltd.	India	Awarded the construction of Kalewa–Yargi section in 2018. Punj Lloyd is an international engineering procurement and construction contractor. Varaha Infra Ltd. is an Indian construction company.
M/S Rodic Consultants	India	Established in 2000, Rodic Consultants is one of the premier engineering and project management consultancy.
TPF Gentinsa Euro Studio S.L.	Spain	TPF is an engineering company based in Madrid, Spain.
Royal Golden Power	Myanmar	Local company which provides engineering, civil construction, construction machinery leasing etc.

Source: Compiled by MSR from various sources.

4.1.3 Sectional Assessment

Mandalay–Monywa:

Figure 4: Mandalay–Monywa Section Overview



Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- In sum, the Mandalay–Monywa route, which serves as the Asian Highway 1 (AH1), runs smoothly and commercial vehicles such as trucks can easily travel on both lanes (AH1 goes from Ayeyarwady bridge to Yadanarpon before entering Chaung-U).
- It took the team 2 hours and 38 minutes travel time from Mandalay airport to the centre of Monywa city. Throughout the route, there are two lanes on both sides. The team assessed the road condition as 'good' throughout.

b. Distinctive junction points

- At 44.6 km, the road diverges to Monywa (left) and Shwe Bo (right).
- At 76.6 km, there is Myinmu bypass road where trucks and passenger cars can pass through this without entering Myinmu.
- At 97 km, near Chaung-U, Mandalay–Monywa road divides, with one road continuing to Monywa, and the AH1 going to Gangaw through MaAu, Lingadaw, KyarTet, and Pale.

Figure 5: Road Condition at Mandalay–Monywa Section

Source: MSR.

Figure 6: Junction Points in Mandalay–Monywa Section

Source: MSR.

c. Significant bridges

The Ayeyarwaddy Bridge (Yatanarpon) was constructed in 2008. It is a four-lane bridge, with a pedestrian lane. There is one further small bridge after Nyaung Bin Wun, spanning the Mu river.

d. Toll gates

There are four toll gates, one for Ayeyarwaddy Bridge and three set up by the Shwe Taung Highway company, who constructed the road under the BOT system. Toll fees are MK450 for the bridge and MK900, MK700, and MK900, respectively, for the three others for passenger vehicles.

e. Ongoing upgrades

The team observed the road being upgraded at the 112 km point of the Chaung–U Monywa–Amyint road (Figure 7). The new road will stretch around 7 km, and will connect to the Sagaing–Monywa Highway. It will be paved in concrete and the construction is being undertaken by Monywa District Rural Road Development Department.

f. Issues and necessary upgrades

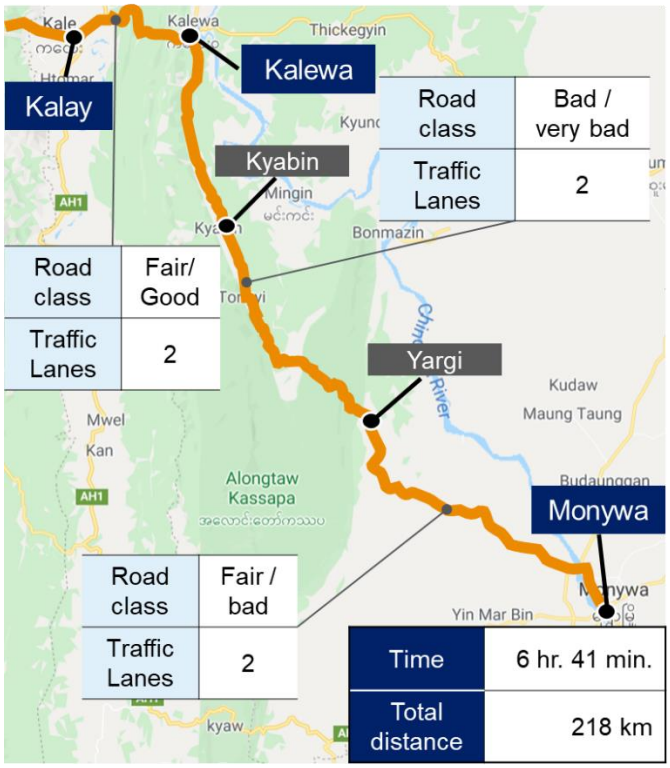
The road in Monywa is in good condition, but it is narrow, with two lanes of asphalt road. The road, however, cannot expand into four lanes because trees line both sides.

g. Traffic volume and vehicles

12,000 vehicles per day pass through the bridge point at Ayeyarwaddy Bridge (GMS, 2018a). The team observed 12-wheeler commercial trucks passing by this road; however, there are more passenger vehicles than trucks.

Monywa–Yargi–Kalewa–Kalay:

Figure 7: Monywa–Kalewa–Kalay Section Overview



Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The funding nations divided the Monywa–Yargi–Kalewa road into two sections.
- The Monywa–Yargi section is constructed and managed by the Myanmar side, specifically the Monywa Group of Companies.
- The Yargi–Kalewa section, which is characterised by mountainous roads with many turns, slopes, and narrow, unpaved gravel roads, is being upgraded through the funding of the Indian government.

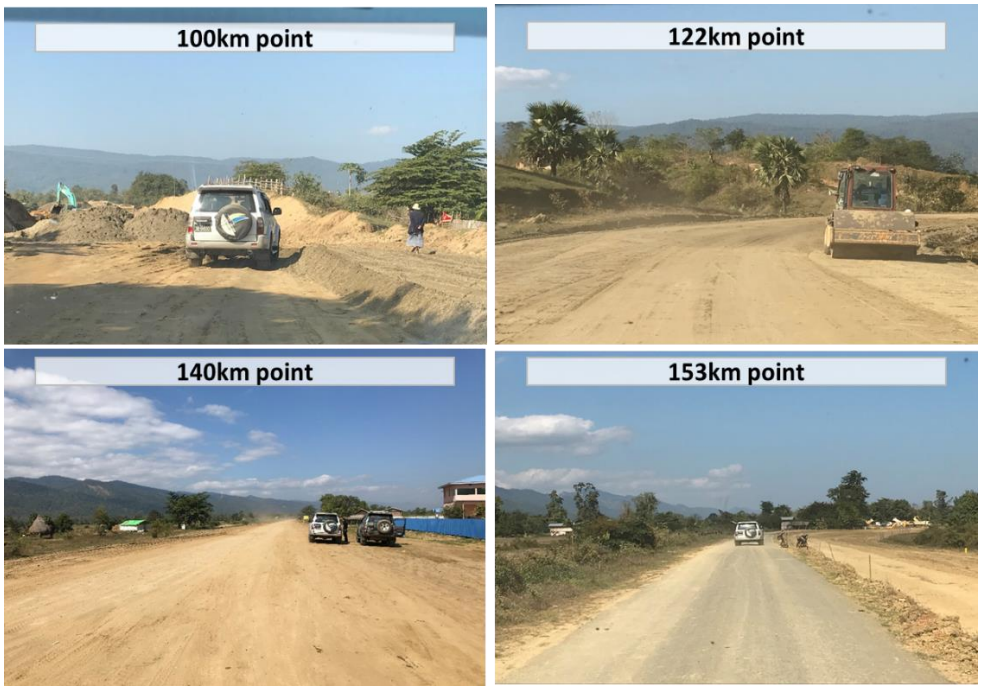
Monywa–Yargi–Kalewa

The Monywa–Yargi part of the road, which is in relatively good condition, has two lanes throughout, with the gravel sections being upgraded to asphalt. Yargi to Kalewa (up to Myit Thar bridge) is under construction and requires special vehicles with elevated bumpers to use this road part. The team graded the Monywa–Yargi part 'fair' to 'bad' and the Yargi–Kalewa part 'bad' to 'very bad'. It took the team 5 hours and 40 minutes to reach Myit Thar bridge from Monywa. The India road authority office is on the Yargi–Kalewa road 140 km from Monywa.

Figure 8: Road Condition at the Monywa–Yargi Section

Source: MSR.

Figure 9: Road Condition at Yargi–Kalewa Section

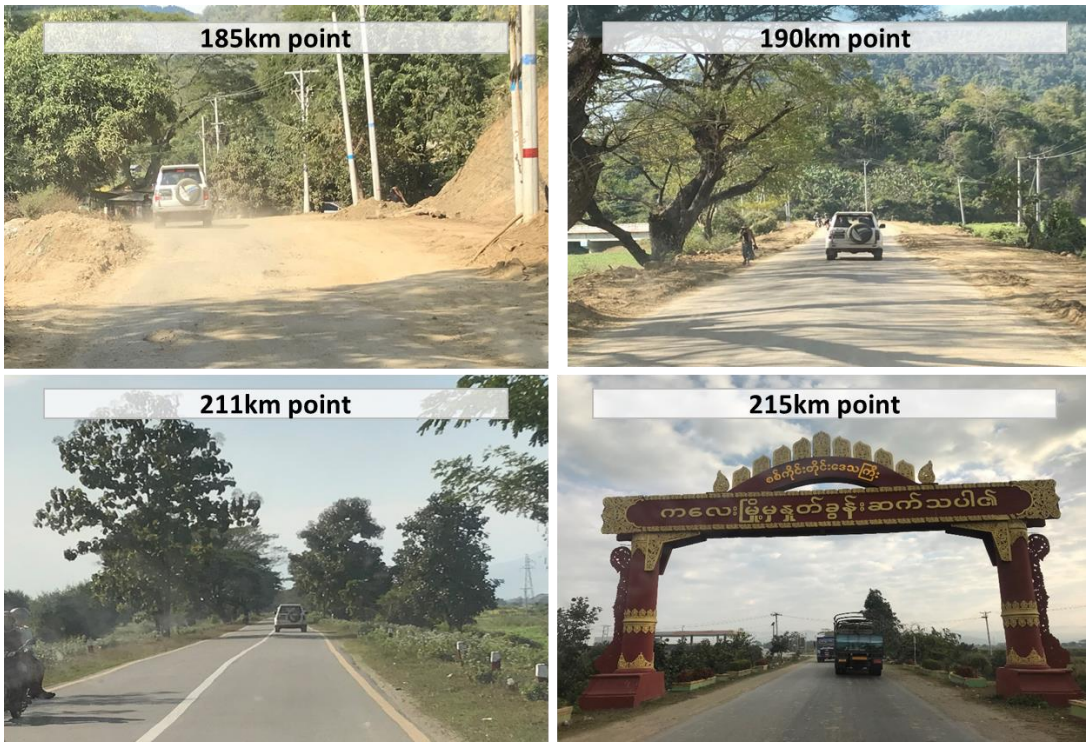


Source: MSR.

Kalewa–Kalay

The road section between Kalewa and Kalay is narrow and has two lanes, with Myit Thar river on one side and mountainous terrain on the other. In addition, there are 21 old bridges, which have a load-bearing capacity of 13 tonnes. It took about 50 minutes to reach Kyigone from Kalewa and about 1 hour to reach Kalay and the team assessed a 2.5 rating for Kalewa–Kalay road.

Figure 10: Road Condition at Kalewa–Kalay Section

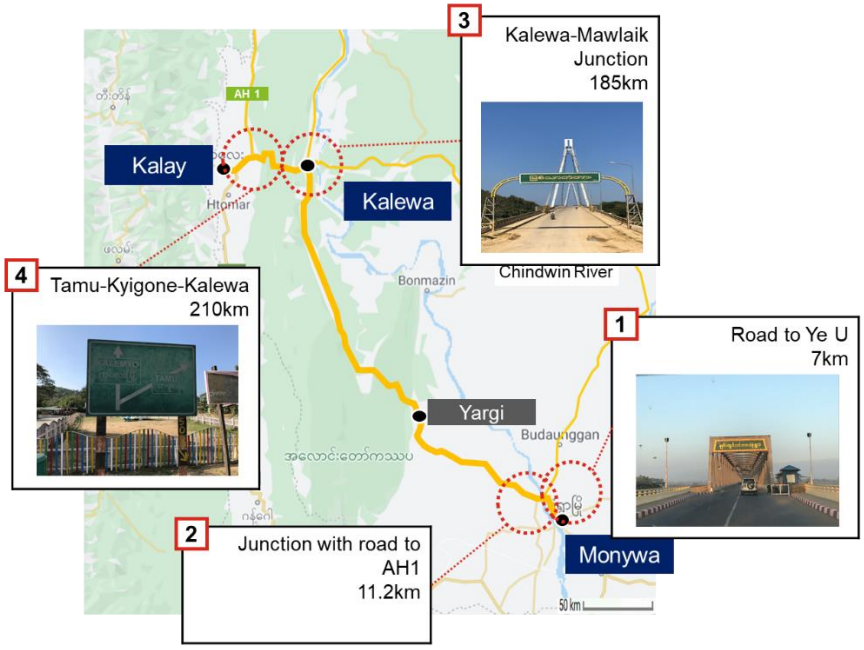


Source: MSR.

b. Distinctive junction points

- At 7 km, exiting from Monywa city, the road diverges, with one section heading left to Chindwin Bridge (Monywa), and the other heading right to Ye U through Budalin and Tapayin.
- At 11.2 km, after crossing Chindwin Bridge, the road divides into a branch from the Monywa–Yargi road at the left side that meets up with AH1 at Pale and Lingadaw. If continuing, the road extends till Pathein.
- At 184.6 km, after crossing Myit Thar Bridge near Kalewa, the road divides into three sections, with the right branch going to Kalewa, the straight-ahead going to Mawlaik, and the left branch becoming the Kalewa–Kalay road through Kyigone.
- At Kyigone, 25.4 km from the previous Kalewa junction, a right branch road goes to Tamu.

Figure 11: Junction Point from Monywa–Kalewa–Kalay



Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

- After exiting Monywa, the road reaches the Chindwin Bridge, which is two lanes with a pedestrian lane on both sides (the bridge approach is a four-lane asphalt road).
- The Myit Thar Bridge (Kalewa), which crosses Myit Thar river near Kalewa, and which was opened in June 2004, is a 1,320 ft long and 28 ft wide two-lane suspension bridge with a 4 ft wide pedestrian lane on each side.
- There are altogether 21 small, old bridges on the Kalewa–Kalay road.

d. Toll gates

There are two toll gates, one for Chindwin Bridge that costs MK300, and another 16 km from Monywa on the Monywa–Yargi route that costs MK600.

e. Ongoing upgrades

- The Yargi–Kalewa road is now being refurbished through the funding of the Indian Government (National Highway Authority of India) with an expected completion date of June 2021. In addition, the Indian government is also planning to construct new bridges to replace 69 old bridges along the Tamu–Kyigone–Kalewa road.
- During the survey, the team observed the construction going on to expand the road. A new road is under construction that runs directly in the mountainous area, with spaces for further expansion.

Figure 12: Upgrades Being Conducted in Yargi–Kyigone–Kalewa Section

Source: MSR.

f. Issues and necessary upgrades

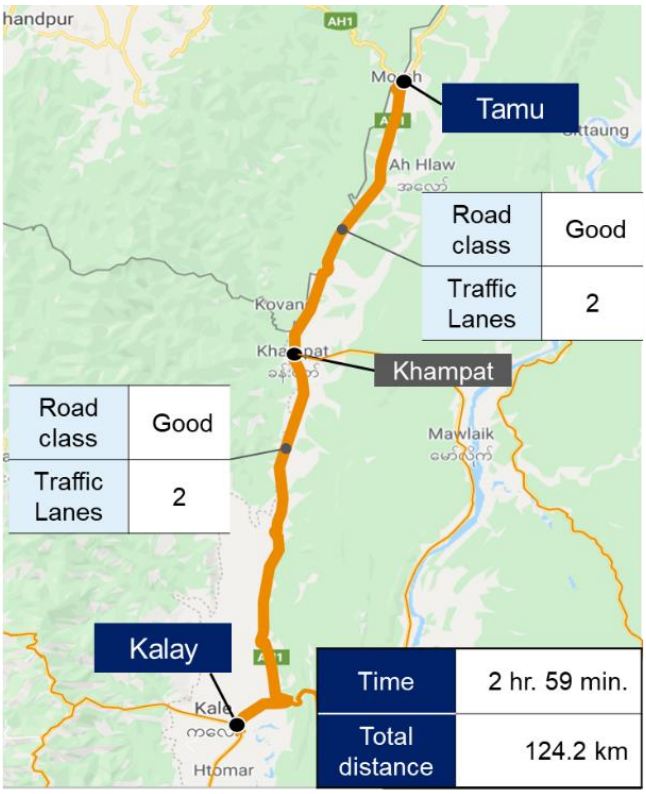
- The Yargi road is not convenient in the rainy season because it is sometimes flooded.
- Moreover, the Yargi road has many sharp turns, uphills, downhills and, in some parts, it is very steep and covered by soil. Mostly, the road is made of gravel and earth.
- Currently, a project to be implemented from Indian government will level the Yargi road and smooth out its curves.

g. Traffic volume and vehicles

According to the GMS survey, 2,300 vehicles per day pass through the bridge point at Chindwin Bridge. The team observed 12-wheeler trucks passing through these areas. However, there were more passenger vehicles.

Kalay–Tamu:

Figure 13: Kalay–Tamu Section Overview



Source: Created by MSR based on ©googlemap2020.

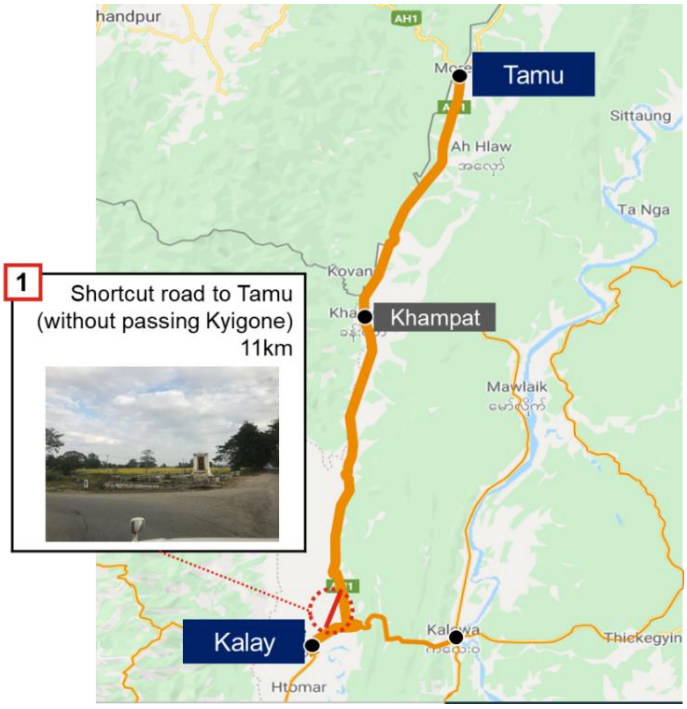
a. Route assessment

Throughout the route, there is one wide lane on both sides. It took the team 2 hours and 58 minutes of travel time from Kalay to the India–Myanmar Friendship Bridge in Tamu. The team assessed the road as 'fair'.

b. Junction point

Departing from Kalay to Tamu, Kyigone Junction is 8 km from Kalay along AH1. The road diverges there, with one section heading north to Tamu and another heading east to Kalewa.

Figure 14: Junction Point in Kalay–Tamu Section

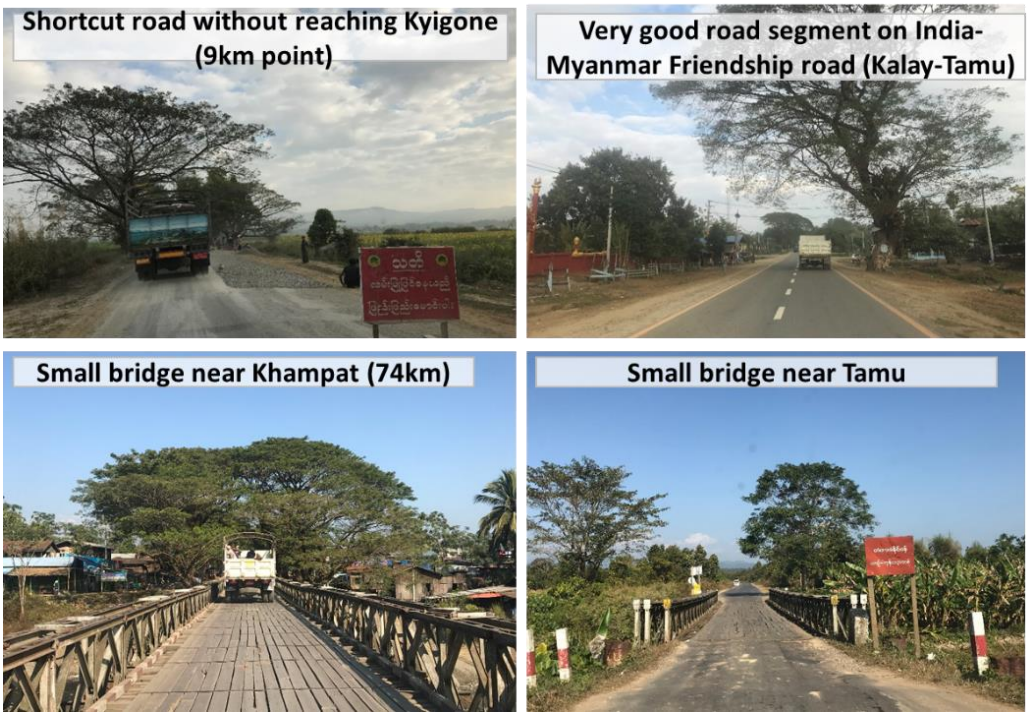


Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

There are 49 small, one-lane bridges between Kalay and Tamu, all constructed since 1940.

Figure 15: Road and Bridge Conditions between Kalay–Tamu



Source: MSR.

d. Toll gates

There are no toll gates between Kalay and Tamu, as the road was constructed under the India–Myanmar Friendship project in 1996.

e. Ongoing upgrades

The Indian government provided additional funds to upgrade the road in 2008 (GMS, 2018a). Moreover, the India and Myanmar governments agreed on terms for India to upgrade the old bridges along the Tamu–Kyigone–Kalewa road.

f. Issues and necessary upgrades

- All 49 of the bridges are too old to be used. In some long, single-lane bridges, the vehicles need to wait in long queues on both sides.
- In addition, the capacity of these old bridges varies from 13 tonnes to 24 tonnes, which makes 6 wheelers the most commonly seen truck type in this road segment.

Figure 16: Trucks Travelling the bridge (Kalay–Tamu)

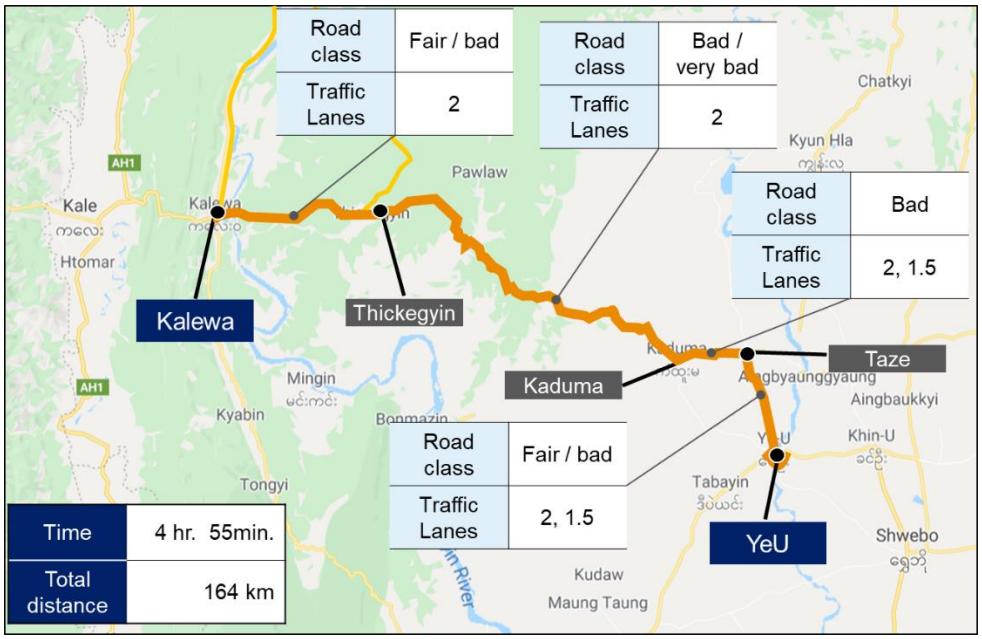
Source: MSR.

g. Traffic volume and vehicles

The team observed 12-wheeler trucks passing by these areas, as well as small passenger vehicles.

Kalewa–Ye U–Shwe Bo–Mandalay:

Figure 17: Kalewa–Kaduma–Taze–Ye U Section Overview

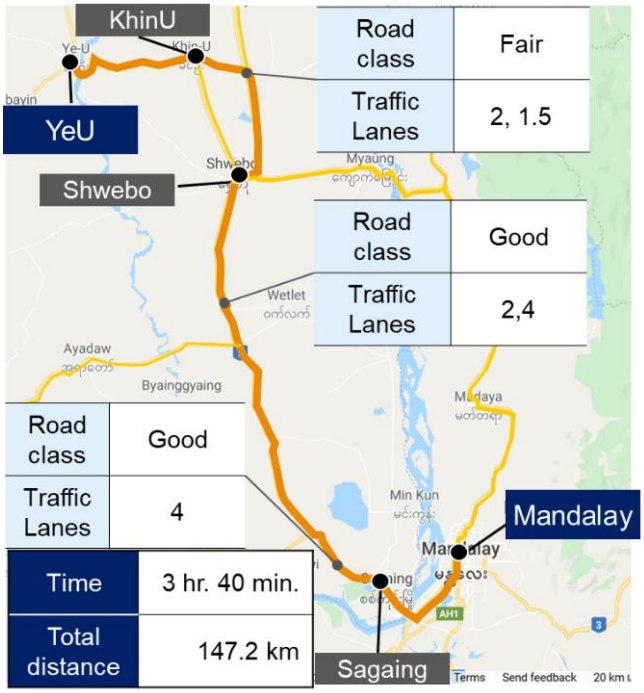


Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The Kalay–Ye U–Mandalay route runs 348.2 km, with the road condition throughout varying in each segment. It took the team 6 hours and 11 minutes of travel time from Kalay to reach Ye U, and another 3 hours and 40 minutes from Ye U to cross Ayeyarwaddy Bridge (Yadanarpon) and reach Mandalay.
- The Kalewa–PyinGaing road is mountainous, and while some parts are being upgraded, the team rated it as 'bad' to 'very bad'. From Kaduma to Ye U, the single–lane road is flat, but narrow on both sides and needs widening to facilitate modern transport.
- The road from Ye U to Shwe Bo is relatively fine when compared with previous roads. Roads in Shwe Bo are high quality and four lanes wide, with lampposts, and the Shwe Bo–Mandalay road is also good quality.

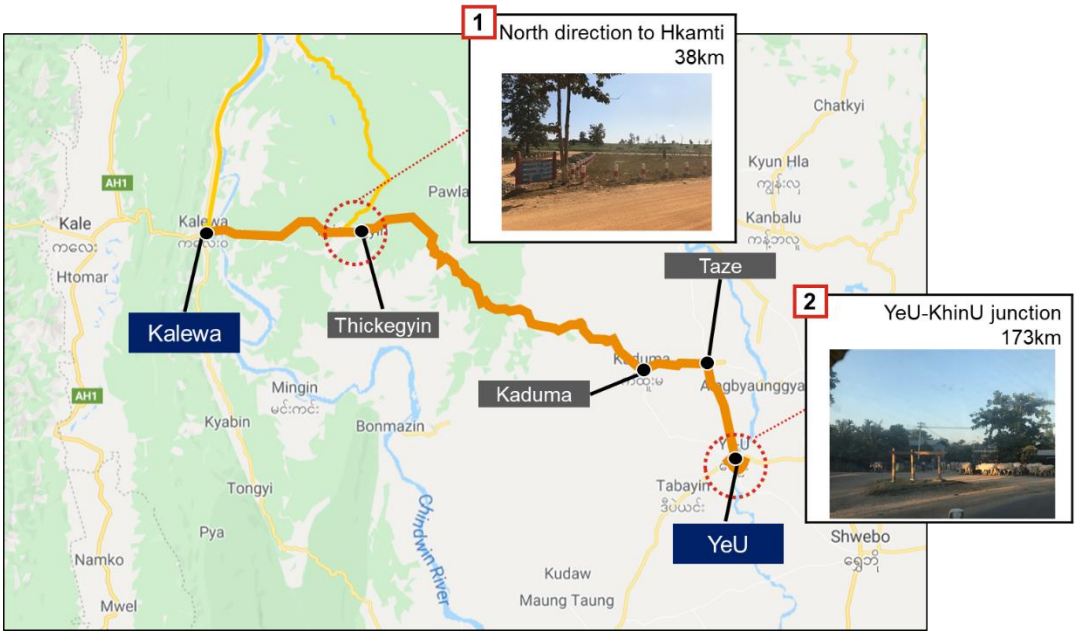
Figure 18: Ye U–Shwe Bo–Mandalay Section Overview



Source: Created by MSR based on ©googlemap2020.

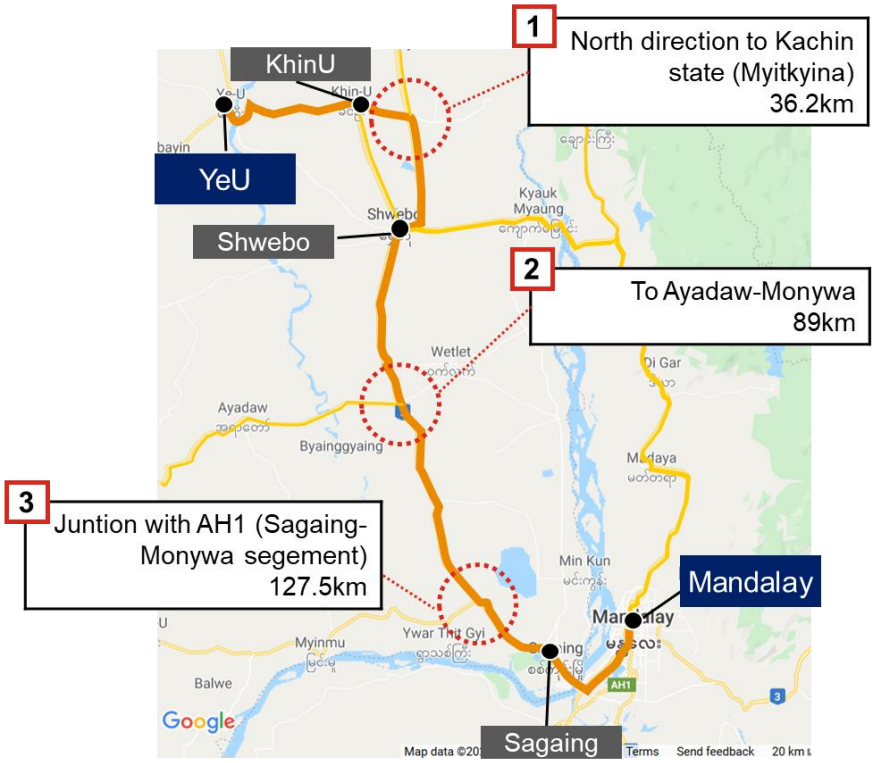
b. Distinctive junction points

Figure 19: Junction Points in Kalewa–Ye U Section



Source: Created by MSR based on ©googlemap2020.

Figure 20: Junction points in Ye U-Shwe Bo–Mandalay section



Source: Created by MSR based on ©googlemap2020.

- The route is very long, and there are important junction points, including between Kalay–Ye U, which is at 201.5 km, and Ye U-Mandalay, which is at 147 km.
- At 36.8 km, near the Myit Thar Bridge before entering Kalewa, the road divides into three, with the right section going to Myit Thar Bridge and then the Yargi road, while the straight-ahead section goes to Kalewa and the left section goes to Mawlite.
- After crossing Chindwin Bridge at AungChanThar village, which is 38 km from Kalewa, the road branches north to PaungByin, Homalin, and Hkamti.
- At 36.2 km from Ye U (between KhinOo and Shwe Bo), the left direction at the junction continues till Kachin state (MoeKaung and Myitkyina).
- At 127.5 km from Ye U, the road meets up with AH1 at the Sagaing–Monywa segment.

c. Significant bridges

Chindwin Bridge Kalewa, which is on the Chindwin river, was officially opened in April 2017. There are also several small bridges along the road between Kalewa and Ye U. After exiting Ye U 206 km from Kalay, the team crossed Mu river, which is a one-lane (car+train) bridge and had to wait a little to cross the bridge, whose toll cost MK300.

d. Toll gates

There are two bridge tolls, one at the Mu river near Ye U, which costs MK300, and one at Ayeyarwaddy Bridge Yadanarpon, which costs MK450. Further, after exiting Shwe Bo is a toll gate costing MK700, as well as one at OhnTaw for the Mandalay–Shwe Bo road, which costs MK300.

e. Ongoing upgrades

- The MOC is upgrading the road between Kalewa and Kaduma (Kalewa–PyinGaing road), which is mountainous and rocky.
- They are also upgrading the branch routes to Mawlite and to Hkamti, from gravel and earth to concrete and asphalt.

Figure 21: Ongoing Upgrade Section between Kalewa–Kaduma

Source: MSR.

f. Issues and necessary upgrades

- There are several narrow, one-lane bridges between Kalewa and Kaduma that need to be upgraded.
- From Kaduma, Taze to 3 km before Ye U, the road is narrow. If two vehicles come in opposite directions, one needs to yield for the other to pass through.
- This is also the case for a part of the road between Ye U-KhinOo–Shwe Bo that needs to be expanded.
- In addition, the Mu river bridge at Ye U must be upgraded into a two-lane bridge to ease transport in the area.

Figure 22: Bridge between Kalewa–Kaduma Section

Source: MSR.

Figure 23: Road between Ye U

Source: MSR.

4.2. Yangon–Myawaddy (Maesot) Route

4.2.1. Overview of Routes

The East–West Economic Corridor in Myanmar, which starts from Yangon and ends in the Thai border town of Myawaddy, lies on the 457 km route through the southeastern Bago Region, Mon and Kayin States in areas such as Pha Yar Gyi, Waw, Kyaikto, Bilin, Thaton, Hpa An, and Kawkareik, as shown in Figure 24. This distance stretches from Yangon Thilawa port to the Myawaddy first Friendship Bridge on the Thailand–Myanmar border.

The importance of this route has increased in recent years with the opening of second Thai–Myanmar Friendship Bridge in 2019. This route is essential for increased connectivity, particularly between the industrial zones in Thailand to the Thilawa industrial zones on the outskirts of Yangon.

Moreover, that route will be the lifeblood of Myanmar as far as trade and commerce is concerned since it will connect the regional hubs like Bago and Mawlamyine with the business capital of Myanmar, that is, Yangon. The linkage of the major state development plans such as Hanthawaddy New International Airport (Bago), the Thilawa special economic zone, and the Dawei special economic zone will greatly enhance the economic activity of that route.

Figure 24: East–West Economic Corridor in Myanmar (Yangon to Myawaddy)

Source: Created by MSR based on ©googlemap2020.

4.2.2. Overview of the Upgrade Plan

This route has been upgraded using finances originating from ADB, along with the Thailand and Myanmar governments and private companies under the BOT system.

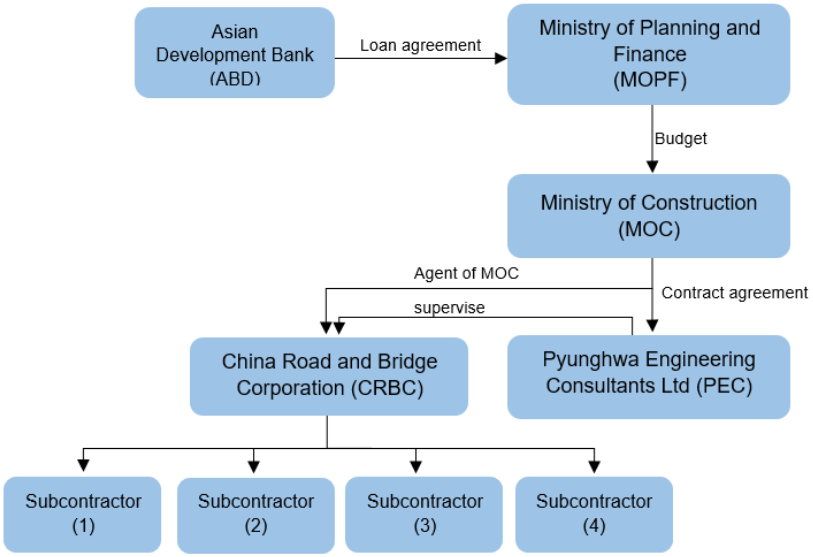
Some parts of the road between Pha Yar Gyi and Thaton were developed by Shwe Than Lwin Highway Co., Ltd. under the BOT system. Moreover, a project to develop a new 70 km arterial highway between Bago and Kyaikto, which is along AH1, as well as the East–West Economic Corridor, was proposed to ADB with a US$476 million budget (ADB, 2018b).

As of September 2018, the Myanmar and Thailand governments agreed in principle to improve the 68 km road section between Thaton in Mon State and Eindu in Kayin State, since Thailand will be assisting Myanmar with US$52 million to boost trade between the two countries (GMS, 2018b).

Currently, most of the road areas are surrounded by farmland, except in the areas crossing towns and villages, which are in a relatively good condition. However, in the urban areas, many existing houses and shops on either side of the road limit expansions. For example, in Thaton and Pha Yar Gyi, which is a confluence of major roads, increased urbanisation and traffic congestion make the area prone to accidents and vulnerable to increased social issues. In such a situation, building a bypass road is essential.

For the road section between Hpa An and Myawaddy, ADB has approved US$100 million; together with US$20 million from ASEAN infrastructure funds and US$1.8 million from the Myanmar government, this will improve a 66.4 km road segment connecting Eindu and Kawkareik in Kayin State, the missing link of the GMS East–West Economic Corridor. The arrangement is described in Figure 25.

Figure 25: Eindu–Kawkareik Road Project Implementation Structure



Source: ADB Report 2018.

Pyunghwa Engineering Consultants is Myanmar's representative to supervise the project, with the construction itself being done by China Road and Bridge Corporation as the main contractor.

Initially the upgrade was to be completed by 2019. However, as of September 2019, the overall progress is 57.4% according to ADB (ADB, 2020). The main delay is due to non-compliance of contractors on environmental issues.

The current state of the road will be further described in the sectional assessment.

4.2.3 Sectional Assessment

Yangon–Hpa Yar Gyi:

Figure 26: Yangon–Hpa Yar Gyi Section Overview

Source: Created by MSR based on ©googlemap2020.

a. Route assessment

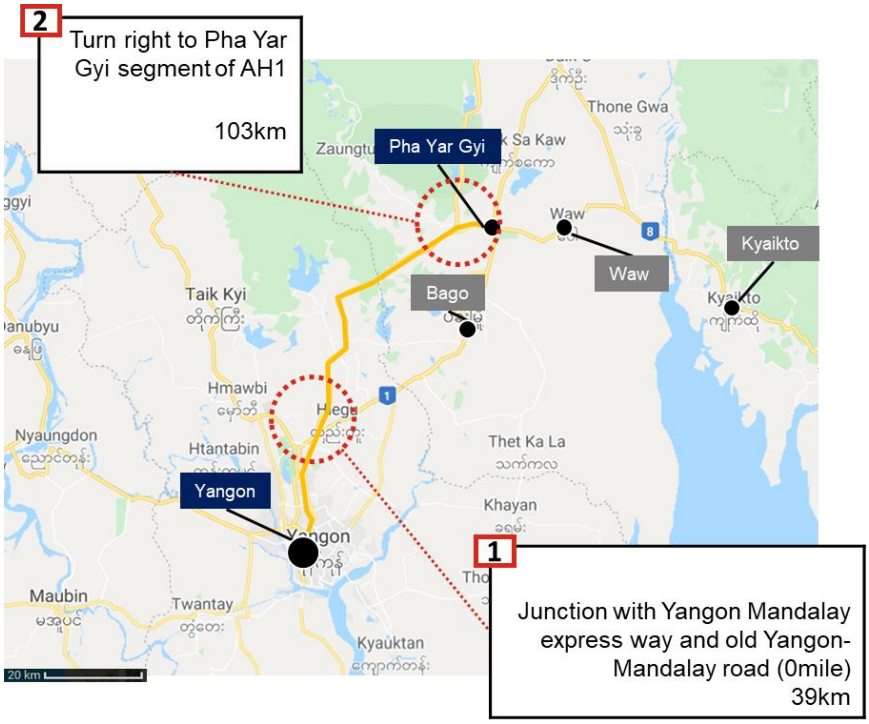
- The team started the journey from Yangon Central Railway Station and used No. 3 main road to exit Yangon. According to interviews with logistics companies, trucks mostly use this road since it reaches the old Yangon–Mandalay highway (now mostly used by cargo trucks, as they are prohibited from the new Yangon–Naypyidaw–Mandalay highway) without passing through the city of Bago. Under a BOT scheme, Max Highway Co., Ltd. manages this well-maintained part of road that was assessed as 'good'.
- Then, the team followed the Yangon–Naypyidaw–Mandalay expressway, which is four lanes of asphalt, with an overall condition assessed as 'good'.
- After crossing Bago river along the highway at Baw Net Gyi, the team reached Pha Yar Gyi by using the Pha Yar Gyi road segment of AH1 which can be graded 'fair'.

- It took the team approximately 2 hours of travel time from Yangon to Pha Yar Gyi. There are mostly two lanes on both sides throughout the route, which is in good condition, with some parts being asphalt and other parts concrete.

b. Distinctive junction points

- At the 39 km point, the zero mile is the junction of No. 3 main road, Yangon–Naypyidaw–Mandalay highway and old Yangon Mandalay road.
- At 103 km near Baw Net Gyi, the northward branch of the road on the right is the Pha Yar Gyi road segment of AH1, which goes to Pha Yar Gyi.
- At Pha Yar Gyi, the road intersects with the old Yangon–Mandalay Road again.

Figure 27: Junction Points in Yangon–Pha Yar Gyi Section



Source: created by MSR based on ©googlemap2020.

c. Significant bridges

There are no significant bridges on that part of the road.

d. Toll gates

- There are three toll gates, with the first in use for No. 3 main road and set up by Max Highway company, which built the road under the BOT system.
- Another toll gate is at the start of Yangon–Nay Pyi Daw–Mandalay highway and is managed by the MOC, with toll fees on its first 115 miles varying from MK2,500 to MK7,500 depending on the different types of vehicles and weights.
- The last toll is at Baw Net Gyi, which is the start of the Pha Yar Gyi road segment of AH1.

Figure 28: Road Conditions in Pha Yar Gyi

Source: MSR.

Figure 29: Shwe Than Lwin Toll Gate for Pha Yar Gyi–Kyaikto Road Section

Source: MSR.

e. Ongoing upgrades

The team observed that that part of the road had neither been upgraded nor repaired recently. Since the overall road condition is good, these were likely not necessary.

f. Issues and necessary upgrades

As the Yangon–Naypyidaw–Mandalay highway is the most-used road in Myanmar, the MOC could implement a digital card payment system at toll gates (the same system that they are starting to introduce in the Yangon bus system) because traffic is intense with long queues during public holidays and weekends.

g. Traffic volume and vehicles

11,300 vehicles per day pass through the highway toll gate, including many kinds of trucks, express buses, and family cars.

<u>Pha Yar Gyi–Thaton:</u>

Figure 30: Pha Yar Gyi–Thaton Section Overview

Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The road section between Pha Yar Gyi to Thaton, which also serves as AH1 and is also part of the new Yangon–Mawlamyine highway, is in good condition, with a four-lane, mostly asphalt road that is upgraded and maintained regularly.
- After exiting Waw, the team crossed Sittaung river bridge at Moke Pa Lin before reaching Kyaikto. The road segment between Moke Pa Lin and Kyaikto is in very good condition.
- From Kyaikto, AH1 passes through Bilin and Theinzeik and reaches Thaton.

b. Distinctive junction points

- At 140 km, between Waw and Sittaung Bridge, the northbound road goes to Daik-U.
- At 207 km from Yangon, AH1 reaches Bilin where a northbound branch road goes to Loikaw in Kayah State, eventually leading to Hopong (near Taunggyi) in Shan State.
- At 246 km in Thaton, AH1 deviates from the Yangon–Mawlamyine highway.

Figure 31: Pha Yar Gyi–Thaton Distinctive Junction Points

Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

Sittaung Bridge at Moke Pa Lin is situated at 151 km and there is another bridge at the exit of Bilin across Bilin creek.

d. Toll gates

- There are five toll gates between the Pha Yar Gyi and Thaton segments of AH1.
- Shwe Than Lwin Highway company, which is responsible for the road segment 90 km from Pha Yar Gyi, operates toll gates at the start of the Yangon–Mawlamyine Highway and 90 km from the starting point.
- Before entering Waw, the team had to pay a wheel tax for crossing the city at a gate run by the local development committee.
- There is also a toll gate for Sittaung Bridge, which connects Bago Region and Mon State, and which opened in July 2008.
- There are also two wheel-tax toll gates for passing both Kyaikto and Bilin.

e. Ongoing upgrades

- The new Waw Bridge, which is located on AH1 across Waw creek, is under construction beside the old bridge.
- The four-lane concrete road section at Waw was upgraded to asphalt in 2019.

Figure 32: New Waw Bridge Construction Site beside Old Bridge

Source: MSR.

f. Issues and necessary upgrades

- As mentioned above, bypass roads are required in some towns.
- Due to increased settlement, especially in the inner part of the town, houses and shops occupy the roadside area and the road becomes narrow.

g. Traffic volume and vehicles

Over 4,000 vehicles pass through the Sittaung Bridge toll gate daily as of 2017.

Figure 33: Road Conditions in Pha Yar Gyi–Thaton Road Section

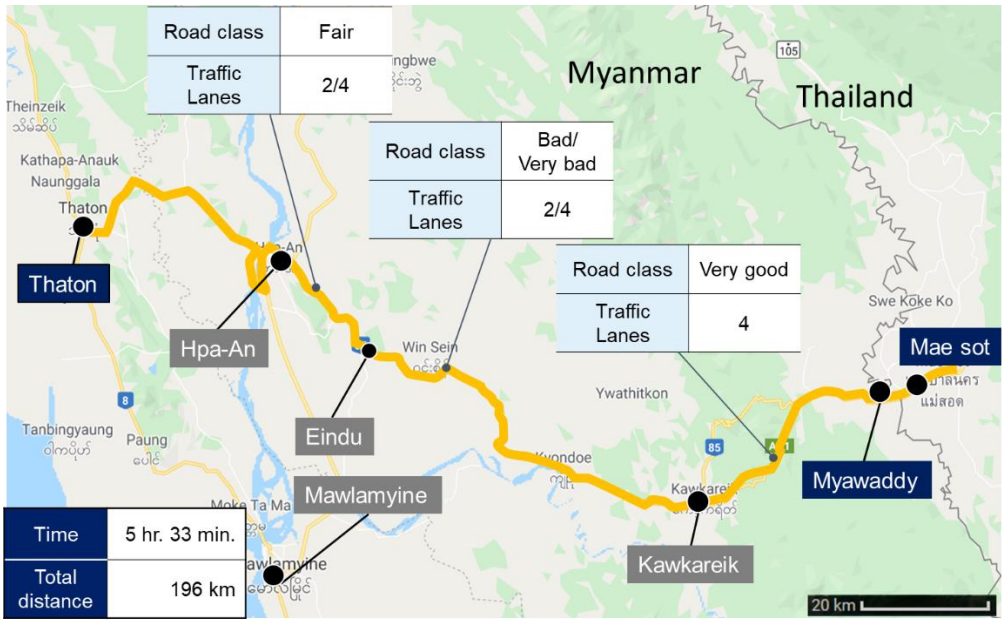
Source: MSR.

Figure 34: Sittaung Bridge (Moke Pa Lin)

Source: MSR.

Thaton–Myawaddy:

Figure 35: Thaton–Myawaddy Section Overview



Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The road between Thaton and Myawaddy is divided into two sections.
- The team assessed the section running from Thaton through Hpa An till Eindu as 'fair' to 'good'; by contrast, the road from Eindu to Kawkareik still needs upgrading.
- The road from Kawkareik to Myawaddy, which was upgraded in 2015 with help from Thailand, is considered one of the best roads in Myanmar.
- It took the team about 10 hours travel time to go from Yangon to Myawaddy, which is 428 km away.

b. Distinctive junction points

- After crossing Thanlwin bridge (Hpa An) and 8 km before reaching Hpa An, the road diverges, with one branch going to Zar Tha Pyin and then Mawlamyine, and the other branch leading to the Hpa An bypass road.
- At Kawkareik, the road again splits into two, with the branch on the right (also part of AH1) having been refurbished in 2015.
- At 6 km from No.1 Friendship Bridge along AH1, there is a branch road that leads to the new Myanmar–Thailand border trade centre and No. 2 Friendship Bridge.

Figure 36: Thaton–Myawaddy Distinctive Junction Points

Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

- Between Thaton and Hpa An, the road passes over two bridges, one of which crosses Donthami creek, which constitutes the border between Mon State and Kayin State.
- Another is the Thanlwin Bridge (Hpa An), built over the famous Thanlwin river.
- Near Kyondoe, the team crossed Gyaing Bridge (Kawkareik), which is an old suspension bridge. There is also a temporary bridge nearby for large vehicles. Gyaing Bridge was closed in 2018 June due to flooding, but reopened after 2 months.

d. Toll gates

There is one toll gate to collect a wheel tax at Hpa An, which is located just a few km from Thanlwin Bridge.

e. Ongoing upgrades

The 66.4 km road section between Eindu and Kawkareik is under construction; as of 2019 September, about 60% of the project is finished (ADB, 2020).

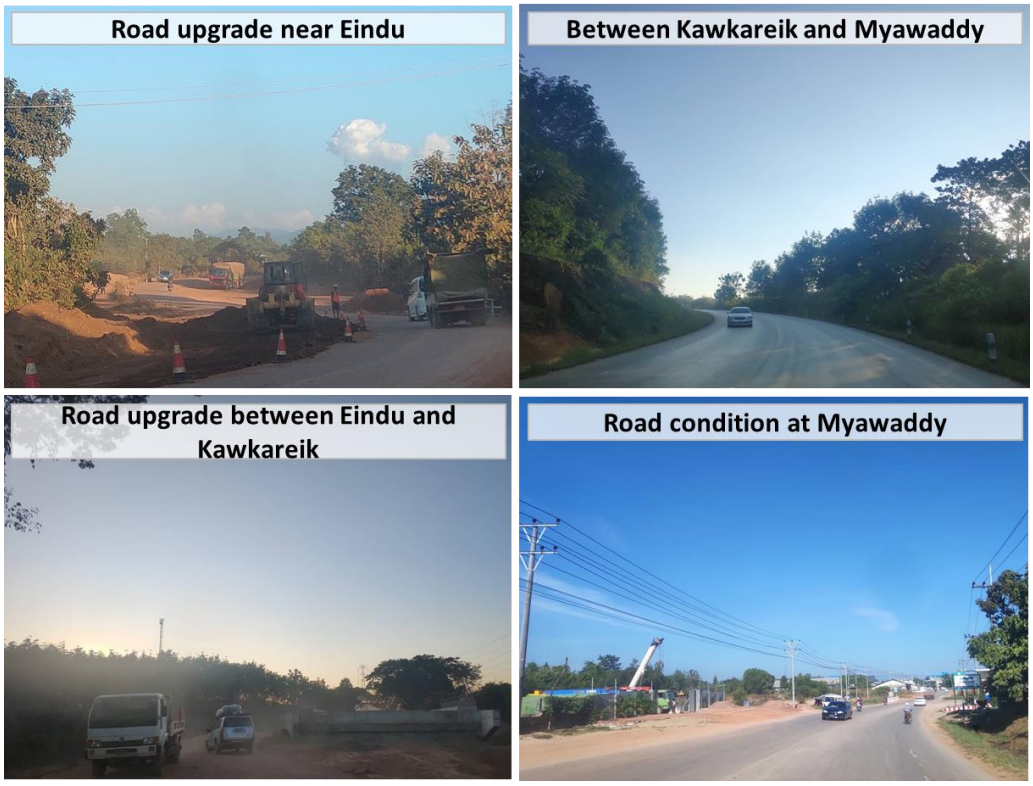
f. Issues and necessary upgrades

- The Eindu–Kawkareik road was mainly funded with US$100 million from ADB, and a further US$20 million from ASEAN infrastructure funds. The project, scheduled to be completed in 2019, was delayed due to noncompliance of contractors on environmental issues.
- Although the project needs to solve some environmental and local resettlement issues, it is expected to resume in the coming dry season, which begins in October 2020.

g. Traffic volume and vehicles

The number of vehicles passing through Eindu varies from 1,200 to 1,600 according to 2017 data.

Figure 37: Road Conditions between Hpa An and Myawaddy



Source: MSR.

4.3. Mandalay–Keng Lap Route (Lao PDR border)

4.3.1. Overview of Routes

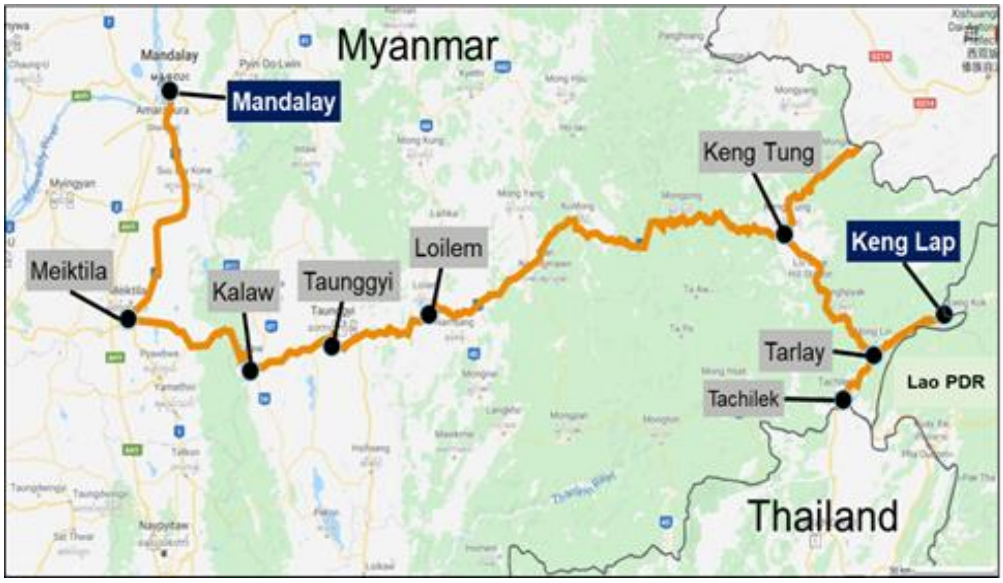
The Mandalay–Keng Lap route is 935 km long, as shown in Figure 38, and takes approximately 21 hours and 24 minutes to cover.[6] The road can be divided into the following three sections:

a. Mandalay–Meiktila–Taunggyi;
b. Taunggyi–Loilem–Keng Tung; and
c. Keng Tung–Tarlay–Keng Lap.

The Mandalay–Meiktila route serves as Asian Highway 2 (AH2)/National Highway 1 (NH1), while the Meiktila–Taunggyi route is AH2, and the Taunggyi–Tachilek route is AH2/National Highway 4 (NH4).

[6] Mandalay–Taunggyi–Loilem–Keng Tung–Tarlay–Keng Lap.

Figure 38: Mandalay–Taunggyi–Keng Tung–Keng Lap Route



Source: Created by MSR based on ©googlemap2020.

4.3.2. Overview of the Upgrade Plan

There are two upgrade plans along the road of Meiktila to Taunggyi, one of which has been completed. There is a further upgrade ongoing along the Tarlay–Keng Lap route.

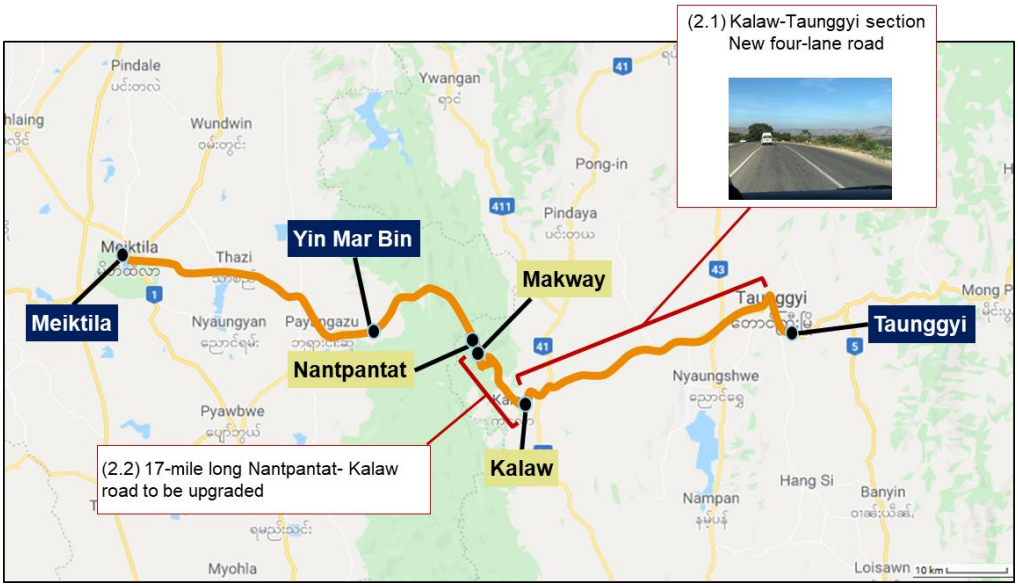
New Four-Lane Asphalt Concrete Road

A section from Kalaw to Taunggyi in southern Shan State was upgraded to an asphalt concrete road, as shown in Figure 39. The four-lane road is 48 ft wide. It was completed under the BOT system by the Highland Road Construction Company.

Bridge Construction

Of the 200 bridges planned for the Meiktila–Kalaw road, 194 were built prior to 2019 and the Highland Road Construction Company will complete the remaining bridges in the open season beginning in 2020, as noted by Tun Tun Lin, construction director of Highland Road Construction Co. Ltd. The company had been contracted to build Meiktila–Kalaw–Taunggyi road under a 40-year agreement through the BOT system and the opening ceremony for the Kalaw–Taunggyi road was held on 1 May 2019. The 45-mile (72.4 km) long Kalaw–Taunggyi road, a section of Meiktila–Taunggyi–Keng Tung–Kalaw road, has been completed, and the 17-mile (27.3 km) long Nantpantat–Kalaw road (Nantpantat is a village situated near Shan Yoma Elephant Camp on the Meiktila–Taunggyi road) has yet to be built.

Figure 39: Road Sections Planned to Be Upgraded



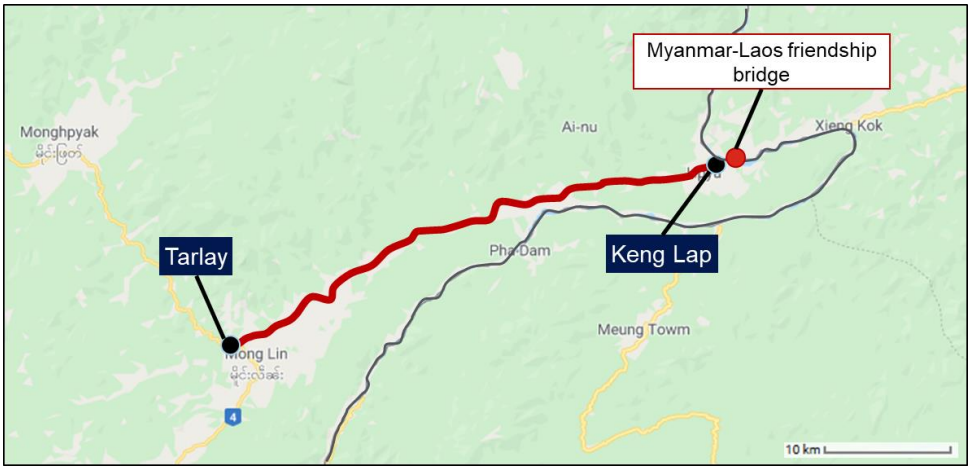
Source: Created by MSR based on ©googlemap2020.

Of the six remaining bridges to be built, the longest is a 40 m long bridge near Makway Village continuous with Nanphantat village along the Kalaw uphill. The cost of a mile-long road is over MK1.7 billion, and if the Nantphantat–Kalaw road has many bends, the expense will be over MK2 billion per mile (Eleven; 2019).

Ongoing Upgrades along Tarlay–Keng Lap Route

- Along the Tarlay–Keng Lap route, the MOC is now upgrading some small parts of the road, as shown in Figure 40.
- Starting from Keng Lap town entrance to the downtown area, the MOC is now expanding the road from 15 feet to 18 feet using crushed rock (quarry).[7]

Figure 40: Road Sections Planned to Be Upgraded



Source: Created by MSR based on ©googlemap2020.

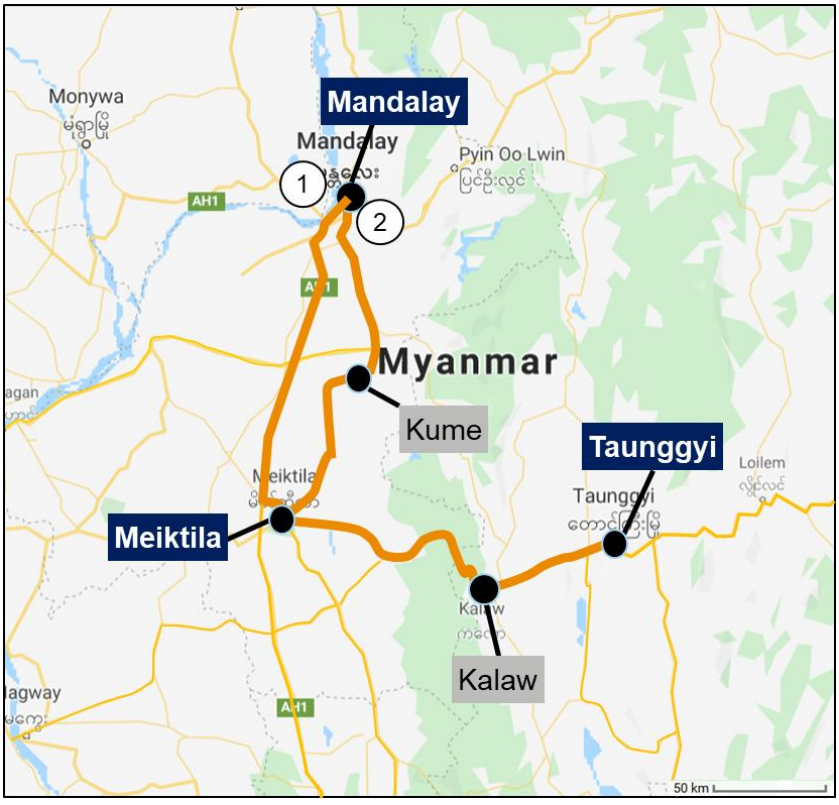
[7] Keng Lap border official.

4.3.3. Sectional Assessment

Mandalay–Taunggyi:

There are two routes from Mandalay to Taunggyi: the first is Mandalay–Meiktila–Kalaw–Taunggyi through the Yangon–Mandalay highway route (AH1), and the second is through NH1/AH2, which travels through Mandalay–Kume–Meiktila–Kalaw–Taunggyi, as shown in Figure 41. The team used the second route to travel from Mandalay to Taunggyi, as it is the shortest and most frequently used by logistics companies. The route is in good condition over 336.8 km.

Figure 41: Two Routes from Mandalay to Taunggyi

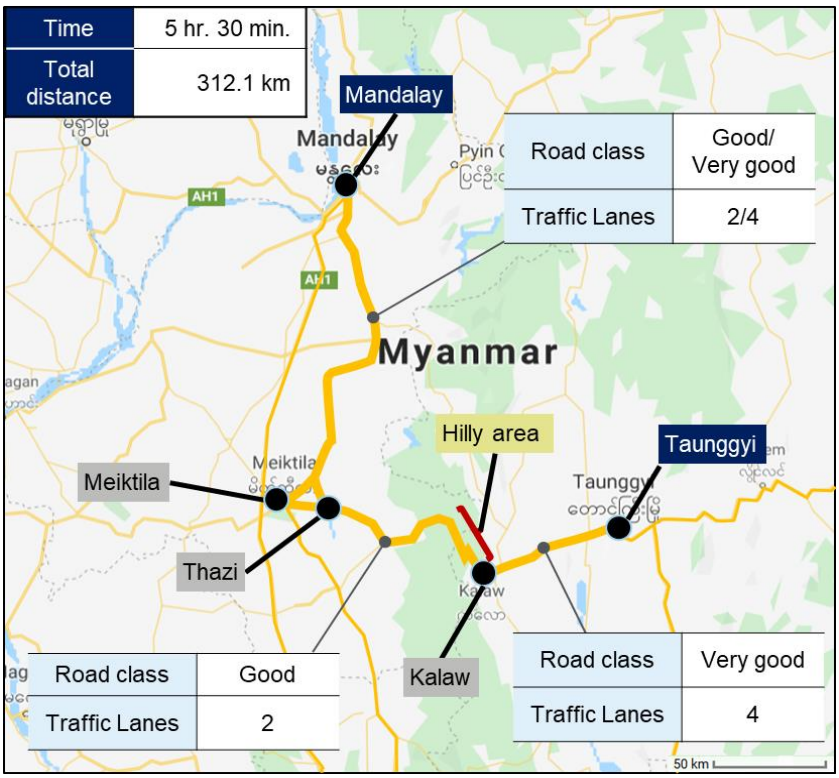


Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The Mandalay–Meiktila road is 48 ft wide and made of asphalt, and is in good condition.
- The Meiktila–Kalaw section is wide enough for two cars going in opposition directions to pass at the same time and is in good condition. The hilly section starts from Yin Mar Bin to Kalaw, which is an uphill climb with curves along the road.
- The Kalaw–Taunggyi section is in very good condition, with a 48 ft wide, four-lane asphalt road. It has recently been upgraded by the Highland Road Construction company under the BOT system.

Figure 42: Mandalay–Taunggyi Section Overview



Source: Created by MSR based on ©googlemap2020.

Figure 43: Road Condition at Mandalay–Taunggyi Section

Source: MSR.

b. Distinctive junction points

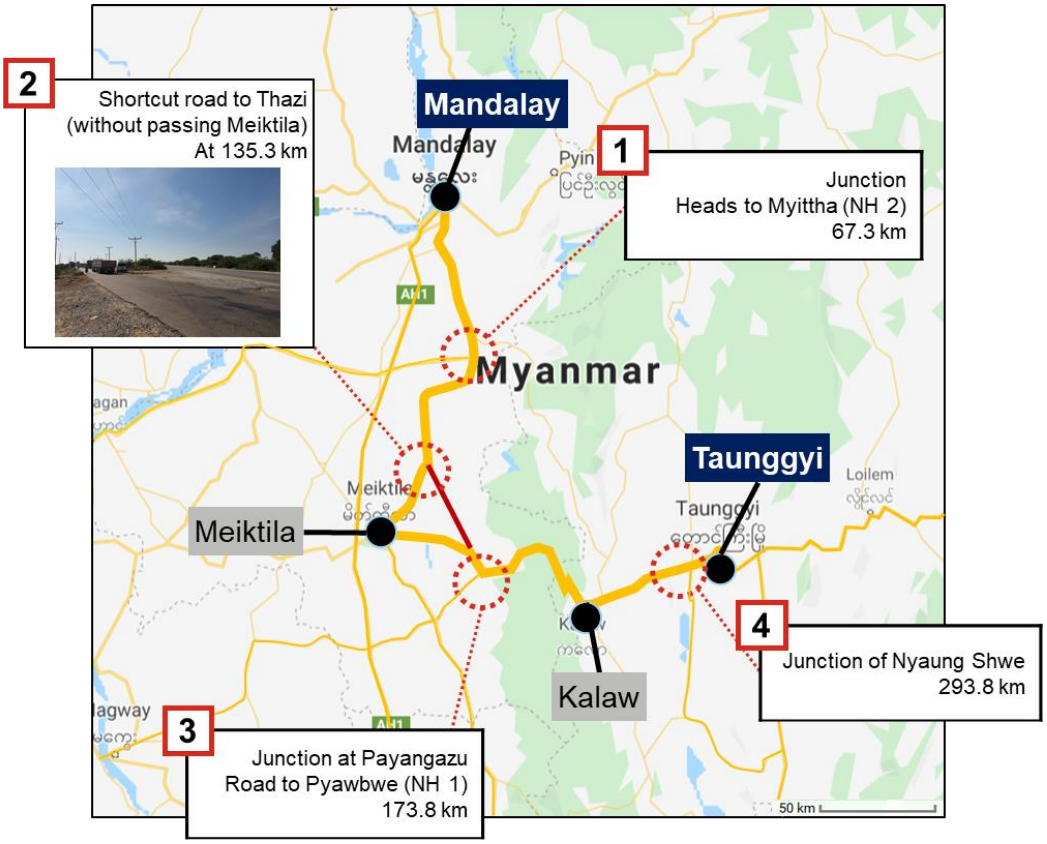
Mandalay to Thazi:

- At 67.3 km, the road divides into two roads (the right direction goes to NH2)
- At 135.3 km, there is a shortcut to NH4 (the right direction heads to Meiktila)

Thazi to Taunggyi:

- At 173.8 km, the road separates (right to Pyawbwe [NH1])
- At 293.8 km, the right direction is the Shwenyaung–Nyaungshwe road, which can take passengers to Inle lake in Nyaung Shwe Township.

Figure 44: Junction Point from Mandalay–Taunggyi



Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

- Myitnge Bridge crosses the Myitnge river, which is situated between Amarapura and Myitnge Township, and lies along NH1, which connects to Mandalay in the north. Myitnge River is 700 ft long and 27 ft wide for motor traffic, flanked on each side by a footpath 6 ft wide that was opened in 1999.[8]
- There is a small bridge in Kyaukse, which is the capital of Kyaukse District in Mandalay Region, that crosses the Zawgi river.

[8] https://en.wikipedia.org/wiki/Myitnge_River (accessed 26 April 2020).

d. Toll gates

- There are six toll gates on the Mandalay–Taunggyi route. Locations and costs are as follows:
  - Near Myitnge and Sintgaing: MK200/MK900.
  - Meiktila Toll Plaza: MK900.
  - Shortcut road not entering Meiktila: MK600.
  - Pha-ya-nga-zu/Yin Mar Bin: MK500.
  - Aungpan toll gate: MK1,000.
  - Between Shwe Nyaung and Ayetharyar: MK600.

e. Ongoing upgrades

(*refer to 4.3.2 overview)

f. Issues and necessary upgrades

Currently, there are no significant issues and necessary upgrades.

g. Traffic volume and vehicles

Over 5,000 vehicles typically pass through Thapyay Wa gate daily on the Meiktila–Mandalay road section (GMS, 2018a).

<u>Taunggyi–Loilem–Keng Tung</u>

According to a Keng Tung border trade official, the road condition between Taunggyi and Keng Tung is similar to the section between Keng Tung and Tachilek. Taunggyi to Keng Tung road is 48 ft wide, with two lanes of asphalt, and has many turns and some narrow curves. The Tachilek–Keng Tung route takes about 13 hours by car and is 488 km long.

According to meetings with officials from the MOC, the main bottleneck of that route is Wa Ta Lone hill, a rocky mountain near Loilem. Also, there are sand hills in the eastern part of Keng Tung, which makes the existing road impossible to expand because they tend to collapse whenever it is done. The government is now trying to conduct a feasibility study to get loans from ADB to upgrade the current road.

Figure 45: Taunggyi–Keng Tung Section Overview

Source: Created by MSR based on ©googlemap2020.

The Takaw Bridge, which crosses Thanlyin river, is situated on AH2/NH4, the only route that connects the southern part of Shan State to the eastern part. It is open from 6am to 6pm every day. Due to the bridge's limited hours, the transportation of the route is not convenient. In addition, the bridge is heavily guarded by the Myanmar military for security concerns.

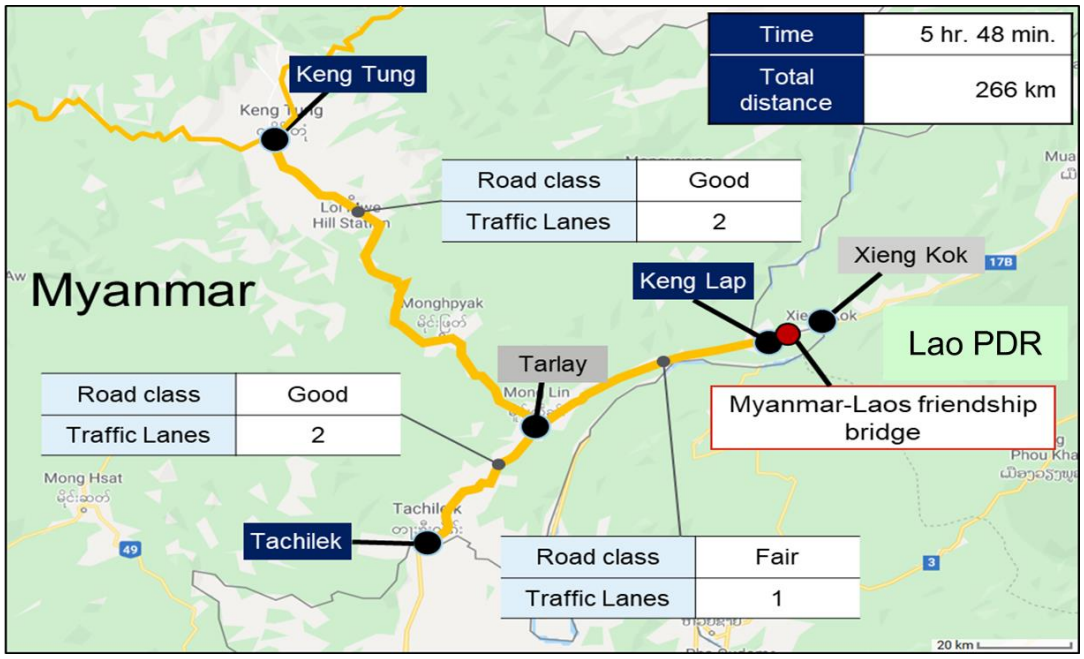
There is no official document that shows the night-time closure of Takaw Bridge. It was constructed in 1973, with a maximum truck weight of 24 tonnes. Currently, the Department of Bridges is building the Nang Seng–Takaw Bridge at a different location from the old Takaw Bridge to cross Than Lwin river. It is expected that the bridge will be completed by 2022.

Figure 46: Takaw Bridge

Source: Photo taken by Fatima Martin.

Tachilek–Keng Lap–Keng Tung:

Figure 47: Tachilek–Tarlay–Keng Lap–Keng Tung Section Overview



Source: Created by MSR based on ©googlemap2020.

a. Route assessment

- The Tachilek–Keng Lap–Keng Tung route, which serves as NH4, is 266 km long, with a total driving time of 5 hours and 48 min.
- Tachilek–Keng Lap–Keng Tung route can be divided into two parts:
  1. Tachilek–Tarlay–Keng Lap route; and,
  2. Tarlay–Keng Tung route.
- The road condition from Tachilek to Tarlay was assessed as 'fair'. Both trucks and passenger cars going in opposite directions can easily pass each other at the same time.
- The Tarlay–Keng Lap route condition is also fair, but there are some narrow parts that cross the villages and some parts are mountainous.

Tachilek–Tarlay–Keng Lap Route

The route takes around 2.5 hours by car. The Tachilek–Tarlay route has some hills, but generally it is in a good condition. Starting from Tarlay to Keng Lap, the route section is in fair condition, with narrow asphalt coverage. There are some small curves along the road. The trucks and passenger cars may find it difficult to pass each other at the same time.

Figure 48: Road Condition at Tachilek–Tar Lay–Keng Lap section

Source: MSR.

Tarlay–Keng Tung route

Tarlay–Keng Tung route is in good condition and wide enough with two lanes. Even though the location is in a mountainous area, the road is smooth, with only small curves. It takes around 3 hours by car.

Figure 49: Road Condition at Tar Lay–Keng Tung Section

Source: MSR.

b. Distinctive junction points

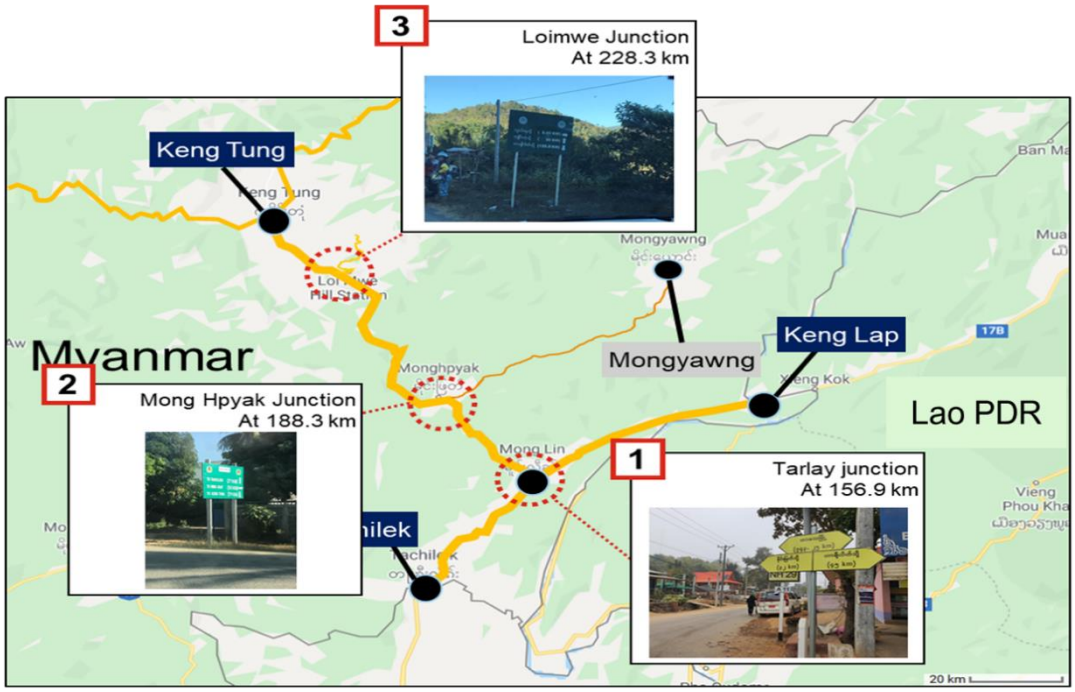
Tachilek to Keng Lap:

- At 47.1 km, the Tarlay junction point is where three routes (Tachilek, Keng Lap, and Keng Tung) meet. Turning left leads to Mong Hpyak and Keng Tung, while turning right leads to Keng Lap, which is on National Highway 29 (NH29) road.

Tarlay to Keng Tung:

- At 188.3 km in Mong Hpyak, the northeast route is NH29, which heads to Mongyawng Township.
- At 228.3 km, the northeast route will lead to Loi Mwe (Misty Mountain), which is 9.14 km away from the junction.

Figure 50: Junction Points in Tachilek–Keng Lap–Keng Tung



Source: Created by MSR based on ©googlemap2020.

c. Significant bridges

At 97.2 km from Tachilek is the Myanmar–Lao PDR Friendship Bridge. It is constructed across the Mekong river.

d. Toll gates

There are three toll gates along the Tachilek–Keng Lap–Keng Tung road.

- 9.8 km: Tachilek toll plaza, which was constructed by Thaw Tar Win Construction Co. Ltd. It costs MK600 for passenger cars.
- 161.1 km: Tarlay toll gate, which costs MK1,000 for passenger cars.
- 258.3 km: Keng Tung toll gate, which costs MK1,000 for passenger cars.

e. Ongoing upgrades

(*refer to 4.3.2 overview)

f. Issues and necessary upgrades

- The Tarlay–Keng Lap route is too narrow, as two cars going in opposite directions can barely pass at the same time. It is necessary to expand, but there are villages along the road with houses that are built too close to the road, which hinders upgrading.
- The Keng Lap border office does not own its own land; currently, it is rented from the monastery.[9] There are efforts to find alternative land.

g. Traffic volume and vehicles

- There are about 60–70 trucks (12-wheelers) that pass through the Keng Lap border checkpoint daily.

4.4. Yangon–Mandalay Highway Section

Figure 51: Yangon–Mandalay Route

Source: Created by MSR based on ©googlemap2020.

[9] Keng Lap border official (Ministry of Commerce).

Figure 52: Yangon–Nay Pyi Taw Route

Source: Created by MSR based on ©googlemap2020.

4.4.1. Distinguishing Points[10]

The distinguishing points between Yangon–Mandalay highway (old route) and Yangon–Mandalay expressway (new route) are as follows:

Yangon–Mandalay Highway (Old Route)

- It is approximately 680 km (423 miles) long.
- It is situated through four major cities, including Bago, Taunggoo, Pyinmana, and Meiktila.
- It is a two-to-four-lane single carriageway.
- It has a 4.8 roughness rating based on the international roughness index.
- It takes about 14 hours to travel.

[10] https://frontiermyanmar.net/en/the-road-rule-costing-myanmar-billions (accessed 26 April 2020).

Figure 53: Road Condition at Yangon–Mandalay Highway Section (Old Route)

Source: MSR.

Yangon–Mandalay Express Highway (New Route)

- It is 586 km (364 miles) long.
- It was firstly planned in late 1950s and rebuilt from October 2005 to December 2010.
- It is a four-lane dual carriageway.
- It has a 3.0 roughness rating based on the international roughness index.
- It takes about 7 hours to travel.
- It is closed to trucks except those carrying perishable goods.

Figure 54: Road Condition at Yangon–Mandalay Highway Section (Old Route)

Source: MSR.

4.4.2. Historical Background

Yangon–Mandalay Expressway

The Yangon–Mandalay expressway stretches from Yangon (a major commercial city), to Nay Pyi Taw (the administrative capital city) and Mandalay (second-largest city in Myanmar). A US consultant carried out the first expressway feasibility study in 1959 and reported to the Myanmar government in 1960. Although some work was carried out before 2005, it was stopped by the government for budgetary reasons. The Yangon–Nay Pyi Taw–Mandalay expressway was developed by the MOC's Public Works office and the Ministry of Defence's Directorate of Military Engineering. Construction began in October 2005 and opened to the public in three sections as follows:

- Yangon–Nay Pyi Taw (325.12 km; 202 miles), 25 March 2009.
- Nay Pyi Taw–Mandalay (Sagar-Inn) (242.28 km; 149 miles), 29 December 2010.
- Mandalay (Sagar-Inn)-Mandalay (21.92 km; 13.5 miles), 23 November 2011.

Total Number of Bridges

The total number of bridges is 124 from Yangon to Nay Pyi Taw, and 99 from Nay Pyi Taw to Mandalay (JICA, 2015).

Total Project Cost

Total cost was MK1.2 trillion (Manch and Htoon, 2017).

Toll Gates

Yangon–Mandalay Highway (Old Route)

Seven companies (Oriental Highway [Asia World], Max Myanmar, ShweThan Lwin, Shwe Taung, Kanbawza, Yuzana, and Thawdawin) operate the toll gates and control the highway, with 40-year BOT contracts with the MOC. Trucks must pay tolls of about MK300,000 per return trip (Manch and Htoon, 2017).

Figure 55: Toll Gates at Yangon–Mandalay Highway Section (Old Route)

Source: MSR.

Yangon–Mandalay Expressway (New Route)

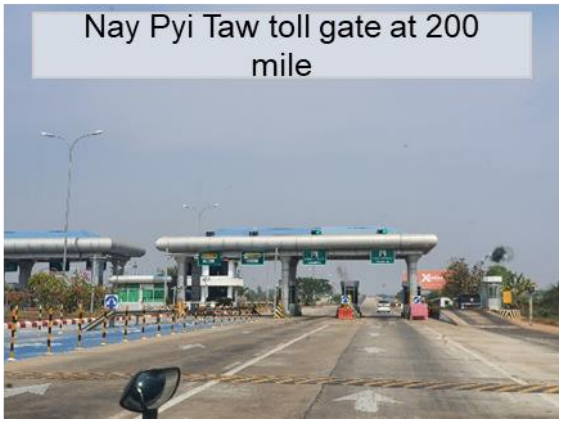
Only the MOC operates toll gates along the Yangon–Mandalay expressway. There are five toll stations on the Yangon–Mandalay expressway located at Yangon, Phyuu, Nay Pyi Taw, Meiktila, and Mandalay, collectively generating US$11 million per annum (Manch and Htoon, 2017).

Table 3: Toll rate of Yangon–Mandalay Expressway

Section	Class 1	Class 2	Class 3	Class 4
Yangon–Nay Pyi Taw	2,500	5,000	7,500	12,500
Nay Pyi Taw–Mandalay	2,000	4,000	6,000	10,000

Source: JICA, 2015.

Figure 56: Toll Gates at Yangon–Mandalay Expressway Section (New Route)



Source: MSR.

4.4.3. Current Situation of Upgrade (2016 to present)

Yangon–Mandalay Highway (old route)

Seven local companies are working on stretches of road by section under Build – Operate – Transfer (BOT) system: Max, Shwe Thanlwin, Shwe Taung (Hi Star), Kambawza Highway, Asia World, Yuzana and Thawdawin are working on stretches of road from Yangon to Bago, Bago to Nyaunglaybin, Nyaunglaybin to Kyauktada, Kyauktada to Phyu, Phyu to Nay Pyi Taw, and Nay Pyi Taw to Meiktila.[11]

Yangon–Mandalay Expressway (new route)

Maintenance of the Yangon–Mandalay Expressway was carried out in two parts: the Yangon–Nay Pyi Taw section, followed by the Nay Pyi Taw–Mandalay section. For the Yangon–Nay Pyi Taw section, 133 miles were covered with asphalt concrete, changing from raised medians to depressed medians. For the Nay Pyi Taw–Mandalay section, 43 miles were paved with asphalt concrete and fixed with 27,798 reflector bulbs. Guard rails were installed along 69 miles, with 1,459 warning signposts installed.

Total maintenance costs in 2018–19 were MK538.58 million from the Union Central Fund, as follows:

- Yangon Section: MK52.6 million;
- Bago Section: MK50.848 million;
- Nay Pyi Taw Section: MK103.01 million; and
- Mandalay Section: MK332.1 million.

MK5.6 million from the Union Central Fund was used for water gates, road shoulders, drainage systems, asphalt concrete, and maintenance of traffic islands (Republic of the Union of Myanmar, 2020).

[11] Htoo, Than (2016), *Yangon–Nay Pyi Taw highway upgrade to finish within five years.* Myanmar Times 18 August 2016. Available at: https://www.mmtimes.com/national-news/nay-pyi-taw/22010-yangon-nay-pyi-taw-highway-upgrade-to-finish-within-five-years.html

4.4.4. Future Government Plans

The government has plans to upgrade the Yangon–Nay Pyi Taw Highway during the 5 years of its current term, and has asked foreign investors for financial help. Changing the highway to six lanes with traffic medians and fences on each side to keep out animals and pedestrians, along with a ban on motorcycle usage, were included in the master plan according to Mr. Kyaw Lin, MOC Permanent Secretary at an August 2016 press conference.[12] In February 2018, Mr. Kyaw Lin, since promoted to MOC Deputy Minister, told the Lower House Parliament that MOC had already planned to begin upgrading 40 miles of the Yangon–Mandalay expressway into an international-class facility with loans from ADB (Consult-Myanmar, 2018).

According to information from a meeting with the MOC Department of Highways at Nay Pyi Taw, there is a plan to upgrade the Yangon–Mandalay expressway from two lanes to four to meet international standards and allow for faster speeds. Currently, there is a plan to upgrade Yangon Main No. 3 road–Bawnatgyi section with an ADB loan. There is also a plan to upgrade the Bawnatgyi–Nay Pyi Taw–Mandalay section. As there is no adequate budget for it, the Department of Highways is considering collaborating with the private sector in a public–private partnership. There is no base outline for the project regarding organising work, the amount of work, work area decisions, and number of participant companies; as a result, these will depend on how much interested companies can invest.

4.4.5. Issues

Accidents

To improve the safety of the Yangon–Mandalay expressway, 16 roadside police stations were established in 2012, offering 24-hour service (Aung, 2019). Traffic police and the MOC Department of Public Works installed safety countermeasures such as speed enforcement and chatter bar and pavement bump emplacement. For emergency phone service, the MOC established the '1880' hotline connected to the Yangon–Mandalay Express Call Centre in July 2014. However, the numbers of the accidents from 2009 to 2014 did not decline, as shown in the table 4 below (JICA, 2015).

Table 4: Number of Accidents Taking Place on Yangon-Mandalay Expressway

Item	2009–10	2010–11	2011–12	2012–13	2013–14
No. of accidents	103	73	55	186	259
No. of injured (person)	170	145	148	192	622
No. of deaths (person)	47	38	47	78	113

Source: JICA, 2015.

[12] Htoo, Than (2016) *Yangon–Nay Pyi Taw highway upgrade to finish within five years.* Myanmar Times 18 August 2016. Available at: https://www.mmtimes.com/national-news/nay-pyi-taw/22010-yangon-nay-pyi-taw-highway-upgrade-to-finish-within-five-years.html

There were 473 accidents, 103 deaths, and 877 injured in 2018, and 521 accidents, 106 deaths, and 1,014 injured in 2019, respectively, on the Yangon–Mandalay expressway (Mizzima, 2019).

Causes

The Yangon–Mandalay expressway is notorious for its high death rate from road accidents. Reckless driving, speeding, defective vehicles, and inclement weather are main causes of accidents according to the office of Highway Police (Consult–Myanmar, 2019).

Usage of Yangon–Mandalay Expressway by Trucks

Only trucks equipped with Telematics systems and that have fewer than 22 wheels and six axles and are carrying perishable items can apply to use the Yangon–Mandalay expressway. The maximum weight for loaded trucks is 48 tonnes in the rainy season and 50.5 tonnes in the dry season, with the Department of Highways providing lists of numbers of trucks allowed to use the Yangon–Mandalay expressway and applications for use permissions. Since trucks equipped with Telematics systems can be traced, they are unpopular with drivers, while owners also do not want to pay the fee of MK20,000 for one trip. So, although the system is good, the number of trucks applying for permission to legally use the Yangon–Mandalay expressway has not increased much.

5. Border Points

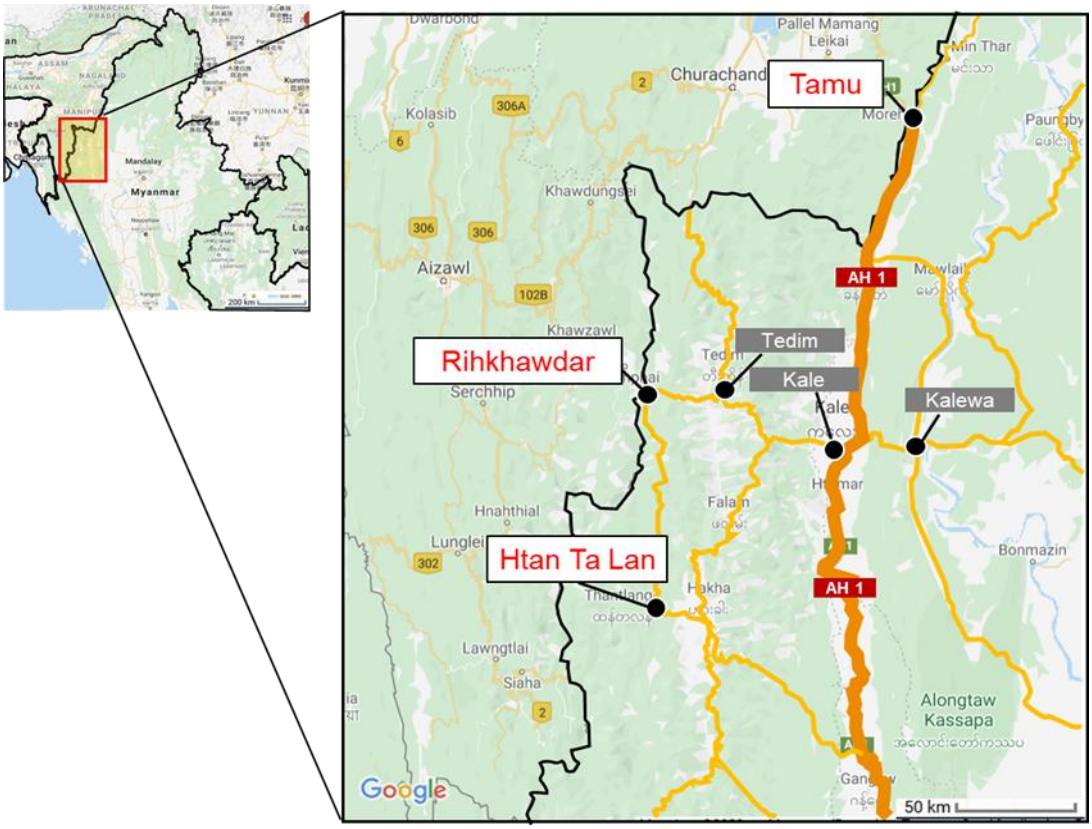
This section examines 1) cross-border trade; 2) existence of physical infrastructure; and 3) institutional arrangements on the route of TLH project. The border points are those of Tamu with Moreh in India, Myawaddy with Mae Sot in Thailand, and Kyaington (Kengtung) with Lao PDR.

5.1. Tamu/Moreh

5.1.1. Cross-border trade

Tamu is a town in the Sagaing region adjacent to the city of Moreh in India and serves as the largest of three main cross-border trading points, the other two being Rhi (Reed), and Htan Ta Lan, as shown in Figure 57. The Tamu border customs post was opened in 1995 after Myanmar and India signed a border trade agreement that also enabled opening of Rhi/Zowkhathar border point, which is the second-largest in trade volume after Tamu.

Figure 57: Location of Three Border Points with India–Myanmar



Source: Created by MSR based on ©googlemap2020.

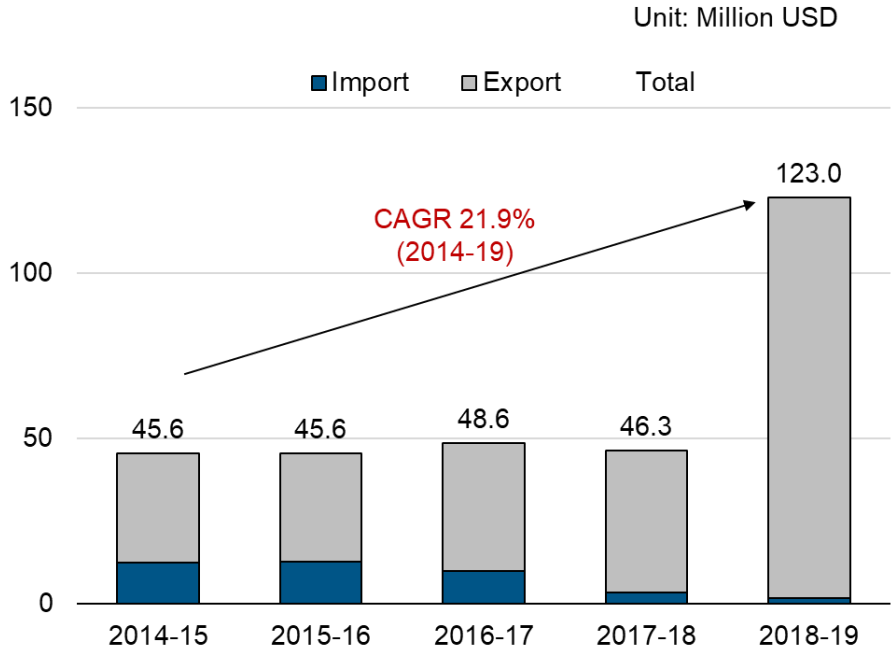
Tamu accounts for only 0.5% of total cross-border trade (Table 5), but in the past 5 years, trade has increased over 21% annually on average (Figure 58). According to border officials, exports are still limited as the threat of ethnic minority armed groups like Kathae (Khasi) and Naga occasionally disrupt trade. Imports from India are declining since the road from Imphal to Moreh is not well maintained. As a result, these imported Indian products face tough conditions to compete in local markets like Mandalay and Yangon.

Table 5: Tamu Border's Contribution to Total Border Trade

Border Trade Point	Border country	Trade Value (export + Import) (USD)		% of total 2017-2018
		2016-2017	2017-2018	
Muse	China	5410.1	5841.9	68.6%
Myawaddy	Thailand	931.7	942.3	11.1%
Chin Shwe Haw	China	573.4	572.2	6.7%
Myeik	Thailand	209.5	259.4	3.0%
Lwejel	China	202.1	237.8	2.8%
Kaw Thaung	Thailand	133.9	202.9	2.4%
Nabulae/Htee Khee	Thailand	106.6	122.3	1.4%
Kanpitetee	China	90.8	116.6	1.4%
Tachileik	Thailand	48.6	92.7	1.1%
Tamu	India	39.7	46.3	0.5%
Rhi (Reed)	India	11.9	44.4	0.5%
Sittwe	Bangladesh	5.9	14.8	0.2%
Maung Daw	Bangladesh	4.6	14.3	0.2%
Mawtaung	Thailand	4.5	7.4	0.1%
Keng Tung	China	3.2	1.9	0.0%
Mese	Thailand	0.4	1.0	0.0%
Htan Ta Lan	India		0.0	0.0%
Total	-	7777.0	8518.3	100.0%

Source: Ministry of Commerce.

Figure 58: Myanmar's Border Trade Value

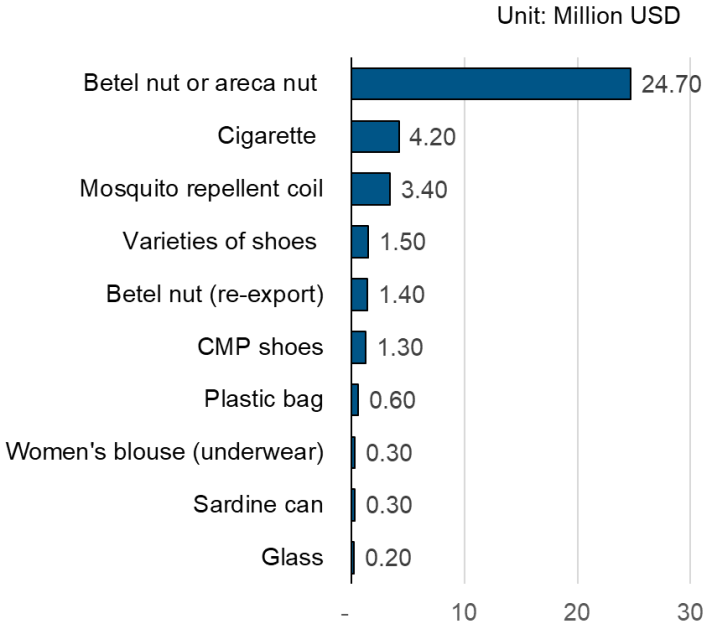


CAGR = Compound Annual Growth rate.
Source: Ministry of Commerce.

5.1.2. Exports

Traditionally, the top Myanmar export at Tamu is areca nuts (also known as betel nuts), which are widely consumed both in Myanmar and in India (see Figure 59). In Myanmar, about 10,000 tonnes of areca nuts are grown each year in areas such as Tanintharyi, Ayeyarwaddy, and Mon. India is one of the world's largest producers of areca nuts, but due to the large demand in the Indian market, the competitive price of importing them from Myanmar, and the similarity of taste between Myanmar and Indian products, India imports them from Myanmar.

Figure 59: Tamu Border Top Export Items (2016–17)



CMP shoes=cut – make – pack shoes [13]
Source: Ministry of Commerce.

In 2018, India increased the tax associated with Myanmar areca nuts to curb illegal imports. India pointed out that about 75% of areca nuts are illegally imported to Myanmar through the Myawaddy border point with Thailand (Htwa, 2018). The Indian government claimed these illegally imported areca nuts are not taxed properly by the Myanmar government. According to the border official in Tamu, local areca nut exports have nearly diminished because of increased duties and strict regulations to combat illegal exports. The most recent export figures (Table 6), show areca nuts off the list of top 10 exported items from the Tamu border point. Now areca nuts are exported mainly from the Rhi border trade point, which costs less in taxes and has fewer restrictions than the Tamu border trade point; in some cases, they are illegally smuggled into India.[14]

[13] https://consult-myanmar.com/2019/07/29/myanmar-spends-1-8-bln-on-import-of-cmp-raw-materials/
[14] Interview with border trade officer in Tamu.

Table 6: Tamu Border Export Trade Top Items (*2018–19 September)

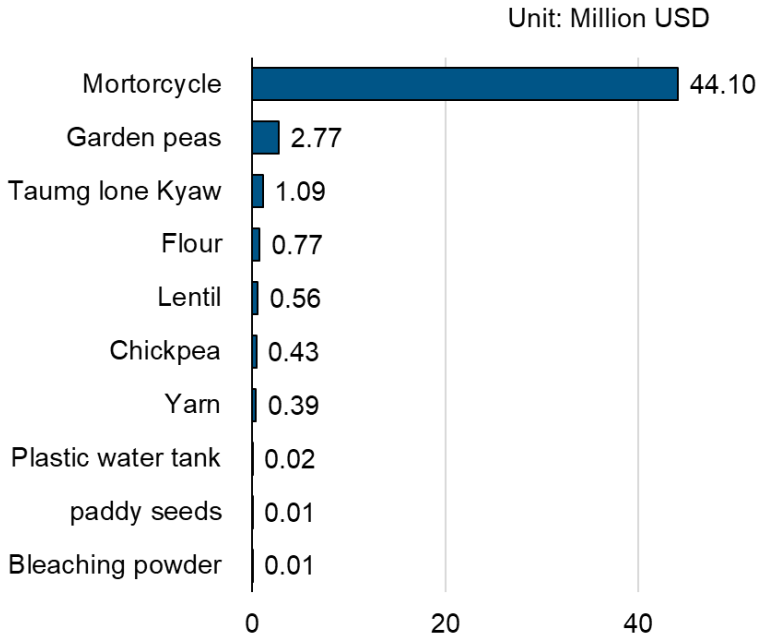
No.	Items / Goods
1	Black gram
2	Pigeon Pea
3	Processed wood
4	Chick Pea
5	Rubber (raw)
6	Hard wood
7	Metal & ore
8	Red kidney bean
9	Maize
10	Black pepper

Source: Tamu border office.

5.1.3. Imports

As shown in Figure 60, motorcycles are the top Tamu import followed by garden peas and *taumg lone kyaw* (ginseng).

Figure 60: Tamu Border Top Import Items (2016–17)



Source: Ministry of Commerce.

According to the updated information on imports for 2018–19, medical equipment remains predominant, followed by petroleum products and medicines and medical equipment, as shown in Table 7. Due to the small volume of imports from India, the items may change based on year-to-year demand from Myanmar.

Table 7: Tamu Border Import Top Items (*2018–19 September)

No.	Items / Goods
1	Medical Equipment
2	Petroleum Products
3	Machine Equipment
4	Electrical Distribution Equipment
5	Iron and Iron Construction Equipment
6	Chemical Products
7	Tractors
8	Fertilizers
9	Automobiles and Parts
10	Plastic Raw Materials

Source: Tamu border office.

5.1.4. Institutional arrangements

Motor Vehicle Agreement

Implementation of the Motor Vehicles Agreement, which allows member states to transport cargo and passengers in their territory more freely under certain conditions, has been under negotiation by the Indian, Myanmar, and Thai governments in recent years. The Indian government, through its embassy in Yangon, has emphasised the Motor Vehicles Agreement for efficient traffic and trade between the two nations (E-Pao, 2018). However, as of January 2020, the agreement has not been implemented and remains at the negotiation stage at the ministerial level.

One Stop Service

Tamu gate provides 'One Stop Service' to facilitate trade with India. One Stop Service was established under Myanmar's law aimed at expediting trade and inviting more investment for the country. In Tamu, there is an office and an area designated for vehicle inspection.

Figure 61: Vehicle Inspection Area

Source: MSR.

At this inspection area, the officials in charge of the Tamu Border Trade Department, Customs Department, Immigration Department, Myanmar Police Force, and Internal Revenue Department monitor trade activities (see Table 8).

Table 8: Responsibility of Each Party Providing One Stop Service at Tamu Border

1.Ministry of Commerce, Department of Trade	Rapidly and accurately issue export/import license in line with notification and procedures.
2. Ministry of Planning, Finance and Industry, Department of Custom	Inspect goods.
3. Ministry of Planning, Finance and Industry, Department of Internal Revenue	Levy duties on export/import commodities.
4. Ministry of Planning, Finance and Industry, Myanmar Economic Bank	Supervise deposit accounts of each department.
5. Ministry of Labor, Immigration and Population, Department of Immigration	Inspect entry and departure of people.
6. Ministry of Home Affairs, Myanmar Police Force	Inquire about arms, ammunition, and narcotic drugs, and provide border trade station security.

Source: Compiled by MSR based on Tamu border office.

Land Border Crossing Agreement

As part of a Land Border Crossing Agreement signed on May 2018, citizens of India and Myanmar are allowed free movement up to 16 km (within the border town) of each other's territory by showing a valid ID at the border gates. However, travellers who want to explore beyond 16 km need special permission from both sides (Samom, 2018). According to the Myanmar immigration department, 453 people in 2018 and 495 people in 2019 passed through the Tamu border gate into Myanmar.

5.1.5. Physical infrastructure

India–Myanmar Friendship Bridge

The India–Myanmar Friendship Bridge, built in 2001 by the Indian government, is 3.8 m wide, 51.8 m long, and can withstand up to 24 tonnes. The bridge spans the Yu river (Menal river), which flows into the Chindwin river near Mawlaik in Myanmar. In May 2018, after the Land Border Crossing Agreement was signed between the two countries, the bridge was designated solely for travellers and vehicles going further than 16 km. At the Indian side, an integrated check post stands on top of a small hill overlooking the bridge.

Figure 62: India–Myanmar Friendship Bridge

Source: MSR.

Border Gates

There are three border gates between Myanmar and India at Tamu. Gate number 1 is at the Friendship Bridge, and requires travellers to show a valid passport and visa and fill out documents. Gate number 2 is at Namphalong market, which is mostly for locals who want to

visit Tamu and Moreh (within 16 km) or shop at the market. Gate number 3 is between Namphalong market and the Friendship Bridge 400 m from the latter and is located on zero mile (border area), which is used only for trade (border trade zone) purposes.
The plot encompasses 10 acres, and currently there are One Stop Services and warehouses. According to the border officials, from seven to as many as 40 trucks come to border gate 3 to unload goods depending on the weather, road condition, and regional stability, amongst other factors. During the field survey, the MSR team observed three trucks unloading goods at that border trade area.

Border Trade Checkpoints

As mentioned earlier, One Stop Service at Tamu is offered at the border gates, and there is also a Tamu border trade office with a vehicle inspection centre located about 3.3 km from the bridge on the India–Myanmar Friendship Road (also called AH1).
The operating hours are from 6am to 6pm (same for border gates) and there are 31 permanent staff members. There is an inspection facility to check not only the trucks, but also passenger cars and express buses.
On the India–Myanmar Friendship Road to Kalewa, 3.3 km outbound from the Tamu border point, there is one final check for illegal entry and departure of people and to control drug and ammunition smuggling.

5.1.6. Physical infrastructure (future plans)

MAR-22 Road

In 2016, the Myanmar government implemented a US$41.5 billion master plan to develop an arterial road network, with a projected completion date of 2035.[15]
Myanmar Arterial Road (MAR)-22 will connect Tamu and Muse directly through Pinlebu, Wuntho, Kyauktan, Hteegyaik, Myataung, Sinkhan, Mansi, and Nankham.
After completion of MAR-22, Tamu and Muse will be only 560 km apart and the development of the Tamu–Moreh border will be greatly enhanced.

Establishment of the Border Market (Border *Haat*)

A border *haat* marketplace will be opened 1 day a week in the India–Myanmar border area (Chin State and Sagaing region) by both countries. Both sides agreed in principle to set up five border *haat* in Chin state, then five in Sagaing region.

Expansion of the Border Trade Zone

According to the interview with the border officials, there have been talks to upgrade the trade area. The proposed plan to upgrade the former 10-acre trade zone into a 24-acre trade hub with an industrial zone and modern warehouses, as well as cold storage facilities, has been approved by the authorities concerned.

[15] The current situation and future plan of infrastructure developments in Myanmar by MOC Department of Highways, June 2016.

5.2. Myawaddy / Mae Sot

5.2.1. Cross-border trade

There are seven border trade zones between Myanmar and Thailand, one each from Mese of Kayah State, Tachilek in Shan State, and Myawaddy of Kayin State, with four in Tanintharyi region: Hteekhee, Mawtaung, Kawthoung, and Myeik (see Figure 63).

Myawaddy is located in the southeastern part of Myanmar (Kayin State). Separated from the Thai border town of Mae Sot by the Moei River (Thaung Yinn River), Myawaddy is one of the most important border trade zones between Myanmar and Thailand, as well as the second-biggest of Myanmar's 18 border trade points.

Figure 63: Location of Seven Border Points between Myanmar and Thailand

SEZ=special enterprise zone.
Source: Created by MSR based on ©googlemap2020.

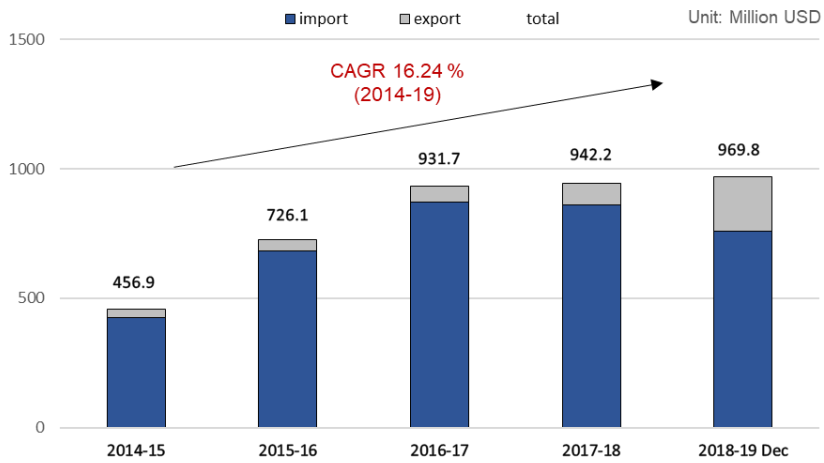
In terms of the total border trade, Myawaddy accounts for 11.1% (Table 9), but in the past 5 years, trade has been increasing significantly (16.24% Compound Annual Growth rate) from 2014 to 2019 (Figure 64). According to border officials at Myawaddy, although border trade is increasing yearly at Myawaddy, it is estimated that the illegal trade may be five times higher than legal trade. Recently, Chang beer from Thailand entered the rapidly growing beverage market in Myanmar by establishing a joint venture with a local brewery. As a result, Chang is competing with its own products available on the black market. Since Myanmar does not allow beer imports, it is proof that the government is still combatting smuggling at the border areas (Han and Kean, 2020).

Table 9: Myawaddy Border Trade Contribution to Total Border Trade

Border Trade Point	Border country	Trade Value (export + Import) (USD)		% of total 2017-2018
		2016-2017	2017-2018	
Muse	China	5410.1	5841.9	68.6%
Myawaddy	Thailand	931.7	942.3	11.1%
Chin Shwe Haw	China	573.4	572.2	6.7%
Myeik	Thailand	209.5	259.4	3.0%
Lwejel	China	202.1	237.8	2.8%
Kaw Thaung	Thailand	133.9	202.9	2.4%
Nabulae/Htee Khee	Thailand	106.6	122.3	1.4%
Kanpitetee	China	90.8	116.6	1.4%
Tachileik	Thailand	48.6	92.7	1.1%
Tamu	India	39.7	46.3	0.5%
Rhi (Reed)	India	11.9	44.4	0.5%
Sittwe	Bangladesh	5.9	14.8	0.2%
Maung Daw	Bangladesh	4.6	14.3	0.2%
Mawtaung	Thailand	4.5	7.4	0.1%
Keng Tung	China	3.2	1.9	0.0%
Mese	Thailand	0.4	1.0	0.0%
Htan Ta Lan	India		0.0	0.0%
Total	-	7777.0	8518.3	100.0%

Source: Ministry of Commerce.

Figure 64: Myawaddy Border Trade Value



CAGR = Compound Annual Growth rate.
Source: Ministry of Commerce.

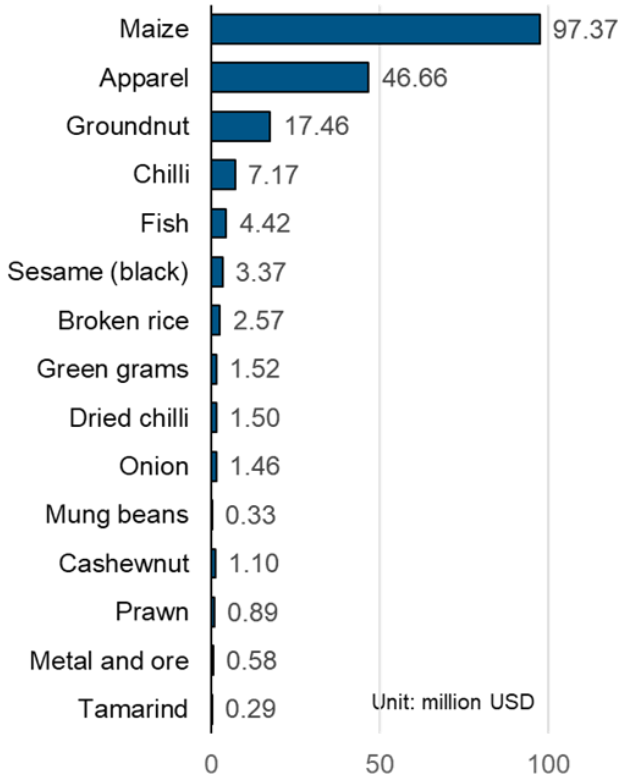
5.2.2. Exports

Since Myanmar is still an agriculture-based country, most of its exports are agricultural and marine products. Comparing the top 15 export items between 2017–18 and 2018–19 shows that the lists are more or less the same. However, while maize topped the 2018–19 export list, it is not even on it for 2017–18. The border trade officer at Myawaddy pointed out that although the Myanmar and Thai governments signed cross-border trade agreements, they still need to negotiate an equal taxation policy on certain goods throughout the year.

5.2.3. Imports

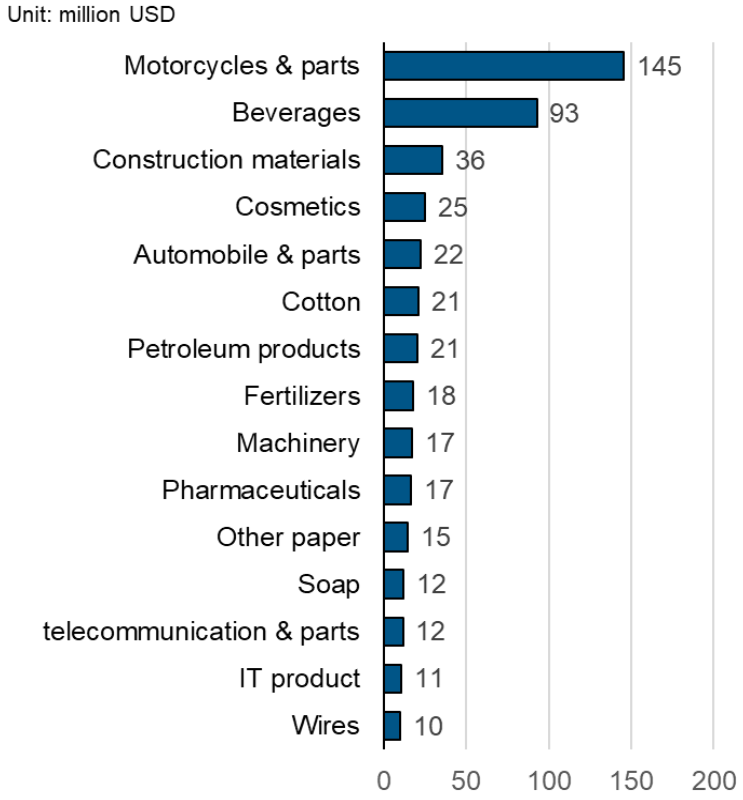
For imports, which are shown on Figures 65 and 66, motorcycles are the top item for 2017–18, followed by automobile parts, agricultural machinery, and beverages. According to the updated information on imports for 2018–19, motorcycles remain on top, followed by beverages and construction materials and automobile parts, which, though previously in second place, had dropped to fifth place. Due to the relatively small volume of imports from India, year-to-year demand from the Myanmar side can change. However, while official trade on which the government collects duties may be rising, the amount of illegal trade across the long, mountainous border, where ethnic armed forces are active, is still unknown. Due to strict actions taken against illegal trade at Myawaddy, the imported trade volume rose significantly.

Figure 65: Myawaddy Border Export Items, 2018 to 2019 September



Source: On data from Myawaddy border trade office.

Figure 66: Myawaddy Border Import Items 2018 to 2019 September



Source: Data from Myawaddy border trade office.

5.2.4. Institutional arrangements

Cross-Border Transport Agreement

Myanmar and Thailand signed a Cross-Border Transport Agreement in March 1996. Thailand is the fourth country to sign such an agreement with Myanmar after China, India, and Bangladesh. In 2019, Myanmar and Thailand signed a subsequent Cross-Border Transport Agreement that allows both countries' licensed logistics companies to transport goods overland through the Yangon (Thilawa) Myawaddy–Mae Sot–Bangkok (Laem Chabang) route. Vehicles from Thailand can travel to the Thilawa special economic zone before being stopped for customs inspections, while vehicles from Myanmar need to go through customs inspections at Mae Sot.

Under the agreement, 100 vehicles from each country are permitted to stay in the other country for 30 days. Three licenses were given to logistics companies in each country. For Myanmar, MK transportation, Hercules Logistics, and Resources Group Logistics were granted permission to transport goods through the border. According to an interview with Myanmar Container Trucking Association, local logistics firms and experts are cautious about this new Cross-Border Transport Agreement between Myanmar and Thailand, since, due to a heavy imbalance of imports from Thailand to Myanmar, it could benefit Thailand more. In addition, local logistics companies will not be utilised as their Thai counterparts can carry goods directly into the Thilawa special economic zone.

Table 10: Interviews with Officials / Experts:

Myanmar Container Trucking Association (Chairman/ Vice Chairman)	'Thailand and Myanmar have the new Cross-Border Transport Agreement, which will grant licenses to 100 cargo vehicles that will allow them to drive into each other's countries without having to unload their cargoes at the border point. Thailand wants to be able to travel up to Thilawa in the future as many Japanese manufacturers have production sites in Thailand. But this is something to be considered since Myanmar will also need to protect its logistics companies.'
Aung Khin Myint (chairman at Myanmar International Freight Forwarders Association)	'The Myanmar side will also have to do their part in allowing Thai vehicles to use routes other than that agreed upon. We are now able to go to Laem Chabang only since Thai vehicles are only allowed to go to Thilawa.'
Border trade official in Myawaddy	'According to a border trade officer, he wants to get rid of illicit trades. But he said it is not an easy task because Myanmar considers border trades only at the new friendship bridge trade centre and border trade zone legal, but over 30 border gates (mostly managed by ethnic armed groups such as Kayin State Border Guard Force, Karen National Union, and Democratic Karen Benevolent Army) along Moei river are regarded legal from Thailand side.'

5.2.5. Physical infrastructure

Thai–Myanmar Friendship Bridge

The Thai–Myanmar Friendship Bridge was constructed in 1997 following the signing of the Cross-Border Transport Agreement and was the first bridge to connect Myawaddy and Mae Sot, southern towns of Myanmar and Thailand, respectively. The bridge is 420 m long and 13 m wide.[16] Since 2015, the border gate at the bridge opens at 5am and closes at 8pm. Before 2015, it was open from 6am to 6pm, like the Tamu–Moreh border gate.

[16] Kayin State Investment Opportunities Survey 2017.

Figure 67: Old Thai–Myanmar Friendship Bridge Border Gate

Source: MSR.

Second Thai–Myanmar Friendship Bridge

The 270 m long second Thai–Myanmar Friendship Bridge opened in December 2019, and is located 4 km northwest of the first bridge. The bridge was constructed in 2015 at a cost of THB3.9 billion, with Thailand contributing about THB3 billion and Myanmar making up the difference. Its main purpose is to alleviate the congestion on the first bridge and enhance bilateral trade. The first bridge will now serve passenger cars and buses. Border passes can be issued easily for day-return visitors from Thailand and third countries to Myawaddy, along with day-return visitors from Myanmar to Mae Sot who show their passports with a valid visa or their national registration cards at the old bridge. The second bridge serves commercial vehicles (trucks), with the 'customs, immigration and quarantine check' team assigned at border checkpoints (at the end of each bridge approach road).

According to the border official, the commercial vehicles and trucks must go through vehicle inspection at the Myawaddy trade zone, which is situated 8.2 km from the second friendship bridge. Trucks without special permission to enter Myanmar must unload and load goods at the trade zone; a One Stop Service team is available to assist those vehicles to go through the process.

The opening of the second bridge was coupled with the Cross-Border Transport Agreement, as mentioned earlier.

Figure 68: Second Thai–Myanmar Friendship Bridge

Source: MSR.

Myawaddy Industrial Zone

The Myawaddy industrial zone is built on a 200-acre site 11 km from the Thai–Myanmar Friendship Bridge and along the Thai–Myanmar border. The project has been developed by the Nyi Naung Oo company since 2013. Although it was expected to be finished in 2017, it was delayed due to lack of electricity and instability in the region, as well as speculative land investors.

Currently, 10 businesses are in operation and many of them have their headquarters in Thailand, employing more than 400 local people (Htwe, 2015).

Figure 69: Location of Myawaddy Industrial Zone

Source: Created by MSR based on ©googlemap2020.

Figure 70: Myawaddy Border Trade Zone

Source: MSR.

Figure 71: Inside Myawaddy Trade Zone

Source: MSR.

5.2.6. Physical infrastructure (future plans)

New Bridges

Although there are some talks between Myanmar and Thailand for a third Friendship Bridge in the future, it is still in negotiation, with no published plan.

Myanmar will build/upgrade three bridges along the Gyaing–Zarthapyin–Kawkareik route with the help of the Japan International Cooperation Agency according to MOC information.

Shwe Kokko Project

Shwe Kokko special industrial zone is being developed on a sweeping bend of the Moei river 16 km north of Myawaddy, on the border with Thailand. The area is under the control of the Kayin State Border Guard Force. The project will cover an area of 72,843 ha of land, with estimated investment of US$15 billion. The project was started in 2017 and is expected to be completed by 2027.

The master plan of this project includes a high-tech hub, with an airport, luxury housing, a 1,200-room hotel, casinos, an entertainment complex, supermarkets, department stores, police station, industrial zone, and freight depots.

The developer, Yatai International Holding Groups, a self-proclaimed Bangkok-based and Hong Kong-registered conglomerate, formed a partnership with the Border Guard Force and obtained a 70-year land lease from the Myanmar government, with an option to extend up to 99 years.

The first phase, which is construction of about 60 luxury villas on 10.3 ha of land with an initial investment of US$22.5 million, will be completed by 2021 (Han, 2019). On the other hand, local protesters have claimed that many Chinese workers are employed illegally at the construction sites and are causing problems (Lwin, 2019). Local residents called on the government to crack down on illegal Chinese immigration, warning that they would stage a protest if it failed to take action.

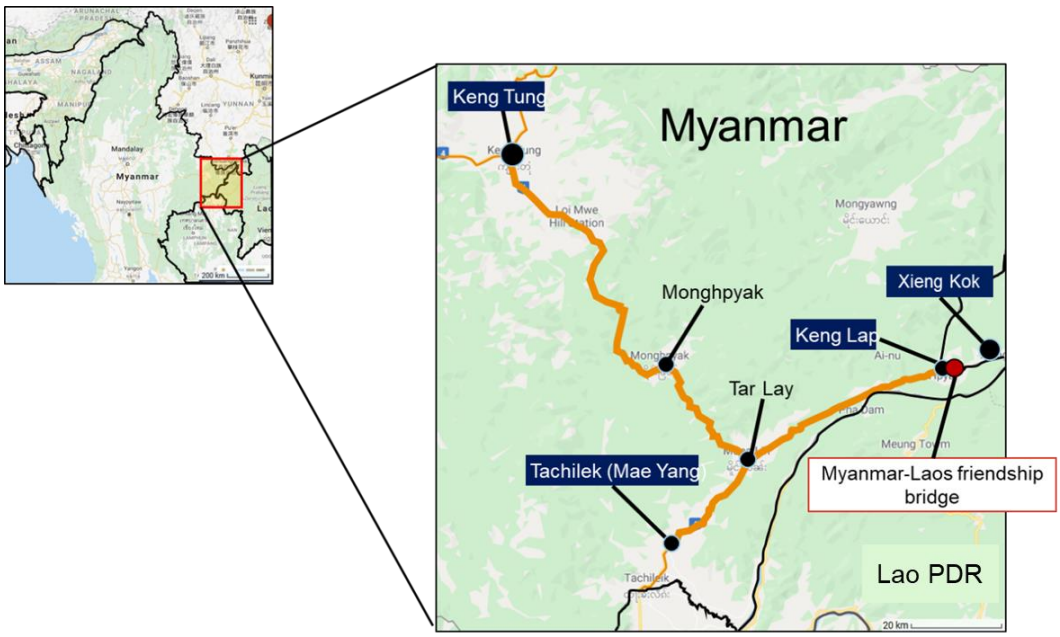
5.3. Keng Lap–Xieng Kok

5.3.1 Cross-border trade

Keng Lap is a small town in Myanmar that is situated along the border with Xieng Kok in Lao PDR. In October 2019, border trade opened in Keng Lap. The border station started issuing licenses and permits for Myanmar exporters to enable them to trade not only with Lao PDR, but also with China. As shown in Figure 72, there are three border check points that the team visited:

1. Mae Yang border check point, which is situated in Tachilek for trade with Thailand;
2. Keng Lap border check point for trade with Lao PDR; and
3. Keng Tung trade station, which is not the border trade station, but where licenses are issued for border trade with the countries adjacent to the eastern part of Shan State.

Figure 72: Location of Three Border Points



Source: Created by MSR based on ©googlemap2020.

5.3.2. Exports

Keng Lap is a new border trade station opened in 2019. According to the Keng Lap border official, from 2018–19, there were only exports from Myanmar and no imports. Currently, exporters are tax-exempt, with rice, maize, livestock (goats) and rubber the only four items being exported. According to the Ministry of Commerce, the trade value of 2018–19 (September–October) was US$18,000, and for 2019–20 (September–November) it was US$81,000 (see Table 11). Rice is the main export from Myanmar.

Table 11: Trade Value at Keng Lap Border Point

Unit: Mil USD

STATION	2018-2019 FY			2019-2020 FY (November)		
	Export	Import	Trade Volume	Export	Import	Trade Volume
KENG LAP	0.018	-	0.018	0.081	-	0.081

Source: Ministry of Commerce.

According to a Keng Lap border official, in 2019, the export quota of rice from Myanmar to China, which goes through Muse, has reached its limits. As a result, the Keng Lap border trade station has become the main alternative transit gate for Myanmar rice to China. Chinese importers directly pick up the Myanmar products at Xieng Kok to import. The official also added that, starting from this year, traders are exporting rice directly to China without using

the Lao PDR bypass route. However, they may again use the Lao PDR border in the latter half of 2020 when they use up the export quota to China.

5.3.3. Export situation in 2020

As of February 2020, the border gate is temporarily closed because of the coronavirus situation. The export of rice to China could be reactivated upon the Myanmar government's decision. In addition to the goat export, livestock such as cows and buffaloes are in line to be exported to Lao PDR through the Keng Lap border gate later in 2020.[17]

5.3.4. Imports situation in 2020

There are no imports yet at the Keng Lap border trade station.

5.3.5. Institutional arrangements

One Stop Service

Tachilek gate provides One Stop Service to facilitate trade with Thailand, while Keng Lap gate provides it for trade with Lao PDR, and Keng Tung for trade with China, Lao PDR, and Thailand.

Figure 73: Vehicle Inspection Area in Keng Lap

Source: MSR.

[17] Interview with Keng Lap border trade officials.

Figure 74: Vehicle Inspection Area in Tachilek

Source: MSR.

5.3.6. Physical infrastructure

Myanmar–Lao PDR Friendship Bridge

The Myanmar–Lao PDR Friendship Bridge links Keng Lap in Tachilek district and Xieng Kok in Luang Namtha, Lao PDR. The bridge, which runs across the Mekong river and is 691.6 m long, was constructed on 2015 at a cost of US$26 million. The bridge is capable of withstanding 75 tonnes per vehicle. Currently, local people who are from Xieng Kok and Keng Lap are allowed to cross the bridge (Mizzima, 2015).

According to information from meetings with the MOC Department of Highways, the bridge was constructed as a result of the military government's goals for boosting bilateral trade. At the initial stage, ministries from both Myanmar and Lao PDR agreed to build the bridge based on the water border and each country took responsibility to construct their own side. However, this bridge could not be used because of conflicting views on border points. If there is mutual understanding between both countries, it is more beneficial to each. A recent trip to the Ministry of Commerce revealed trucks carrying corn passing through the Myanmar–Lao PDR bridge; most of them were doing so without official permission.

Figure 75: Myanmar–Lao PDR Friendship Bridge

Source: MSR.

Border Trade Station and Checkpoints

There are three border checkpoints in eastern Shan State:

- Keng Lap Border Checkpoint;
- Tachilek Border Trade Station; and
- Keng Tung Trade Station.

Keng Lap Border Checkpoint (Keng Lap checkpoint and One Stop Service Department)

The Keng Lap border checkpoint is mainly controlled by the Tachilek border trade station (Mae Yang checkpoint). The Keng Lap border checkpoint issues export/import licenses and both export and import declarations. There are about 70 trucks per day that pass through the Keng Lap border checkpoint. On the Lao PDR border side, there is no customs office.

Tachilek Border Trade Station (Mae Yang Checkpoint and One Stop Service Department)

Mae Yang border checkpoint was established on 1 July 1996. The 3-acre station area is situated along NH4, 8 miles from Tachilek Township. The checkpoint is under the control of the Ministry of Commerce's Department of Trade One Stop Service, which operates along the border trade station. It is jointly organised by six departments, including the Customs Department, Trade Department, Internal Revenue Department, Immigration Department, Security Office (Police) and Myanmar Economic Bank. These departments issue licenses for exporters and importers, along with export and import declarations based on the licensed and non-licensed items. Currently, the department employs 61 staff.

There are two bridges connecting Tachilek to Thailand (Mae Sai Township) across the Mekong river. Bridge 1 is solely for passengers with cars and travellers, while Bridge 2 is only for export and import trucks. The roads are in good condition at Tachilek and Mae Sai border.
The trade values of Mae Yang border check point are:

- US$92.7 million in 2017–18;
- US$83.71 million in 2018–19; and
- US$8.09 million in 2019–20 (October monthly).

Wang Pong Harbour (Wang Pong Checkpoint)
Wang Pong harbour started its trade on 1 August 1996. That checkpoint is 33 miles away (1.5 hours' drive) from Tachilek Township and it mainly trades with China.[18]

Keng Tung Trade Station (One Stop Service Department)
Keng Tung trading station is not the border trade station itself, but mainly issues licenses for doing business in Tachilek, Keng Lap, Mong Khat, Mong Yang, and Mong La. It is responsible for the issuance of licenses for three bordering countries: China, Thailand, and Lao PDR. The station is under the control of the Tachilek border trade station. One Stop Service is featured at Keng Tung, but the offices are scattered over the township, unlike at Mae Yang and Keng Lap checkpoints. Trade for Mong Khak, Mong Yang, and Mong La, which constitute the route from Taunggyi, must apply in Keng Tung because of its route condition. The main route for this station is Mong La to China.

5.3.7. Physical infrastructure (future plans)

There is no significant plan.

5.3.8. Restriction areas in Shan State

As shown in Table 12, there are some restricted areas in Shan State where foreigners are not allowed. Keng Lap township is not in the restricted area, but both locals (excluding the citizens of nearby towns) and foreigners are restricted to crossing the Lao PDR–Myanmar friendship bridge.

Generally, due to several ethnic armed forces, foreigners and tourists travelling in Shan State need permission to visit rural and remote areas.

[18] Mae Yang border checkpoint (Tachilek)

Table 12: Restricted Areas for Foreigners in Shan State

No.	Restriction areas for foreigners	No.	Restriction areas for foreigners
1.	Yatsauk Township	14.	Kunlon Township
2.	Loilin Township	15.	Mineye Township
3.	Panglong Town	16.	Kyaukme Township
4.	Namhsam Township	17.	Hsipaw Township
5.	Kholan Town	18.	Naung Hkio Township
6.	Kunhing Township	19.	Namtu Township
7.	Karli Town	20.	Namhsam Township
8.	Lechar Township	21.	Momeik Township
9.	Linkhe Township	22.	Mabane Township
10.	Mone Township	23.	Minesat Township
11.	Lashio Township	24.	Mine Tung Township
12.	Theinni Township	25.	Makman Township
13.	Tantyan Township		

Source: Ministry of Labour, Immigration and Population.

Allocation of Budgets to Develop Highways in Myanmar

There are three sources for budgets to improve highways in Myanmar, according to MOC:

1) national/regional funds;
2) private funds; and
3) loans and grants from external sources.

The estimated annual budget needed for upgrading highways is MK3 trillion. Although each source of funding (MK1 trillion) is expected to contribute equally to this budget, only national/regional funds are able to furnish up to MK1 trillion. Funds from local private sources are between MK100–200 billion and external loans and grants come to MK200 billion. Maintenance is about 2% of the total expenditures.

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Developing the Trilateral Highway: A Thai Perspective

Background paper

Ruth Banomyong

1. Introduction

The Trilateral Highway (TLH), which links Thailand to India via Myanmar, is seen as a new opportunity for Thailand. There has been great interest from the Thai government to gain improved access to the Indian market, especially the northeast of India, where enhanced land connectivity is a necessity.

The possibility of transiting via Myanmar is critical to the success of this endeavour. However, it is important to understand how Thailand is valuing the TLH for its long-term development and sustainability. Customs statistics also need to infer the potential growth of border and transit trade across the TLH.

Currently, there is no formal transit trade between Thailand and India. However, there exist some informal channels for certain types of commodities. This informal trade reflects the potential of the TLH as a trade corridor that can enhance connectivity between Thailand and India. It is probably too early to tell whether the TLH will one day become an economic corridor due to the challenges of transiting via Myanmar.

The purpose of this report is to present and discuss the Thai perspective related to the TLH and what is currently being done to support its further development. A number of initiatives by the Thai government in terms of infrastructure and agreements are currently underway. However, none of these developments is specific to the TLH per se. They are mostly part of a national trade and logistics development agenda made by the Thai government. This report will first discuss Thailand's own perspective related to the TLH and share some insights on current trade statistics at key borders between Thailand and its neighbouring countries. Policy implications will be derived from the findings.

2. Thailand's Perspective on the Trilateral Highway

Thailand is very favourable to the development of the TLH, and not surprisingly the country has a very Thai-centric perspective where it believes it will gain the most benefit from linking with India. Official Thai position states that Thailand will benefit from the TLH as it is now the centre of transport and communication in the region as well as the gateway to the Association of Southeast Asian Nations (ASEAN). India wants to trade and invest in Thailand and use Thailand as a springboard to other ASEAN countries (Public Relations Department, 2016). This is the official position of the Thai government. The current Thai administration has not made any public statement to the contrary, but efforts to actually promote the TLH as an important project for the development of Thailand have not been seen in its new policy statement. It is possible that Thailand has other priorities that need to be highlighted.

The Thai position is interesting as it shows that Thailand sees itself as the logistics hub for the region (i.e. Southeast Asia) as well as the main entry point into ASEAN for India even though Myanmar is the first contact point with India, in particular when it comes to land connectivity.

Myanmar also wants to be a key connector in linking ASEAN with South Asia. Myanmar is right in the middle between India and Thailand and has a lot to gain from enhanced connectivity with its two neighbours. However, Myanmar has not formulated a regional connectivity strategy and is grappling with its own domestic connectivity due to infrastructure and legal limitations. There are regulatory challenges to the implementation of the trade and transport facilitation agenda, thus making transit trade challenging.

These types of competing national strategies need to be understood if enhanced integration and connectivity is going to be achieved for the TLH. There are discussions on the modalities required for the development of the TLH, but progress has been slow. This is because the TLH requires not only road infrastructure investment and development but also a facilitating institutional environment.

Thailand believes that India would like to use Thailand as a springboard to ASEAN. There already exists Indian investment in Thailand, and there have been efforts to link Ranong port on the Thai Andaman Sea with ports in India. The most positive outcomes have been a feeder service and some memoranda of understanding signed by the Port Authority of Thailand. The biggest issue is that Ranong port has no hinterland, and feeder vessels linking with India are often empty for one leg of the journey. Nonetheless, the Port Authority of Thailand has persisted in its development efforts to make Ranong port successful. Another key issue is the access channel, which belongs to Myanmar.

Thai policy makers have a strong belief that Thailand is the logistics hub for ASEAN and a target for Indian trade and investment. At the same time, Thailand wants to use the TLH to transport goods via Myanmar to India as part of its logistics development in order to reduce costs for Thai businesses when trading with India. It is believed that this will enable Thailand

to sell more agricultural produce to India and South Asia. Sanitary and phytosanitary issues do not seem to be urgent in the agenda in discussions related to the TLH.

The Thai Commercial Attaché in New Delhi stated that: 'the TLH is an opportunity for Thai trade and investment as Thai goods are popular in India and benefit from the Thai–India Free Trade Area (FTA), and the ASEAN–India FTA. Currently, Thailand has a trade surplus of around US$8 billion with India. The average growth rate is around 10%, but many Thai businesses are unsure of doing business with India apart from with large firms due to a lack of information. The Indian market is changing rapidly and 'new' India is an opportunity' (Matichon, 2018).

The Ministry of Commerce of Thailand has been inviting Thai small and medium-sized enterprises (SMEs) to develop their markets in India as demand is high with limited competition. The physical completion of the highway will enable enhanced connectivity to Thai agricultural produce and perishable goods, taking around 3–4 days to access markets in northeast India, which is faster than using sea transport from Thailand. The advice given is for Thai SMEs to sell goods first and then explore investment opportunities with the Thai commercial office in New Delhi, which is more than willing to become the main coordinator with Indian agencies in order to facilitate investment.

Provincial policy makers in Tak Province, at the border with Myanmar, also see the completion of the physical infrastructure as critical to increasing trade, especially border trade. Local officials believe that there will be a 42% increase in the border trade value due to the completion of the second bridge linking Thailand and Myanmar. The expected yearly value for border trade was estimated at B100 billion, with the TLH being one of its main drivers. The TLH is seen as the main trade route between Mae Sot, Myawadee, Yangon, and India. The distance to India from Mae Sot is not considered far, with easy access and faster transit times.

This means that Thai goods, especially consumer goods, will be able to access the eastern part of India, as Thai products are considered to be of a high quality and reasonable price. Thai goods are well accepted by consumers in neighbouring countries. However, since there are no official statistics for border trade, it is very difficult to accurately estimate the overall value of border trade. It has been estimated that border trade values are underestimated by at least 60%.

The Thai private sector sees opportunities for cooperation along the TLH in the following sectors: agriculture, infrastructure, logistics, and tourism.

The Thai private sector is looking for partners both in Myanmar and India to enable cooperation. However, there is still a lack of information related to opportunities as well as an uncertain business environment.

There is a gap in understanding between the marketing done by Ministry of Commerce officials and the perception of the Thai private sector. The private sector consider that the

Indian market is very difficult and challenging to penetrate. They have limited knowledge of the potential market in northeast India. Even those that are selling there do not organise the logistics and prefer to sell at the Thai border. The Myanmar or Indian buyers will then arrange for the logistics themselves. Official transit is difficult, and the use of 'grey' channels is the current optimal logistical system. This is why finding accurate border and transit trade statistics is impossible.

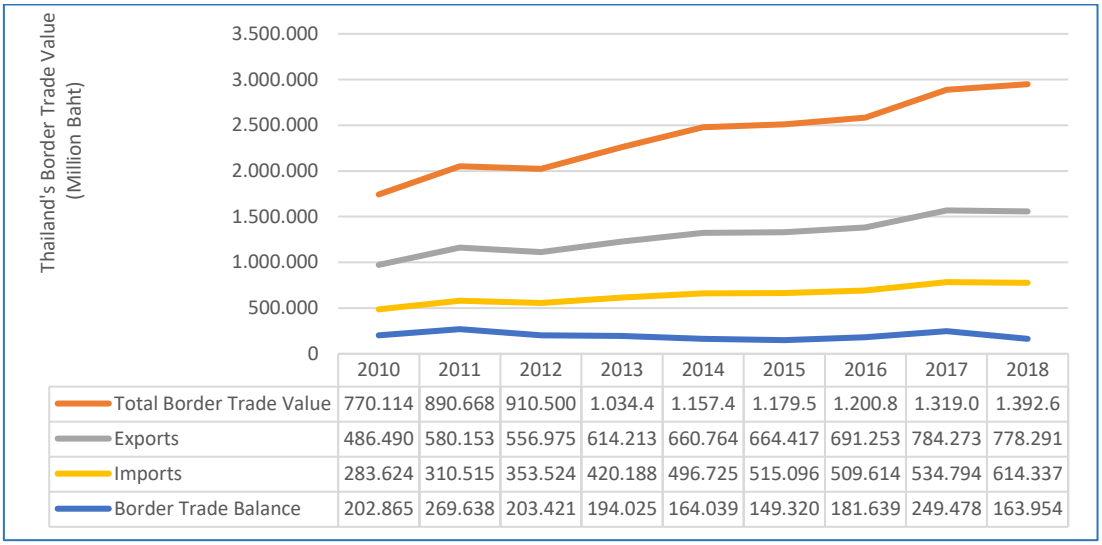
Tourism opportunities are often discussed by the Thai private sector. There is a strong potential for growth in tourism with the eastern part of India. Thailand is already a destination for Indian tourists. On average, more than 1 million Indian tourists visit Thailand every year. Thailand is also a preferred location for 'Bollywood' movies, and thus Thailand is well known to the Indian public.

The opinions related to the development of the TLH are mostly favourable both from the public and private sectors in Thailand. However, the private sector sees more the challenges of linking with India via Myanmar from a trading perspective. Uncertain rules and regulations, unreliable logistics channels, limited infrastructure, and the lack of integrated service providers for transit to India have dampened the appetite of the Thai private sector. The public sector is more optimistic as it believes discussions amongst the three countries (India, Myanmar, and Thailand) will eventually create not only infrastructure linkages but also a supporting environment that will enable the success of the TLH.

3. Trade Statistics at Thailand's Main Border Points

In order to obtain insights about the potential of the TLH, it is important to have the trade statistics at Thailand's main border points. The problem with these statistics is that they are official numbers, which do not take into account border and informal trade being done at the border. Nonetheless, it is important to illustrate the overall value of Thailand's border trade. The country currently enjoys an overall positive border trade balance, as shown in Figure 1.

Figure 1: Thailand's Border Trade Value



	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total Border Trade Value	770.114	890.668	910.500	1.034.4	1.157.4	1.179.5	1.200.8	1.319.0	1.392.6
Exports	486.490	580.153	556.975	614.213	660.764	664.417	691.253	784.273	778.291
Imports	283.624	310.515	353.524	420.188	496.725	515.096	509.614	534.794	614.337
Border Trade Balance	202.865	269.638	203.421	194.025	164.039	149.320	181.639	249.478	163.954

Source: Thai Ministry of Commerce (2020).

Another observed limitation related to border statistics is that each Thai Customs house collects its statistics in a different format. Although the main statistics collected are the same, the level of detail required by each customs house is different. Border trade data are collected in value terms, and it is almost impossible to obtain volume data. The following section presents the different trade statistics from the main Thai border posts.

3.1 Mae Sot's Trade Statistics

Mae Sot is currently the most important border post in terms of border trade value with Myanmar. The completion of the second bridge and improved infrastructure on the Myawadee side has helped Mae Sot grow in terms of trade value. The statistics of the top-25 commodities for export and import are described in Table 1. The Thai fiscal year starts on 1 October and ends on 30 September.

Table 1: Mae Sot Customs Statistics (2014–2018)

Thailand Fiscal Year 2018 (October 2017–September 2018)

Top 25 Exports		
No.	**Type**	**Value (฿ million)**
1	Motorcycles	3,136.32
2	Energy drinks	3,125.54
3	Mobile phones and telephone sets	2,435.99
4	Gasoline	1,831.12
5	Diesel oil	1,756.27
6	Sugar	1,511.45
7	Chemical fertiliser	1,490.99
8	Cotton printed fabric	1,329.92
9	Dried areca nuts	1,234.39
10	Floor tiles	1,177.25
11	Beer	1,097.06
12	Slippers	1,046.73
13	Polyester fabric	995.08
14	Solvent oil	939.35
15	Liquid petroleum gas	925.45
16	Soy milk	823.68
17	Instant noodles	703.29
18	Plastic products	682.52
19	Instant coffee	667.53
20	Biscuits	577.75
21	Vegetable oil	562.22
22	Televisions	531.32
23	Cooking sauces	513.27
24	Monosodium Glutamate	509.97
25	Plastic scrap	489.77
	Others	49,177.68
	Total	**79,271.91**

Top 25 Imports		
No.	**Type**	**Value (฿ million)**
1	Live cattle	1,427.39
2	Iron scrap	1,056.85
3	Peanuts (AFTA)	763.07
4	Antimonyoxide (bonded warehouse)	449.82
5	Mobile phones (EPZ)	352.09
6	Electrical transformers (free of charge)	204.37
7	Wood furniture	196.01
8	Ladies' underwear (Form D)	129.53
9	Cashew nuts	110.19
10	Sesames (grains) (bonded warehouse)	98.13
11	Fish	96.27
12	Inductors (free of charge)	87.08
13	Aluminium scrap	78.69
14	Dried chilies	72.48
15	Cotton trousers	66.75
16	Metal pipes	62.81
17	Vegetable seeds	58.40
18	Gas containers (returned)	54.79
19	Shrimp paste	52.81
20	Antimony	48.93
21	Rolled steel	46.32
22	Underwear	35.36
23	Bicycles (used)	31.98
24	Surge Protection Devices (Free of charge)	28.43
25	Green beans	28.14
	Others	850.54
	Total	**6,487.23**

Source: Mae Sot Customs House.

Thailand Fiscal Year 2017 (October 2016–September 2017)

Top 25 Exports		
No.	**Type**	**Value (฿ million)**
1	Sugar	4,782.83
2	Motorcycles	2,983.59
3	Mobile phones and telephone sets	2,775.42
4	Energy drinks	1,882.42
5	Cotton printed fabrics	1,519.45
6	Beer	1,463.58
7	Liquid petroleum gas	1,233.66
8	Combined vehicle harvesters	1,230.11
9	Beverages	1,181.79
10	Slippers	1,123.31
11	Diesel oil	1,104.88
12	Gasoline	1,058.53
13	Floor tiles	957.33
14	Soy milk	853.23
15	Solvent oil	825.88
16	Chemical fertilisers	778.67
17	Biscuits	742.17
18	Televisions	736.56
19	Tractors	709.51
20	Vegetable oil	651.35
21	Motorcycle tyres	632.72
22	Instant noodles	618.71
23	Whisky	597.54
24	Polyester fabric	856.89
25	Monosodium Glutamate	577.81
	Others	47,393.97
	Total	**79,271.91**

Top 25 Imports		
No.	**Type**	**Value (฿ million)**
1	Live cattle	1,375.99
2	Peanuts (AFTA)	1,028.24
3	Antimonyoxide (Bonded warehouse)	383.23
4	Wood furniture	328.47
5	Mobile phones (EPZ)	313.60
6	Iron scrap	163.74
7	Dried Chillies (ATG)	154.24
8	Tamarind	94.36
9	Electrical transformers (EPZ)	92.16
10	Cashew nuts	70.10
11	Ladies' underwear (Form D)	56.85
12	Aluminium scrap	56.60
13	Fish	55.68
14	Mobile phones	51.75
15	Green beans (AFTA)	49.42
16	Sesames (grains) (bonded warehouse)	41.98
17	Inductors (EPZ)	31.81
18	Bicycles (used)	29.76
19	ISO tanks (returned)	27.50
20	Vegetable seeds (AFTA)	26.35
21	Myanmar onions	25.38
22	Tin	22.72
23	Antimony	20.97
24	Live scallops	16.67
25	Dried meat	18.84
	Others	765.29
	Total	**5,301.70**

Source: Mae Sot Customs House.

Thailand Fiscal Year 2017 (October 2016–September 2017)
Thailand Fiscal Year 2016 (October 2015–September 2016)

No.	Type	Value (฿ million)
1	Sugar	5,244.32
2	Mobile phones and telephone sets	5,022.70
3	Beverages	3,010.32
4	Beer	2,724.07
5	Motorcycles	2,397.26
6	Combine vehicle harvesters	2,225.57
7	Cotton printed fabrics	1,958.08
8	Energy drinks	1,925.42
9	Televisions	1,454.08
10	Gasoline	1,343.99
11	Slippers	1,225.66
12	Diesel oil	1,141.09
13	Biscuits	1,119.74
14	Tractors (agriculture use)	1,035.33
15	Motorcycle tyres	1,029.07
16	Liquid petroleum gas	891.28
17	Tractors	870.21
18	Freezers	760.93
19	Motorcycle tyres (inner)	745.79
20	Dried areca nuts (re-export)	732.39
21	Monosodium glutamate	692.07
22	Instant noodles	670.54
23	Cooking sauces	653.13
24	Washing powder	593.90
25	Instant coffee	587.88
	Others	39,572.32
	Total	**79,627.11**

No.	Type	Value (฿ million)
1	Peanuts (AFTA)	764.62
2	Live cattle	684.35
3	Antimonyoxide (bonded warehouse)	358.51
4	Dried chillies (ATG)	295.84
5	Green beans (AFTA)	169.85
6	Antimony	128.47
7	Wood furniture	119.99
8	Mobile phones	115.35
9	Onions	111.59
10	Bicycles (used)	95.32
11	Corn seeds	43.30
12	Fish	38.82
13	Ladies' underwear	38.08
14	Cashew nuts	37.84
15	Sesames (grains)	28.28
16	Dried meat	26.17
17	Trousers	23.98
18	Cotton fabrics	18.86
19	Sarong (fabric)	18.53
20	Crabs	17.54
21	Men's shoes (Form D)	15.21
22	Live crabs	11.62
23	ISO tanks	11.59
24	Dried fish maw	10.96
25	Garments	9.62
	Others	984.84
	Total	**4,179.12**

Source: Mae Sot Customs House.

Thailand Fiscal Year 2015 (October 2014–September 2015)

No.	Type	Value (฿ million)
1	Mobile phones and telephone sets	4,823.95
2	Beer	3,224.14
3	Gasoline	2,362.06
4	Cotton printed fabrics	1,946.72
5	Diesel oil	1,794.53
6	Motorcycles	1,264.71
7	Combined vehicle harvesters	1,128.26
8	Slippers	1,063.52
9	Televisions	904.699
10	Biscuits	904.699
11	Sugar	860.22
12	Soy milk	793.037
13	Instant coffee	712.637
14	Tractors	671.002
15	Fabrics	624.842
16	Instant noodles	621.503
17	Cement	591.185
18	Monosodium Glutamate	570.959
19	Bird's nest (Food)	556.428
20	Whiskey	535.631
21	Medicine	532.632
22	Oil palm	523.573
23	Motorcycle tyres	522.791
24	Energy drinks	447.787
25	Fabrics (Synthetic Fibre)	426.541
	Others	35,832.00
	Total	**64,240.06**

No.	Type	Value (฿ million)
1	Live cattle	1,402.77
2	Peanut (AFTA)	363.77
3	Antimonyoxide (bonded warehouse)	302.976
4	Antimony	235.265
5	Onions	187.484
6	Wood furniture	177.85
7	Dried chillies	
8	Mobile phones	90.202
9	Bicycles (used)	77.155
10	Fishing instruments	59.339
11	Ladies' clothing	53.41
12	Fish	51.909
13	Green beans (AFTA)	45.469
14	Green beans (black colours) (AFTA)	42.473
15	Road construction machine (Returned)	30
16	Sesames (grains)	26.17
17	Sea crab	21.43
18	Cashew nuts	20.619
19	Dried fish maw	16.886
20	Corn seed	16.2
21	Shirts	15.902
22	Used tractors (returned)	12.2
23	Antimony (raw)	12.06
24	Road grader machines (returned)	11.08
25	Rice products	10.481
	Others	790.46
	Total	**4,073.55**

Source: Mae Sot Customs House.

The data provided by Mae Sot Customs shows the evolution of the top exports and imports via Mae Sot. The top export to Myanmar in 2016 and 2017 was sugar. However, in 2018, the value of this commodity was ranked sixth, being overtaken by motorcycles. The reason why sugar was the most exported commodity was because of sugar shortages in China. Because of the sugar quotas in China, there was a price differential of over US$200 per ton between sugar sold in the Chinese market and global markets. Even though the transport cost per ton was between US$50 and US$70, it was still worthwhile to use the overland transit route via Myanmar.

It was estimated that more than 4 million tons of sugar from India and Thailand were exported via Myanmar to China with the entry point being the Ruili/Muse border gate during 2016 and 2017 but these numbers cannot be officially confirmed. Almost all products exported from Thailand from Mae Sot do not have India as a final destination, and most of the commodities are destined for Myawadee, Yangon, or Mandalay. It is important to note that on the Myanmar side, the import statistics do not match the export statistics of the Thai side as a large portion of the Thai exports are not declared when entering Myanmar.

On the Thai import side, the highest import value, depending on the year, is either for peanuts or live cattle destined for Malaysia. The value of imports is quite small compared to the value of exports at Mae Sot, and it is mostly composed of agricultural produce or goods coming from the export processing zones in Myawadee.

3.2 Aranyaprathet Trade statistics (2014–2018)

Aranyaprathet is the main border post between Thailand and Cambodia. This border post can be considered as a potential gateway for the TLH into Cambodia. It must not be forgotten that in the Asian Development Bank's Southern Economic Corridor development, Dawei in Myanmar will be connected to Aranyaprathet via the Thai province of Kanchanaburi. Table 2 shows Aranyaprathet's trade statistics. The obtained data show not only the value but also the weight of the commodities. Format and type of data collected at Customs houses in Thailand are not standardised even though it is expected.

Table 2: Aranyaprathet Customs Statistics (2014–2018)

Fiscal year 2018 (October 2017–September 2018)

No.	Top 10 Exports (฿ million)			No.	Top 10 Imports (฿ million)				
	Type	**Weight (Kg)**	**Value (Baht)**		**Type**	**Weight (Kg)**	**Value (Baht)**	**Tariff**	**VAT**
1	Beverages	206,730.94	4,881.585	1	Tapioca	598,529.94	4,075.407	-	-
2	Motorcycle engines	10,261.88	4,295.103	2	Motor components (Aluminium)	7,645.97	1,639.605	0.076	0.059
3	Motorcycle parts	6,844.55	3,633.649	3	Aluminium scraps	30,755.10	1,325.318	-	92.019
4	Cars	12,278.37	3,559.169	4	Copper scraps	5,141.48	929.874	-	61.179
5	Motorcycles	5,358.09	2,405.458	5	Dog feed	1,310.62	684.051	-	-
6	Tractors	8,505.88	2,399.663	6	Small DC motors	350.66	493.674	-	34.548
7	Cements	8,873.38	1,962.931	7	Printed circuit board (PCB)	758.86	489.220	0.146	4.483
8	Combined vehicle harvester	1,082,466.45	1,736.196	8	Hard disk components	401,793.34	456.037	-	-
9	Plastic products	4,251.11	1,584.129	9	Soybeans	537.01	358.758	1.179	1.931
10	Knitted fabrics	6,431.10	1,446.315	10	Electric wire	292.01	306.137	0.004	0.985
	Others	1,094,749.15	43,563.109		Others	157,306.13	6,167.849	119.154	202.494
	Total	**2,446,750.90**	**71,467.308**		**Total**	**1,204,421.10**	**16,925.930**	**120.559**	**397.698**

Source: Aranyaprathet Customs House.

Fiscal year 2017 (October 2016–September 2017)

No.	Top 10 Exports (฿ million)			No.	Top 10 Imports (฿ million)				
	Type	**Weight (Kg)**	**Value (Baht)**		**Type**	**Weight (Kg)**	**Value (Baht)**	**Tariff**	**VAT**
1	Cars	8,170	3,432.292	1	Tapioca	1,287,134	6,155.746	-	-
2	Motorcycle engines	5,730	3,037.614	2	Motor components (aluminium)	5,547	1,282.333	0.191	0.147
3	Motorcycle parts	9,614	2,890.643	3	ISO tanks	5,189	1,043.472	0.017	0.013
4	Combined vehicle harvesters	9,533	2,704.152	4	Aluminium scraps	19,233	763.893	-	53.139
5	Beverages	116,388	2,680.339	5	Copper scraps	4,647	756.261	-	51.224
6	Cements	1,094,901	1,896.614	6	Dog feed	1,201	641.469	-	-
7	Tractors	6,916	1,576.699	7	Small DC motors	520	456.084	0.001	0.006
8	Plastic products	2,898	1,457.319	8	Women's clothing	580	281.364	-	18.919
9	Motorcycles	2,465	1,132.344	9	Garments (used)	11,012	274.538	82.357	24.997
10	ISO tanks	5,270	1,130.920	10	Electric wires	263	266.793	0.276	0.825
	Others	902,533	34,662.912		Others	285,110	4,305.390	119.832	142.610
	Total	**2,164,417**	**56,601.848**		**Total**	**1,620,436**	**16,227.344**	**202.673**	**291.879**

Source: Aranyaprathet Customs House

Fiscal year 2016 (October 2015–September 2016)

No.	Top 10 Exports (฿ million)			No.	Top 10 Imports (฿ million)				
	Type	**Weight (Kg)**	**Value (Baht)**		**Type**	**Weight (Kg)**	**Value (Baht)**	**Tariff**	**VAT**
1	Motorcycle engines	6,305,882.41	3,570,652,304.82	1	Tapioca	1,552,014,850.00	6,974,755,520.64	-	-
2	Cars	8,071,653.60	3,378,248,906.11	2	Camera components	112,092.40	1,538,843,494.85	10,000.00	-
3	Motorcycle parts	10,729,723.28	3,371,335,577.76	3	ISO tanks	4,255,514.00	1,150,854,574.38	32,071.09	24,694.74
4	Combined vehicle harvesters	12,115,465.00	3,244,958,584.80	4	Motor components (aluminium)	2,287,485.00	813,005,790.56	42,749.20	27,444.01
5	Tractors	9,510,449.64	2,181,077,717.72	5	Dog feed	1,177,458.53	753,038,275.28	52,316.85	44,291.10
6	Cements	1,084,826,458.74	1,970,867,703.36	6	Aluminium scraps	11,876,465.50	538,819,590.28	-	37,717,371.32
7	Plastic products	2,458,686.07	1,411,684,347.13	7	Electric wires	245,230.20	466,860,406.23	11,257.28	12,180,817.21
8	Live pigs	21,253,790.00	1,319,546,070.00	8	Garments (used)	9,535,523.29	301,173,362.00	82,347,820.02	24,722,241.01
9	ISO Tanks	7,040,329.37	1,289,952,738.99	9	Copper scraps	1,330,349.94	262,806,770.40	47,861.52	18,396,473.95
10	Beverages	44,752,673.48	1,170,546,301.68	10	Soybean grain	2,000,000.00	243,034,491.75	-	-
	Others	973,229,735.60	34,164,283,550.65		Others	51,559,247.14	3,006,791,464.97	161,489,088.31	173,444,197.02
	Total	**2,180,294,847.19**	**57,073,153,803.02**		**Total**	**1,636,394,216.00**	**16,049,983,741.34**	**244,033,164.27**	**266,557,530.36**

Source: Aranyaprathet Customs House.

Fiscal year 2015 (October 2014–September 2015)

No.	Top 10 Exports (฿ million)			No.	Top 10 Imports (฿ million)				
	Type	**Weight (Kg)**	**Value (Baht)**		**Type**	**Weight (Kg)**	**Value (Baht)**	**Tariff**	**VAT**
1	Motorcycle engines	5,608,225.74	3,433,913,025.53	1	Camera components	707,720.36	7,617,414,300.24	-	-
2	Motorcycle parts	10,689,736.06	3,284,886,903.88	2	Tapioca	1,132,884,998.00	4,606,045,610.15	-	-
3	Cars	5,885,593.02	2,577,824,625.14	3	Aluminium scraps	21,965,407.66	971,212,015.98	-	67,984,841.12
4	Tractors (agriculture use)	17,771,338.74	2,400,002,395.30	4	Dog feed	1,399,392.05	759,033,362.98	64,002.10	54,259.35
5	Combined vehicle harvesters	8,807,205.00	2,314,270,868.40	5	Aluminium parts for electronics	2,885,352.00	596,933,158.57	-	-
6	Cements	1,196,638,808.00	2,162,825,206.65	6	Garments (used)	22,326,546.67	583,261,596.98	174,978,557.60	53,105,278.06
7	Electrical control cabinets	96,224.08	2,123,700,238.54	7	Optical film components	45,760.60	546,447,854.49	2,324.55	1,789.89
8	Live pigs	35,962,770.00	2,117,629,296.55	8	Electric wires	301,068.15	434,760,797.22	69,059.53	10,673,330.40
9	Tractors	8,616,542.00	2,085,294,719.01	9	Small DC motors	239,743.29	232,237,502.59	-	-
10	Camera components	785,319.63	2,064,797,445.99	10	Copper scraps	1,378,986.93	220,436,563.62	-	16,770,559.47
	Others	1,041,114,359.95	38,308,705,203.27		Others	110,961,285.91	3,550,151,866.85	87,295,956.49	73,648,004.41
	Total	**2,331,976,122.22**	**62,873,849,928.26**		**Total**	**1,295,096,261.62**	**20,117,934,629.67**	**262,409,900.27**	**222,238,062.70**

Source: Aranyaprathet Customs House.

There is a strong imbalance between exports and imports, with more Thai exports than imports from Cambodia. This border post currently suffers from congestion as the physical facilities are inadequate for the volume of freight and number of people crossing. The Thai government is now building two new border posts near this area at Ban Pa Rai and Nong Len with support for the facilities on the Cambodian side given by the Neighbouring Countries Economic Development Cooperation Agency (public organisation), which is the Thai aid agency. Officials at this border post are sceptical about the linkages with the TLH but see the potential connectivity with southern Viet Nam, especially Ho Chi Minh City and ports in Vung Tau. If the TLH is to be extended through Aranyaprathet, then it will be challenging to identify freight flows to and from India.

The dilemma is similar to that of the East–West Economic Corridor (EWEC). This corridor extends 1,320 kilometres (km) as a continuous land route between the Andaman Sea in the Indian Ocean and the South China Sea. The provinces bordering the corridor are as follows: in Viet Nam – Da Nang, Dong Ha, Thua Thien Hue, and Quang Tri; in the Lao People's Democratic Republic (Lao PDR) – Dansavanh and Savannakhet; in Thailand – Mukdahan, Kuchinarai, Kalasin, Khon Kaen, Phitsanulok, Mae Sot, and Tak; and in Myanmar – Mawlamyine and Myawaddy. Its notable geographic characteristics are as follows:

- Commercial nodes. It links important commercial nodes in each member country: (i) Mawlamyine–Myawaddy in Myanmar, (ii) Mae Sot–Phitsanulok–Khon Kaen–Kalasin–Mukdahan in Thailand, (iii) Savannakhet–Dansavanh in the Lao PDR, and (iv) Lao Bao–Dong Ha–Hue–Da Nang in Viet Nam.
- Border nodes. It contains the border node border checkpoints of Myawaddy–Mae Sot between Myanmar and Thailand, Mukdahan– Savannakhet between Thailand and the Lao PDR, and Dansavanh–Lao Bao between the Lao PDR and Viet Nam.

The natural conduit for the extension of the TLH should be the EWEC even though there is no through traffic via this corridor as there is some institutional complementarity and the Cross Border Transport Agreement can be used as a reference template for negotiating cross-border transport with India.

3.3 Mukdahan Border Statistics (2017–2018)

The Mukdahan border, on the Thai side, is part of the EWEC. Under the Cross Border Transport Agreement (CBTA), Mukdahan is one of the pilot sides for implementation. The objectives are to have a single stop inspection with a common control area (CCA). However, this border post does not have the physical facilities for a CCA, and another location is currently being earmarked for its implementation.

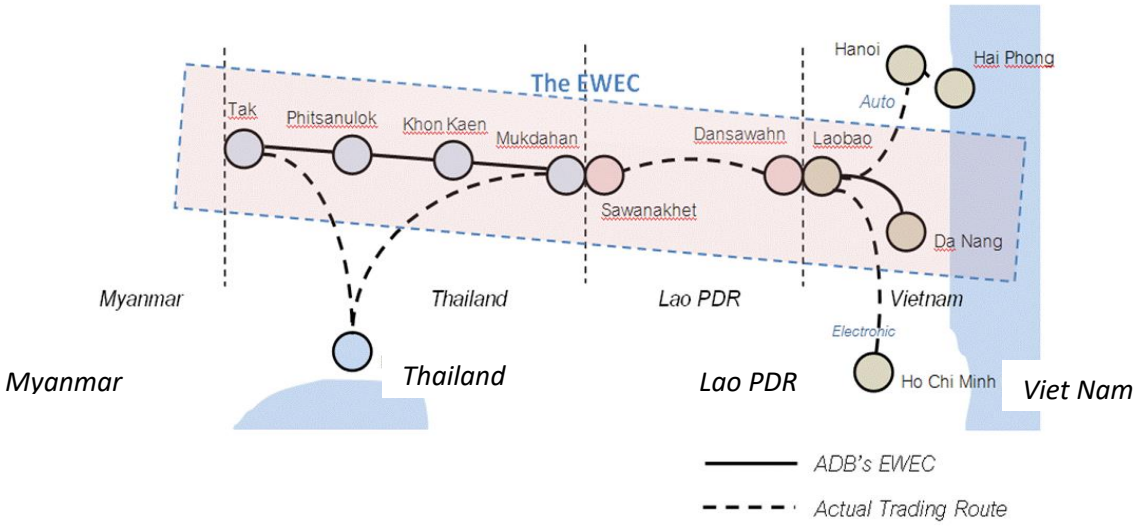
In the EWEC, trade and transport facilitation frameworks are in place, but their implementation is still lacking. There is also a myriad of facilitation-related agreements that have coverage over different geographical areas. The four EWEC countries are parties to both the CBTA and the ASEAN Framework agreement for the facilitation of goods in transit (signed in 1998 in Hanoi). There are also bilateral facilitation agreements for goods in transit between Thailand and the Lao PDR, as well as between Viet Nam and the Lao PDR. The role of logistics service providers and the use of logistics outsourcing and information technology in managing logistics are relatively well developed in Thailand, whereas these practices are still lacking in the Lao PDR and Viet Nam. From a Lao or Vietnamese perspective,

modern logistics practices have not been fully implemented yet. Thai, Lao, and Vietnamese logistics service providers have developed rapidly and played a strong supporting role in the manufacturing sector. However, these companies are often small and cannot compete directly with multinational firms (e.g. TNT, FedEx, and DHL). Logistics service providers in the four EWEC countries have different strengths and weaknesses. A common strength is their in-depth knowledge of the local market. Viet Nam is currently facing an acute shortage of qualified human resources, while the market in Lao PDR is still based on traditional logistics services, such as customs brokerage and physical transportation. Myanmar is just starting its integration process with other ASEAN countries even though many facilitation agreements have already been agreed upon. Thai providers may seem to be more competitive, but this is only true if the comparison is made with other EWEC providers.

Logistics integration in the EWEC is mostly hindered by the institutional framework that is in place. A facilitating institutional framework is currently being implemented and details still need to be addressed, especially on how to apply all the various facilitation measures. This poses a challenge for all related agencies and stakeholders as new rules and regulations are being put in place with field operatives not knowing how to apply these specific measures.

There are two main veins that exist within the EWEC: (1) the route from Mae Sot (Tak, Thailand) to Danang in Viet Nam, which is the original EWEC route, supported by the Asian Development Bank (ADB); and (2) the private sector EWEC routeing that is currently being used, which includes Bangkok and its industrial estates, Hanoi, Hai Phong, and Ho Chi Minh City in Viet Nam as its origin and destination points.

Figure 2: EWEC Actual Trade Flows



Source: Banomyong, Sopadang, and Ramingwong (2010).

In 2005, it was observed that commodity flows along the Asian Development Bank-designed EWEC were non-existent. This is still the case in 2020. The main existing product flows within the EWEC are mostly from/to Bangkok/Laem Chabang in Thailand and from/to Hai Phong (automotive products) and Ho Chi Minh City (electronics products) in Viet Nam which does not follow the agreed upon route in the EWEC. The existing flows are illustrated by the dotted line in Figure 2.

The natural expansion for the trilateral highway is to link with the GMS EWEC, which means that there is, in reality, no real flow of goods between Danang to Mae Sot (Tak) at the border with Myanmar. A 'snapshot' of the EWEC route based on collected information is presented hereafter. As observed from the empirical evidence, transportation is quite reliable as there is not much difference in terms of the service times. Areas that are less reliable are the border crossings and entry into Viet Nam. This wide variation is based on a number of factors. The most common factor that increases uncertainty within the EWEC is the lack of appropriate import or transit documentation.

Based upon the empirical evidence collected on the route between Danang and Tak, it is noted that nearly a half of the total 41.3-hour transit time (18 hours, equivalent to 43.5%) is in fact taken up by customs or border crossings based on each country's administrative formality. The non-synchronisation and complicated institutional framework are clearly hindering the smooth flow of goods across borders. From the cost perspective, 42.6% of the door-to-door transport costs are collected at customs and border crossings. The amount is almost equivalent to the cost of physical transportation. This evidence is alarming and must be solved. The international institutional framework must be better arranged or implemented if it has already been agreed upon.

Table 3: Mukdahan Customs Statistics

Fiscal year 2018

No.	Top 10 Exports			No.	Top 10 Imports		
	Type	**Value (Baht)**	**Weight (Kg)**		**Type**	**Value (Baht)**	**Weight (Kg)**
1	Micro-processor chips (processing units)	83,060,596,730.16	23,766,613.94	1	Data processing machines	14,518,421,433.92	2,332,619.43
2	Printed circuit boards (PCBs)	5,576,838,666.52	3,296,972.62	2	Media storage devices and memory devices	13,805,809,891.85	1,796,507.12
3	Uninterruptible Power Supply (UPS)	4,693,117,856.97	3,261,978.05	3	Refined copper	11,805,414,398.76	52,046,768.00
4	Transistors and semiconductors	3,420,348,218.10	1,355,296.53	4	Mobile phones	9,341,395,701.61	4,528,344.23
5	Fuel oils	1,741,038,450.98	71,274,181.94	5	Camera components	8,784,838,533.88	997,384.09
6	Camera components	1,248,807,390.02	191,192.86	6	Electrical energy	8,139,336,241.02	26.00
7	Plastic products	965,736,868.05	889,753.28	7	Printed circuit boards (PCBs)	1,924,919,373.45	886,457.42
8	Beverages	911,785,020.46	26,278,463.51	8	Transistors and semiconductors	1,349,004,729.34	509,542.62
9	Electronic integrated circuits	812,003,502.64	467,684.43	9	Components of data processing machine	1,161,902,244.87	171,328.48
10	Sugar	645,784,951.73	54,459,256.00	10	Women’s clothing	658,647,006.01	13,429,226.45
11	Others	21,667,249,321.61	598,368,000.59	11	Others	20,855,842,294.74	1,164,765,973.33
Total		**124,743,306,977.24**	**783,609,393.74**	**Total**		**92,345,531,849.45**	**1,241,464,177.17**

Source: Mukdahan Customs House

Fiscal year 2017

No.	Top 10 Exports			No.	Top 10 Imports		
	Type	**Value (Baht)**	**Weight (Kg)**		**Type**	**Value (Baht)**	**Weight (Kg)**
1	Micro processor chips (processing unit)	69,267,945,583.99	21,676,776.01	1	Data processing machines	15,163,757,787.42	2,319,616.12
2	Printed circuit boards (PCBs)	5,081,796,992.38	2,450,674.22	2	Refined copper	10,370,677,278.79	50,983,280.00
3	Uninterruptible power supply (UPS)	5,044,780,994.89	3,480,941.78	3	Electrical energy	9,691,105,441.66	24.00
4	Transistor and semiconductors	3,554,458,060.42	1,291,662.11	4	Camera components	9,262,595,775.80	1,431,546.12
5	Sugar	1,891,675,049.54	114,472,064.00	5	Mobile phones	6,942,618,174.31	3,244,335.91
6	Fuel oils	1,644,878,177.21	81,995,441.32	6	Media storage devices and memory devices	4,612,253,233.56	666,808.08
7	Camera components	1,384,070,522.92	198,752.06	7	Printed circuit boards (PCBs)	1,820,977,895.92	676,795.94
8	Dried fruits	998,466,989.58	12,798,735.00	8	Instruments and apparatus for measuring and checking	1,170,551,699.55	540,634.73
9	Plastic products	872,972,521.40	675,184.31	9	Women’s clothing	1,166,068,910.57	19,939,242.14
10	Electrical signal, safety, traffic control equipments	797,895,660.89	84,098.11	10	Iron/Steels	723,621,804.39	393,553.65
11	Others	22,522,173,945.06	555,116,867.43	11	Others	22,731,842,763.62	761,507,139.53
Total		**113,061,114,498.28**	**794,241,196.33**	**Total**		**83,656,070,765.59**	**841,702,976.21**

Source: Mukdahan Customs House.

The data from Mukdahan provides both the value and weight of the top-10 export and import commodities. The main commodities going through this border post are components used in the electric and electronic supply chain between Thailand and Viet Nam. Thailand still has a positive trade balance over the Lao PDR at this border post.

Table 4: Number of Containers

Fiscal year 2018

Month	No. of import and export containers						No. of transit containers						Total	
	In			Out			In			Out			In	Out
	Loaded	Empty	Total	Loaded	Empty	Total	Loaded	Empty	รวม	Loaded	Empty	Total	Total	Total
October	640	289	929	474	539	1,013	168	0	168	160	0	160	1,097	1,173
November	1001	424	1,425	554	856	1,410	52	0	52	322	0	322	1,477	1,732
December	726	324	1,050	464	890	1,354	278	0	278	244	0	244	1,328	1,598
January	943	467	1,410	400	974	1,374	107	0	278	343	0	343	1,688	1,717
February	460	339	799	299	755	1,054	301	0	301	213	0	213	1,100	1,267
March	907	342	1,249	356	803	1,159	109	0	109	202	0	202	1,358	1,361
April	664	361	1,025	271	631	902	95	0	95	261	0	261	1,120	1,163
May	810	474	1,284	320	825	1,145	84	0	84	418	0	418	1,368	1,563
June	649	273	922	406	881	1,287	53	0	53	176	0	176	975	1,463
July	720	533	1,253	903	864	1,767	86	0	86	267	0	267	1,339	2,034
August	788	811	1,599	917	985	1,902	101	0	101	367	0	367	1,700	2,269
September	859	302	1,161	410	918	1328	107	0	107	228	0	228	1,268	1,556
Total	9,167	4,939	14,106	5,774	9,921	15,695	1,541	0	1,712	3,201	0	3,201	15,818	18,896

Fiscal year 2017

Month	No. of import and export containers						No. of transit containers						Total	
	In			Out			In			Out			In	Out
	Loaded	Empty	Total	Loaded	Empty	Total	Loaded	Empty	รวม	Loaded	Empty	Total	Total	Total
October	735	562	1,297	353	697	1,050	174	0	174	411	0	411	1,471	1,461
November	822	270	1,092	274	854	1,128	170	0	170	147	0	147	1,262	1,275
December	810	324	1,134	234	630	864	189	0	189	286	0	286	1,323	1,150
January	614	433	1,047	439	773	1,212	552	0	552	491	0	491	1,599	1,703
February	332	491	823	294	686	980	695	0	695	486	0	486	1,518	1,466
March	832	336	1,168	400	825	1,225	617	0	617	203	0	203	1,785	1,428
April	537	314	851	223	625	848	162	0	162	134	0	134	1,013	982
May	473	521	994	388	459	847	92	0	92	136	0	136	1,086	983
June	552	349	901	202	473	675	122	0	122	196	0	196	1,023	871
July	562	383	945	332	688	1,020	123	0	123	202	0	202	1,068	1,222
August	702	353	1,055	583	588	1,171	306	0	306	306	0	306	1,361	1,477
September	677	332	1,009	440	691	1131	81	0	81	267	0	267	1,090	1,398
Total	7,648	4,668	12,316	4,162	7,989	12,151	3,283	0	3,283	3,265	0	3,265	15,599	15,416

Source: Mukdahan Customs House.

The numbers of containers going through Mukdahan is still limited, with just over 2,000 containers per month going through this border gate (both ways). The number of transit containers is even less at around half of the total container traffic. The final destinations of these transit containers are either Hanoi or Ho Chi Minh for Viet Nam, and Ayudhaya or Cholburi for Thailand. The majority of the goods using this border gate are not containerised, but the trend is encouraging as there has been a constant increase over the years.

Table 5: Number of Trucks

Fiscal Year 2018

Month	Cargo trucks statistics of Mukdahan border point					
	Loaded trucks		Empty trucks		Total	
	In	Out	In	Out	In	Out
October	1,563	3,458	2,390	807	4,407	4,450
November	1,772	3,701	2,907	916	4,679	4,617
December	1,696	2,885	2,033	1,263	3,729	4,148
January	1,976	2,868	2,125	1,018	4,101	3,886
February	1,339	2,271	1,659	812	2,998	3,083
March	2,031	3,105	2,059	698	4,090	3,803
April	1,533	2,459	1,802	1,088	3,335	3,547
May	1,737	3,203	2,197	1,540	3,934	4,743
June	1,474	2,946	2,013	1,216	3,487	4,162
July	1,271	2,709	2,142	992	3,413	3,701
August	1,603	3,164	2,700	1,248	4,303	4,412
September	1,880	2,556	1,801	1,381	3,681	3,937
Total	19,875	35,325	25,828	12,979	46,157	48,489
Grand total	55,200		38,807		94,646	

Fiscal year 2017

Month	Cargo trucks statistics of Mukdahan border point					
	Loaded trucks		Empty trucks		Total	
	In	Out	In	Out	In	Out
October	2,429	3,797	2,349	1,096	4,778	4,893
November	2,429	3,627	2,065	1,030	4,494	4,657
December	2,426	3,410	1,877	755	4,303	4,165
January	3,560	2,908	1,823	1,562	5,383	4,470
February	2,431	4,280	2,181	349	4,612	4,629
March	3,143	3,345	2,106	1,819	5,249	5,164
April	1,908	2,857	1,920	882	3,828	3,739
May	1,829	3,726	2,620	707	4,449	4,433
June	1,774	3,294	2,208	735	3,982	4,029
July	1,752	2,922	1,968	827	3,720	3,749
August	2,389	3,306	2,135	1,075	4,524	4,381
September	1,799	2,775	1,848	691	3,647	3,466
Total	27,869	40,247	25,100	11,528	52,969	51,775
Grand total	68,116		36,628		104,744	

Source: Mukdahan Customs (2019).

The number of loaded trucks seems to have decreased between 2018 and 2017, while the number of empty trucks is roughly at the same level. Their numbers are higher than the number of containers as most of the traffic is non-containerised. It is also interesting to note that the number of loaded trucks going out is higher than those coming in from the Lao PDR, while there are more empty trucks coming in from Lao PDR. This is a reflection of the traffic flows, where loaded trucks from Thailand go into Lao PDR and discharge while returning mostly empty into Thailand.

4. Physical Infrastructure

According to the Bangkok Post (2019a), the Thai cabinet has approved a low-interest B777 million loan under a 30-year contract to Myanmar for infrastructure development in Myawadee. This is important for the TLH as Myawadee is a key connectivity node with Thailand. This loan is based on a proposal by the National Economic Development Agency (NEDA) to provide financial assistance to Myanmar to fund the third phase of the Greater Mekong Subregion development project for Myawadee town. Under the proposal, a 30-year loan of B777 million with an interest rate of 1.5% will be given to Myanmar, with a grace period of 10 years.

The loan conditions require goods and services from Thailand for at least 50% of the value of the contract. Constructors and project advisers must hold Thai nationality, and Thai laws will be enforced in the loan contract. Myawadee town plays an important role in the economic development of Myanmar and Thailand because it is a major border trading area between Myanmar and Thailand through the Mae Sot district of Tak. The border town serves as a transport route for goods and people from Thailand to other important towns in Myanmar.

The Thai government has already built a B1.1 billion bridge over the Moei River to relieve traffic congestion at the Mae Sot checkpoint. The bridge, which has already opened, is part of a larger plan to connect Mae Sot and Yangon, Myanmar, and improve access to the Indian Ocean, according to the Thai Minister of Transport (Bangkok Post 2019b).

In 2017, the Myanmar government approved a proposal allowing the Thai government to help improve the condition of a 68-km road that serves as an important link in the EWEC transport route. The Thai cabinet endorsed a plan to help Myanmar improve a 68-km section of the road linking Endu and Thaton in southern Myanmar at a cost of B1.8 billion, which will be shouldered by the Thai government (Bangkok Post 2017).

However, after numerous negotiations between both sides, Myanmar decided on a build–operate–transfer arrangement with a Chinese contractor. Currently, there are problems as the Chinese contractor is not able to complete the project as per the agreed timeline, and Myanmar has requested assistance from Thailand's Department of Highway (DoH) to assess the challenges of this specific project. The DoH went to the construction site during 23–25 September 2019 to offer advice to the Myanmar side but cannot interfere with the contract as the issue is between Myanmar and the Chinese contractor. The DoH has therefore no knowledge of the design standard or end date of the project as it is not under their responsibility. Figures 3 and 4 show the status of the road linking Endu and Thaton in September 2019.

Figure 3: State of Road between Endu and Thaton

Figure 4: State of Road between Endu and Thaton

Source: Pictures Courtesy of the Department of Highways (DoH), Ministry of Transport, Thailand.

This four-lane highway, completed in 2020, links Ta to Mae Sot, this will be one of the most beautiful roads in Thailand. The budget for building the road is B4 billions. Thailand has been developing not only its own infrastructure but also the infrastructure in its neighbouring countries, such as the new highway linking Myawadee and Korakeik in Myanmar. This new highway cuts the transit time drastically to Mawlamyine and enables faster access to Yangon.

Figures 5 and 6 show the new four-lane highway linking Tak to Mae Sot. The quality of the road is good, thus supporting faster transit times for trucks going to and from the Thai–Myanmar border.

Figure 5: Highway Linking Ta to Mae Sot

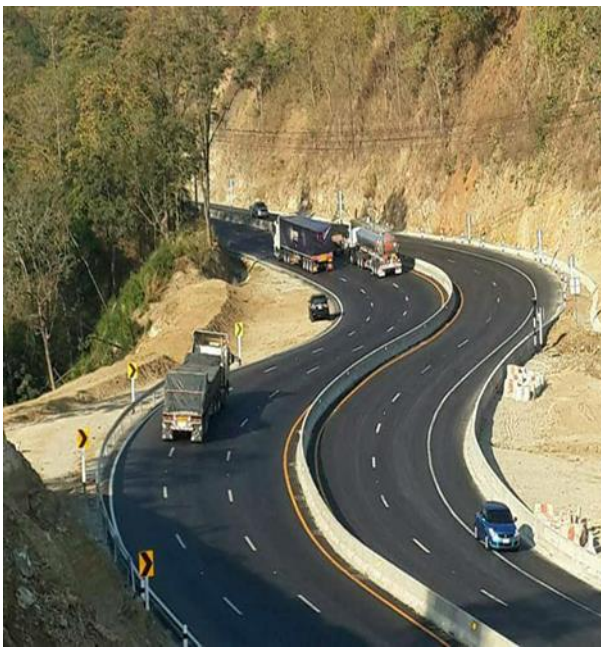
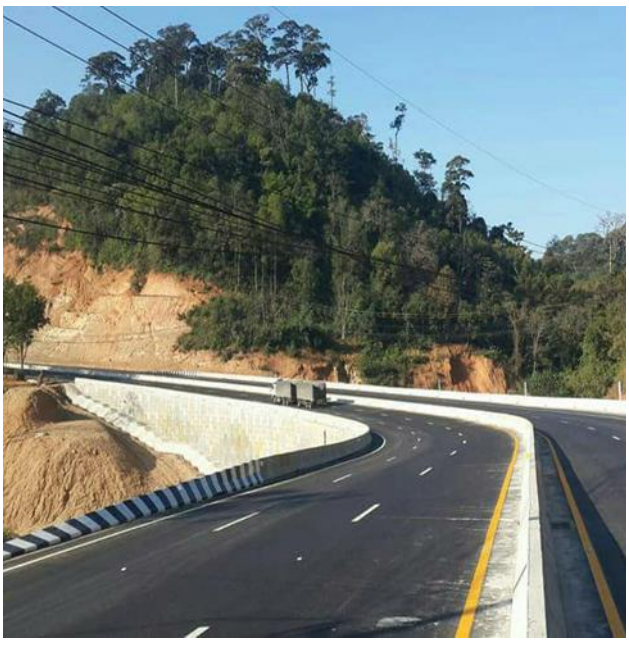


Figure 6: Highway Linking Ta to Mae Sot



Source: Pictures Courtesy of the Department of Highways (DoH), Ministry of Transport, Thailand.

5. Institutional Arrangements: The Initial Implementation of the Cross-Border Transportation Agreement

The Initial Implementation of the Cross-Border Transportation Agreement (IICBTA) between Thailand and Myanmar took effect with a memorandum of understanding signed in March 2019. It furthers cross-border trade and regional transport networks and connectivity through mutual cooperation and shared prosperity. The Myanmar–Thailand IICBTA will start with each party by issuing 100 transport permits, and will incorporate an expanded route network encompassing Yangon and Thilawa in Myanmar, and Bangkok and Laem Chabang in Thailand, as well as the Myawadee–Mae Sot border crossing point.

Myanmar commenced the agreement with Thailand on 22 October 2019. It will facilitate transport at the Myawadee–Mae Sot checkpoint in Tak. Authorised vehicles from each side will be able to cross the border and will be granted a permit to stay in the other country for 30 days. Therefore, cargo trucks from Myanmar can cross the Mae Sot checkpoint to two destinations, namely Laem Chabang Port, Chon Buri, and the border province of Mukdahan. At the same time, vehicles from Thailand can carry goods from the Mae Sot checkpoint all the way to the Thilawa Special Economic Zone in Yangon (extended from Myawaddy originally). This will help Thai companies save time and transport costs and facilitate exports via cross-border trade.

However, Thai truckers and logistics service providers are not keen on this arrangement as they would prefer to have exchanges of truck tractor units at the border. This sentiment is also echoed by some Myanmar providers, as local providers would prefer that their most expensive assets still remain in their respective country and only the trailers moved from origin to destination.

6. Summary

Thailand expects a lot from the TLH. Trade and investment are expected to grow on both sides, but with a strong possibility of bypassing Myanmar. Thailand believes that the benefits will mostly be for Thailand. This belief may be right for the Thai government, but the picture is less clear when it comes to the private sector, as shown in Table 6.

Table 6: TLH Perspectives

Benefits	Answer
Thai government	Yes
Private sector	Probably yes
Logistics service providers	Unsure

Source: Author.

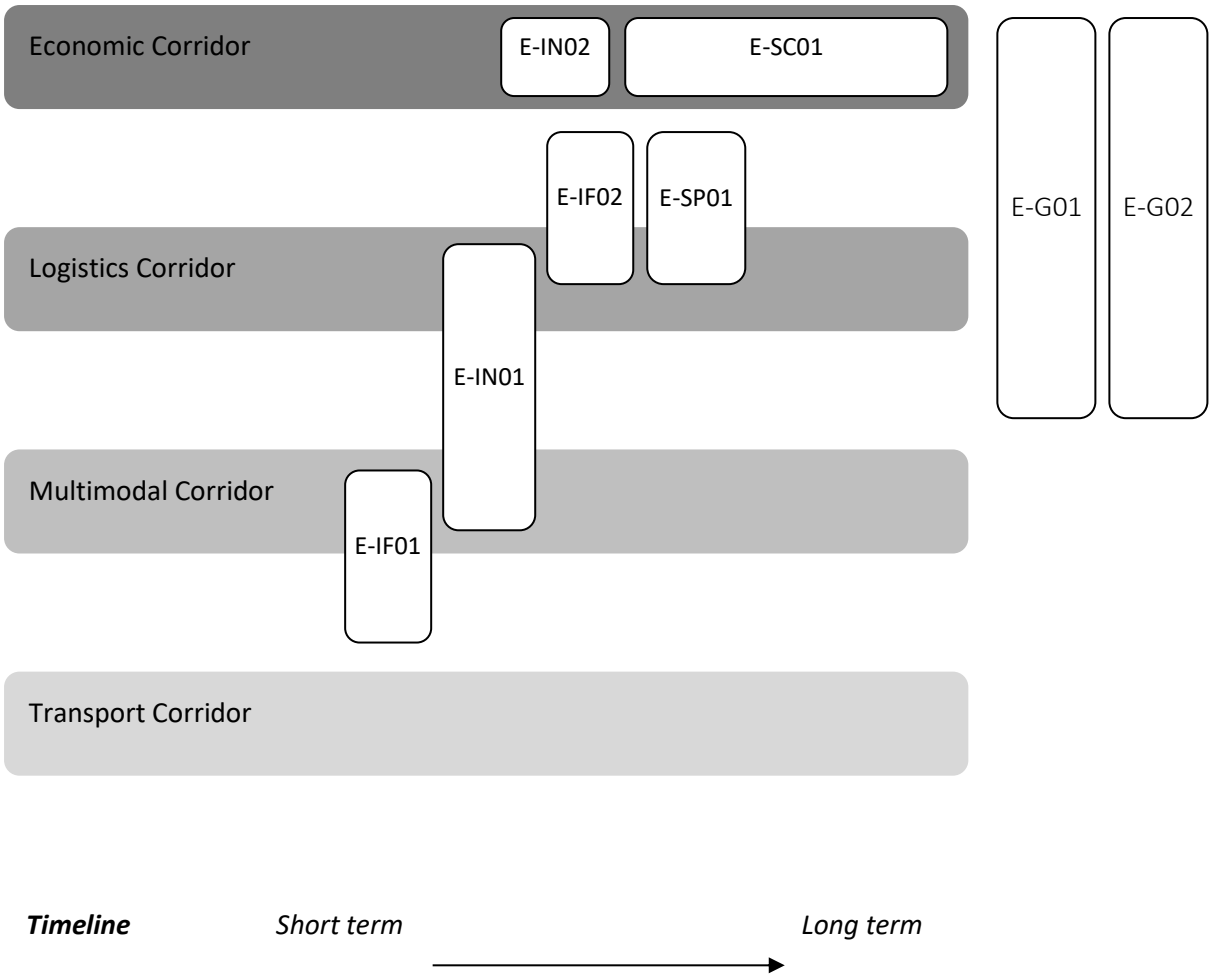
This study has tried to explore the development of the TLH from a Thai perspective. The development of the TLH is still on the country's agenda, but there are many projects under the Ayeyawady–Chao Phraya–Mekong Economic Cooperation Strategy (ACMECS). There is also Thai bilateral aid to Myanmar and the Thai national border development policy that support the TLH, albeit under a different agenda.

The physical route on the Thai side is currently completed with improvements made on the Myanmar side with the help of Thailand. The TLH infrastructure is slowly improving, but some of the border facilities are still insufficient and inefficient. In addition, local service providers lack in technology and logistics skills, resulting in strong competition from foreign-owned service providers.

Transit via Myanmar from Thailand to India is still impossible. Even though there is now an IICBTA, the supporting and administrative procedures are still lacking as trans-loading and border crossing still remains a barrier to the seamless movement of freight, people, and vehicles along the TLH.

It is important that the following policy recommendations are made and presented in order to improve the logistics integration of the TLH for the purpose of transforming it into a full-fledged economic corridor. Each proposed project concept is based on the specific findings on the issues described in this study. Priority should be given to the proposed pilot implementation of trade and transport facilitation measured along the TLH as existing trade and transport facilitation measures have yet to be fully implemented. Figure 5 illustrates the proposed projects classified by the issues identified in the study as key to the development of the TLH into an economic corridor.

Figure 5. TLH Policy Recommendation Framework



Source: Author.

In each policy dimension, specific programmes are proposed. These specific programmes are again based on the study's observations.

1. Infrastructure-Based Programme:

1.1 E-IF01: TLH Basic Infrastructure and Logistics Facility Development

- To improve and develop basic logistics infrastructures along the TLH in order to facilitate the movement of commodities. The developments include (i) road improvement, (ii) border-crossing facilities, and (iii) supporting facilities (free zones and inland clearance depots).

1.2 E-IF02: Information Technology Development for TLH Development

- To develop information technology infrastructure for the development of TLH and to promote IT utilisation in business procedures as well as for all border-crossing activities.

2. Private Sector/Trader-Based Programmes:

E-SC01: TLH Investment Forum and TLH Trade and Transport Facilitation Sub-Committee

- To establish an international forum focusing on accelerating and attracting investment and promoting the TLH to local, regional, and international traders.
- To establish a TLH Trade and Transport Facilitation Sub-Committee aimed at promoting trade collaboration, establishing business networks, and facilitating any initiatives to develop economies along the TLH.

3. Institutional Framework-Based Programmes:

3.1 E-IN01: IICBTA Promotion, Clarification, and Full Implementation

- To promote and accelerate the full implementation of the IICBTA.
- India should join the CBTA and expand it to the South Asian Association for Regional Cooperation (SAARC) countries.

3.2 E-IN02: TLH Business and Officials Capacity Building

- To increase businesses' and officials' strengths using knowledge management concepts.

4. Service Provider-Based Programme:

E-SP01: TLH Local Service Provider (LSP) Promotion and LSP network Development

- To promote local logistics service providers and develop clusters and networks of regional service providers.

5. Other Programmes:

5.1 E-G01: TLH Road Map Development

- To develop an appropriate road map and development direction for TLH focusing on supporting economic activities along the TLH.

5.2 E-G02: TLH 'Reality-Check' Study

- To explore the current situation and understand if there is a real demand for transit goods along the TLH (end to end).

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Current Status, Challenges, and Opportunities for the Trilateral Highway and Possible Extension to Cambodia, Lao PDR, and Viet Nam: Perspectives from Viet Nam

Background paper

Nguyen Binh Giang, Vo Thi Minh Le, and Nguyen Thi Hong Nga

1. Introduction

1.1. History of road connectivity between Viet Nam and Lao PDR

Road connectivity between Viet Nam and Lao People's Democratic Republic (Lao PDR) dates back to the late 1800s, beginning with the idea of building National Highway 9 (NH9) connecting Savannakhet (Lao PDR) and Dong Ha (Quang Tri province, Viet Nam) in 1895. A few years later, the construction of NH8 linking Ha Tinh (Viet Nam) and Borikhamsai (Lao PDR) was also proposed. However, it took more than 3 decades to put these two routes into use. In addition, NH12, which connects Quang Binh (Viet Nam) and Thakhet (Lao PDR), as well as NH7, which connects Nghe An (Viet Nam) and Luang Prabang (Lao PDR), opened in 1930 and 1937, respectively. 1999 marked the introduction of the Asian Highway (AH) Network, five sections of which link Lao PDR and Viet Nam, including AH13, AH15, AH16, AH131, and AH132. Some sections are located on the national routes of the two countries. In addition, there are some national routes that do not belong to any AH, but still connect Lao PDR and Viet Nam; for example, NH7 connects Nghe An (Viet Nam) and Phou Khoun (Lao PDR) via Nam Can–Namkan (also known as Nonghet) border checkpoint, while NH15 connects My Thuy Port to La Lay–Lalai international border gate (Table 1).

Table 1. Major Asia Highways and National Routes Connecting Viet Nam and Lao PDR

AH No.	Section in Viet Nam	Length (km)	Type of terrain (%)		
			Flat	Hilly	Mountainous
AH13	Nga Tu So/Ha Noi–NH279/Tuan Giao–Tay Trang border checkpoint	499	7.6	-	92.4
AH15	Cua Lo Port/Nghe An–Quan Banh/Nghe An/NH46, NH1/AH1/Bai Vot/Ha Tinh–Cau Treo border checkpoint/Ha Tinh	99.3	49.8	31.5	21.7
AH16	NH1/AH1/Dong Ha/Quang Tri–Cam Lo/Ha Tinh–Lao Bao border checkpoint/Quang Tri	84	50	42.9	7.1
AH131	Vung Ang Port/Ha Tinh–NH1/AH1/Long Tien/Ha Tinh, NH1/AH1/Ky Anh/Ha Tinh–NH12/Dong Le/Quang Binh–Xom Sung/Quang Binh–Hoa	137			

	Tien/Quang Binh–NH12/Khe Lam/Quang Binh–Cha Lo border checkpoint/Quang Binh				
AH132	Dung Quat port/Quang Ngai–NH1/Ah1/Doc Soi/Quang Ngai; NH24/Thach Tru/Quang Ngai–NH14/Ah17/Kon Tum, NH40/Ngoc Hoi/Kon Tum–Bo Y border checkpoint	198.2			
	NH7: Nghe An–Nam Can border checkpoint				
	NH15: My Thuy Port–La Lay border checkpoint	105			
	NH217: Ha Trung, Thanh Hoa–Na Meo border checkpoint	196			

Note: AH=Asian Highway; NH=National Highway.
Source: Authors' compilation using data from UNESCAP, 2019 and Directorate of Roads Viet Nam, 2020.

- **AH13 (NH279 and NH6)**

  The AH13 (or NH279 and NH2) section in Viet Nam (499 km long) starts at Tay Trang–Pang Hok border checkpoint, passes through Dien Bien–Son La–Hoa Binh, and ends at Ha Noi. The terrain is mostly mountainous (92.4%), with some flat sections (7.6%, between Ha Noi and a part of Hoa Binh). Based on the Asia Highway Standard, the AH13 section in Viet Nam can be classified as Class III (desirable standard), with 100% asphalt/cement concrete pavement and 97% two-lane roads (some sections are below Class III). The most recent improvement on AH13 in Viet Nam was on the section between Luong Son to Dong Tien district, Hoa Binh Province (32.9 km) in 2018 on a build-operate-transfer (BOT) model, and the other was on the section between Xuan Mai, Ha Noi and Luong Son, Hoa Binh (38 km) in 2009.

- **AH15 (NH46 and NH8)**

  The AH15 (or NH48 and NH8) section in Viet Nam (99.3 km long) begins at Cau Treo–Nam Phao border checkpoint, runs through Ha Tinh, and ends at Nghe An province. This section runs through flat (49.8%), hilly (31.5%), and mountainous terrains (21.7%). Based on the Asia Highway Standard, the AH13 section in Viet Nam can be classified as Class III, with 100% asphalt/cement concrete pavement and 29.4% four-lane roads and 70.6% two-lane roads. The most recent improvement on AH15 was on the section between Hong Linh in Ha Tinh province to Cau Treo–Nam Phao border checkpoint (35.5 km) in 2014 using Viet Nam's national roadway fund.

- **AH16 (NH9)**

  The AH16 (NH9) section in Viet Nam (84 km long) starts at Lao Bao–Dansavanh border checkpoint, and ends at Dong Ha, Quang Tri province. This section runs through flat (50%), hilly (42.9%), and mountainous terrains (7.1%). The AH16 section in Viet Nam can be classified as Class III, with 100% asphalt/cement concrete pavement and 100% two-lane roads. This section plays an important role in the Greater Mekong Sub-region's (GMS) East–West Economic Corridor (EWEC) connecting Thailand and Viet Nam via Lao PDR so it was upgraded by the Asian Development Bank in 2002.

- **AH131 and AH132**
  AH131 (NH12A) and AH132 (NH40, NH14) sections connect Viet Nam and Lao PDR via Cha Lo–Na Phao and Bo Y–Phoukeua international border checkpoints. Based on the Asia Highway Standard, the AH131 and 132 components in Viet Nam can be classified as Class III, even though some sections are considered below Class III.

1.2. Expectations for enhancing connectivity to India, via Lao PDR and Myanmar

In recent years, relationships between India and the ASEAN countries, particularly Viet Nam, have been cemented in many fields ranging from economic engagement and security cooperation to strategic alignments. Viet Nam–India relations were upgraded to a Comprehensive Strategic Partnership in 2016, promising a bright future for further cooperation between the two sides. Previously, in 2003, at the Mekong–Ganga Cooperation Ministerial Meeting, a proposal for developing a railway linking New Delhi to Ha Noi was made and this idea has been supported by the two countries and relevant parties to foster connectivity between India and Viet Nam, as well as other ASEAN countries.

The road connectivity between India and Viet Nam can be traced by 1) the northern route: Hai Phong–Ha Noi–Hoa Binh–Son La–Dien Bien–Tay Trang (Viet Nam)–Lao PDR–Myanmar–India; ii) the EWEC: Da Nang–Hue–Quang Tri (Viet Nam)–Lao PDR–Myanmar–India; and iii) the Southern Economic Corridor (SEC): Vung Tau–Ho Chi Minh City–Moc Bai (Viet Nam)–Cambodia–Thailand–Myanmar–India. Amongst the three routes, Viet Nam prioritised the EWEC and the SEC. Notably, at the 10th Mekong–Ganga Cooperation Ministerial Meeting held in August 2019, Viet Nam's Deputy Prime Minister proposed expanding the EWEC and SEC to India by road and sea, including the India–Myanmar–Thailand Highway to Cambodia, Lao PDR, and Viet Nam. In addition, the Deputy Prime Minister called for research projects to develop multimodal transport networks connecting the Mekong region and India, trade and investment facilitation through elimination of trade barriers, trade promotion, customs clearance, quarantine, and regional supply chain development, etc.

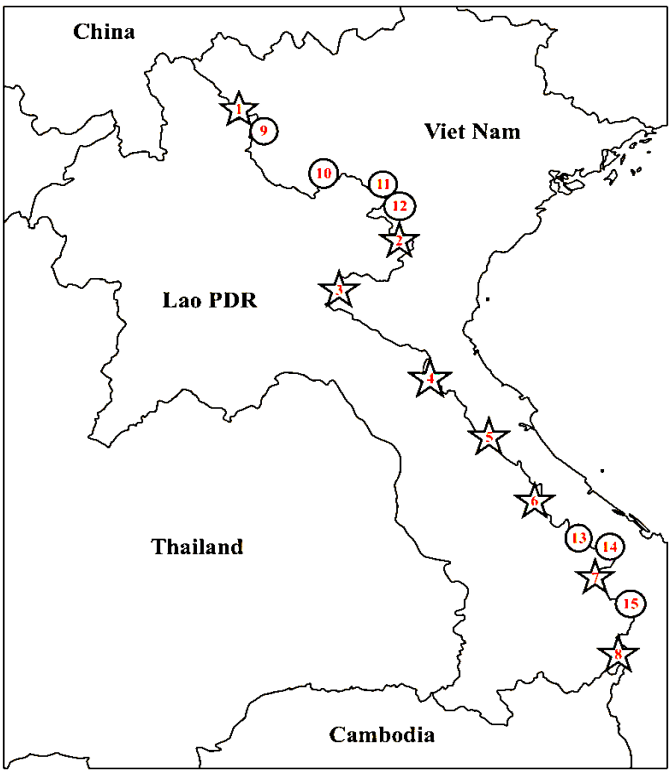
Acknowledging the potentials and advantages of enhanced connectivity with India via Lao PDR and Myanmar, particularly along the EWEC, Viet Nam's government over the past few years has carried out certain projects to improve both hard and soft infrastructure in the country. In terms of hard infrastructure, the construction of the two-lane Hai Van Tunnel 2 (6.29 km long), which plays a key role in EWEC's connectivity, is expected to be completed in late 2020. Also, the Embassy of India in Viet Nam and the Department of Planning and Investment of Dien Bien had a meeting to discuss road connectivity between Tay Trang (Viet Nam) and Mouang Khua (Lao PDR) in 2014, with India financing a Dien Bien–Tay Trang Road Rehabilitation and Upgrading Project as a commercial loan. This project was nevertheless not approved, but it shows India's interest in this section: a bridge connecting Ha Noi to India via Lao PDR. In terms of soft infrastructure, the institutional reforms related to customs clearance and declaration activities, such as the development of a single window system at border crossing points, have been taken into consideration.

2. Current Status of the Road Connectivity between Viet Nam and Lao PDR

2.1. Border checkpoints between Viet Nam and Lao PDR

According to the General Department of Viet Nam Customs (2019), the border checkpoints between Lao PDR and Viet Nam can be grouped into three categories: 1) international-level border checkpoints; 2) national-level border checkpoints; and iii) local border checkpoints (and some local crossings, which are only open for locals). At international-level border checkpoints, goods, vehicles, and individuals are allowed to enter/exit Viet Nam and Lao PDR to/from a third country, while national-level border checkpoints allow the exchange of vehicles and individuals between the two countries; local border checkpoints do not allow the exchange of individuals.

Figure 1. Maps of International and National Border Checkpoints between Viet Nam and Lao PDR



International border checkpoints		
No	**Border gate**	**Provinces**
1	Tay Trang – Pang Hok	Dien Bien – Phongsaly
2	Na Meo – Nam Soy	Thanh Hoa – Houaphanh
3	Nam Can – Namkan	Nghe An – Xiengkhouang
4	Cau Treo – Nam Phao	Ha Tinh – Borikhamsai
5	Cha Lo – Na Phao	Quang Binh – Khammouane
6	Lao Bao – Dansavanh	Quang Tri – Savannakhet
7	La Lay – Lalai	Quang Tri – Saravane
8	Bo Y – Phoukeua	Kon Tum – Attapeu
National border checkpoints		
No	**Border gate**	**Provinces**
9	Huoi Puoc – Nason	Dien Bien – Luang Prabang
10	Chieng Khuong – Bandan	Son La – Houaphanh
11	Long Sap – Pahang	Son La – Houaphanh
12	Ten Tan – Somvang	Thanh Hoa – Houaphanh
13	Hong Van – Cutai	Thua Thien Hue – Saravane
14	A Dot – Ta Vang	Thua Thien Hue – Xekong
15	Nam Giang – Daktaoknoy	Quang Nam – Xekong

Source: Drawn by the authors using data collected from General Department of Viet Nam Customs

Today along the Viet Nam and Lao PDR border, there are eight international–level border checkpoints, seven national–level border checkpoints (Figure 1), and 18 local border checkpoints (Table 2). These border checkpoints are under the direct management and supervision of customs sub–departments at the provincial level, except six local border checkpoints (Si Pa Phin–Houay La, Nam Lanh–Muang Po, Son Hong–Nam Sak, Kim Quang–Maladok, Dak Blô–Dak Bar, and Dak Long–Vangtat).

Table 2. Local Border Checkpoints between Viet Nam and Lao PDR

No.	Viet Nam		Lao PDR	
	Province	**Border gate**	**Province**	**Border gate**
1	Dien Bien	Si Pa Phin	Phongsaly	Houay La
2	Son La	Nam Lanh	Houaphanh	Muang Po
3	Son La	Na Cai	Houaphanh	Sop Dung
4	Thanh Hoa	Kheo	Houaphanh	Thalao
5	Nghe An	Thong Thu	Houaphanh	Namtay
6	Nghe An	Tam Hop	Borikhamsai	Thoong Mixay
7	Nghe An	Cao Veu	Borikhamsai	Thoong Phila
8	Nghe An	Thanh Thuy	Borikhamsai	Nam On
9	Ha Tinh	Son Hong	Borikhamsai	Nam Sak
10	Ha Tinh	Kim Quang	Borikhamsai	Maladok
11	Quang Binh	Ca Roong	Khammouane	Nong Ma
12	Quang Tri	Ta Rung	Savannakhet	La Co
13	Quang Tri	Ban Cheng	Savannakhet	Ban May
14	Quang Tri	Thanh	Savannakhet	Denvilay
15	Quang Tri	Cac	Savannakhet	A Sok
16	Quảng Nam	Tay Giang	Sekon	Kaleum
17	Kon Tum	Dak Blo	Sekon	Dak Bar
18	Kon Tum	Dak Long	Attapeu	Vangtat

Source: General Department of Viet Nam Customs

Amongst 33 border checkpoints along the two countries, Tay Trang–Pang Hok (also known as Sop Hun) border checkpoint is one of eight international border checkpoints, located in Dien Bien District, Dien Bien province on the Viet Nam side, and May District, Phongsaly province on the Lao PDR side. Tay Trang border gate is under the management and supervision of Tay Trang Customs Sub–Department under Dien Bien Province Customs Department, while Pang Hok border gate is under Pang Hok Customs Department.

2.2. Cross–border trade and transport flows

Cross–border trade

Thanks to the bilateral border trade agreement between Lao PDR and Viet Nam signed on 27 June 2015, cross–border trade between the two countries has expanded at a rapid pace over the past 4 years. Data of the General Department of Viet Nam Customs (2019) show that cross-border trade between Lao PDR and Viet Nam reached nearly US$1.2 billion in 2019; up to 1.5 times higher than that of 2016; however, it made up merely 0.22% of the total trade of Viet Nam. This ratio has stayed quite stable at around 0.21%–0.23% over the 2016–2019 period (Annex 1). In general, Viet Nam has had a high trade surplus with Lao PDR over the years, but this situation varies across border checkpoints. In particular, Viet Nam's trade deficit with Lao PDR can be observed at Bo Y–Phoukeua and Cha Lo–Na Phao border checkpoints, while the rest have a trade surplus.

International border crossing points play a crucial role in the cross-border trade between Lao PDR and Viet Nam. Over recent years, trade via international border gates have accounted for a vast majority of Viet Nam's total export-import turnover to/from Lao PDR (more than 99%) (Table 3). Major export commodities from Viet Nam to Lao PDR are steel, iron, fruits, vegetables, petroleum products, and vehicles, while major import commodities from Lao PDR to Viet Nam are rubber, timber, and fertiliser (General Department of Viet Nam Customs, 2020).

Table 3. Trade between Lao PDR and Viet Nam via Border Checkpoints

(including electricity export–import, excluding the exchange of commodities amongst border communities)

Border checkpoints	2016				2017				2018			
TOTAL	**733,070,922**				**810,249,420**				**919,716,654**			
	Export (US$)	**Rate (%)**	**Import (US$)**	**Rate (%)**	**Export (US$)**	**Rate (%)**	**Import (US$)**	**Rate (%)**	**Export (US$)**	**Rate (%)**	**Import (US$)**	**Rate (%)**
International border checkpoints between Viet Nam–Lao PDR												
Bo Y – Phoukeua	53,198,218	11.9	81,565,337	29.1	48,239,476	9.6	82,535,834	26.8	39,949,258	6.9	108,841,225	31.7
Cau Treo – Nam Phao	173,342,595	38.9	36,804,343	13.1	213,758,584	42.6	39,848,194	13	221,082,409	38.3	36,177,411	10.5
Cha Lo – Na Phao	51,837,578	11.6	87,518,889	31.2	54,372,730	10.8	88,465,967	28.7	49,042,248	8.5	90,018,099	26.2
Lao Bao – Dansavanh	101,567,129	22.8	35,174,514	12.5	110,814,145	22.1	71,340,405	23.2	180,026,532	31.2	68,105,048	19.8
La Lay – Lalai	19,613,185	4.4	22,688,172	8.1	23,608,794	4.7	17,988,801	5.8	30,323,215	5.3	28,699,599	8.4
Nam Can – Namkan	21,158,669	4.7	2,259,038	0.8	22,989,821	4.6	1,474,181	0.5	29,617,741	5.1	3,007,152	0.9
Tay Trang – Pang Hok	**14,628,919**	**3.3**	**842,177**	**0.3**	**14,758,980**	**2.9**	**324,614**	**0.1**	**16,615,223**	**2.9**	**2,535,459**	**0.7**
Na Meo – Nam Soy	9,924,205	2.2	6,495,860	2.3	9,668,396	1.9	5,185,807	1.7	6,529,939	1.1	4,762,592	1.4
TOTAL		**99.8**		**97.5**		**99.2**		**99.8**		**99.5**		**99.7**
National Border Checkpoints between Viet Nam–Lao PDR												
Nam Giang – Daktaoknoy	372,417		3,503,141		3,558,180		356,796		2,418,600		444,196	
Huoi Puoc – Nason	353,492		225,741		277,136		122,940		37,004		448,765	
Chieng Khuong – Bandan	110,308		22,404		57,634		-		391,728		20,944	
A Dot – Ta Vang	15,739		34,742		74,337		-		86,272		-	
Hong Van – Cutai	-		203,016		-		-		-		-	
Long Sap – Pahang	-				-		-		-		1,569	
Thong Thu – Namtay	-		1,384,312		-		164,759		-		135,546	
Thanh Thuy – Nam On	-		36,447		-		17,812		-		32,489	
Cao Veu – Thoong Phila	-				-		4,121		-		10,894	
Na Cai – Sop Dung	-		486,588		-		18,840		-		11,000	
Tay Giang – Kaleum	-				-		-		-		49,609	
Ca Roong – Nong Ma	-		1,167,605		-		197,976		6,054		-	

Source: Data provided by General Department of Viet Nam Customs (Interview on 17 December 2019).

Amongst eight international border checkpoints, Cau Treo-Nam Phao and Lao Bao-Dansavanh are the most vibrant gates in terms of export activities with the highest proportion of Viet Nam's total export turnover to Lao PDR (38.3% and 31.2%, respectively, in 2018), while Bo Y–Phoukeua and Cha Lo–Na Phao are the most active border gates in terms of import activities with the highest proportion of Viet Nam's total import turnover from Lao PDR (31.7% and 26.2%, respectively, in 2018). At the same time, export and import values via Tay Trang–Pang Hok international border checkpoint accounted for only 2.9% and 0.7% of Viet Nam's total export and import value in 2018. Viet Nam's import value via the Tay Trang–Pang Hok border gate had the lowest ranking amongst eight international gates.

Table 4. Cross-border Movements of Cargoes via Tay Trang Border Gate
(including the exchange of commodities amongst border communities)

No.	Year	Volume of cargo import (tonnes)	Volume of cargo export (tonnes)	Total volume (tonnes)	Value of cargo import (US$)	Value of cargo export (US$)	Value of cargo import–export (US$)
1	2010	7,975	3,265	11,240	2,270,495	1,085,952	3,356,447
2	2011	16,353	7,851	24,204	3,745,855	1,857,807	5,603,662
3	2012	32,146	29,562	61,708	12,900,911	5,001,221	17,902,132
4	2013	18,014	119,938	137,952	21,554,575	7,947,059	26,501,634
5	2014	210,129	4,362	214,491	18,627,267	9,058,990	27,686,256
6	2015	112,924	4,156	117,080	17,880,243	11,558,428	31,661,880
7	2016	66,726	4,357	71,083	15,049,807	6,310,614	21,360,421
8	2017	72,032	10,068	82,100	15,044,807	14,894,307	29,939,114
9	2018	102,022	24,958	126,980	33,256,720	7,235,916	40,492,636
10	11M/2019	204,067	53,490	257,557	65,166,926	8,800,267	73,967,192
	TOTAL	**842,388**	**262,007**	**1,104,395**	**205,497,606**	**65,166,868**	**278,471,374**

Source: Data provided by Tay Trang Customs Sub-Department (Interview on 9 December 2019).

According to the statistics of Tay Trang Customs Sub-Department,[1] despite limited export–import volume and value, trade relations between Viet Nam and Lao PDR via the Tay Trang–Pang Hok border gate have recently been improving. For example, trade value between Viet Nam and PDR via Tay Trang–Pang Hok border gate in 2018 nearly doubled that of 2017 and it is estimated that the figure in 2019 will double that of 2018 (see Table 4).

Major export commodities are construction materials such as stone, cement and steel (for China's hydropower and road construction projects in Lao PDR), agricultural products (paddy rice) and temporary import and re-export goods (via Lao PDR to China, mainly via Phongsaly and Khua). Especially since early 2019, there are newly exported commodities, namely durians and sweet potatoes from southern provinces of Viet Nam, that are transited via the northern provinces of Lao PDR to China. Trucks with exported durians are permitted to go straight through without trans-shipment, whereas trucks with exported sweet potatoes are

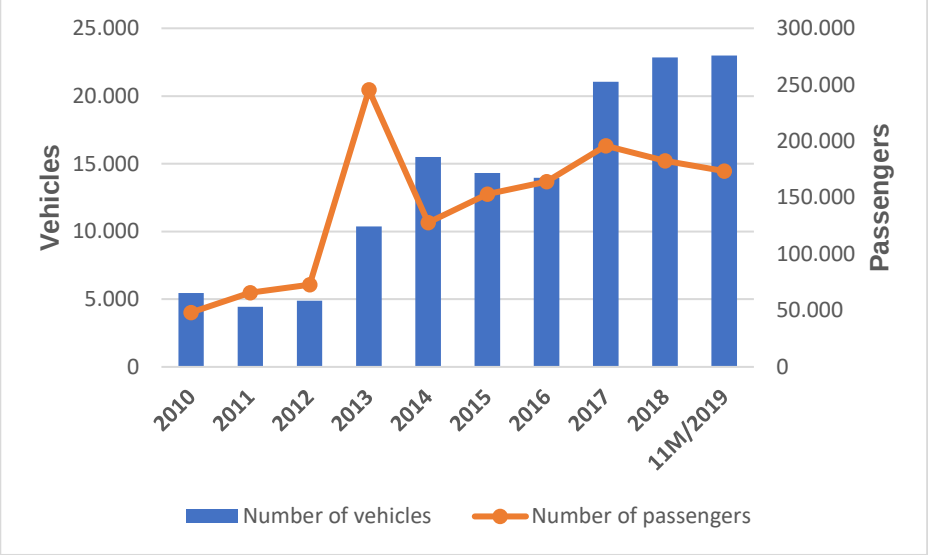
[1] Interview on 9 December 2019.

required to be trans-shipped. Cargoes are exported and transited via Lao PDR only to China, not to Thailand or Myanmar. Major import commodities are mainly forestry goods, especially thysanolaena (to make brooms).

Cross-border transport

The movement of vehicles and people between Viet Nam and Lao PDR is permitted through eight international-level border checkpoints and seven national-level border checkpoints. Vietnamese trucks are allowed to pass the border and travel within Lao PDR. The main purpose of people-to-people exchanges via Lao PDR–Viet Nam border checkpoints are business and tourism (both sides), and medical care and education (mostly from Lao PDR).

Figure 2. Cross-Border Movements of Vehicles and Passengers via Tay Trang Border Gate



Source: Data provided by Tay Trang Customs Sub-Department (Interview on 9 December 2019).

Thanks to the 2001 Agreement on Road Transport between Lao PDR and Viet Nam, both countries experienced a growing number of people and vehicles crossing the border gates over the past years. For instance, the number of vehicles crossing through Tay Trang border checkpoint has risen sharply from 13,957 in 2016 to 22,999 in the first 11 months of 2019, while the number of passengers jumped from 164,096 to 173,503 (Figure 2).

Table 5. Cross-Border Movements of Vehicles and Passengers via International Borders, 2018

Border checkpoints	Number of passengers	Number of vehicles
Cau Treo	560,367	111,224
Lao Bao	539,220	120,120
Bo Y	251,530	33,060
Cha Lo	195,000	98,000
Tay Trang	182,717	22,850

Source: Authors' compilation using data collected from various materials.

Nevertheless, compared to other international border checkpoints such as Cha Lo, Cau Treo, Lao Bao, and Bo Y, the number of people and vehicles passing the Lao PDR–Viet Nam border at Tay Trang–Pang Hok remained limited. In 2018, the number of people and vehicles crossing Cha Lo border checkpoint reached nearly 195,000 passengers and more than 98,000 vehicles, respectively; the figure at Cau Treo border checkpoint was 560,367 passengers and 111,224 vehicles, whereas at Tay Trang border gate it was 182,717 passengers and 22,850 vehicles (see Table 5). This can be attributed to economic conditions in neighbouring provinces in Lao PDR (mainly mountainous and poor provinces), which result in its low demand of goods exchange and tourism services, etc.

Regarding the frequency of bus transportation service through the Tay Trang–Pang Hok border checkpoint, according to the agreement between the six northern provinces of Lao PDR and Dien Bien province, each province of Lao PDR is permitted to operate one passenger bus per day to Viet Nam and stop at the bus terminal in Dien Bien Phu city. In reverse, Dien Bien is permitted to operate six passenger buses to Lao PDR per day, particularly to Phongsaly, Oudomxay, Luang Prabang, Bokeo, Luang Namtha, and Xayabury (see Table 6).

Table 6. Frequency of Bus Routes through Dien Bien–Tay Trang Border Checkpoint

Route	Length (km)	Frequency (times/day)	Price (US$)
Dien Bien – Phongsaly	~308	2 (1 for each side)	~15
Dien Bien – Oudomxay	~210	2 (1 for each side)	11
Dien Bien – Luang Prabang	~410	2 (1 for each side)	23
Dien Bien – Bokeo	~443	2 (1 for each side)	~25
Dien Bien – Luang Namtha	~320	2 (1 for each side)	15
Dien Bien – Xayabury	~522	2 (1 for each side)	~30

Source: Authors' compilation using data collected from interviews and various materials.

Regarding the fare and duration of these routes, the transportation cost is higher in Lao PDR than in Viet Nam due to longer distances and higher fuel prices. For example, fuel in Lao PDR costs 1.5 times more than in Viet Nam. In general:

Cost = VND1,100/ km x Distance (applied for international routes)

= VND600/km x Distance (applied for domestic routes)

Duration = Distance/Speed (35–40 km/h)

3. Physical Infrastructure

3.1. Current status of physical infrastructure along Hai Phong–Tay Trang section

- **Road quality**

Hai Phong–Tay Trang route runs along AH14 (Hai Phong–Ha Noi) and AH13 (Ha Noi–Tay Trang), with five main sections, including Hai Phong–Ha Noi, Ha Noi–Hoa Binh, Hoa Binh–Son La, Son La–Dien Bien, and Dien Bien–Tay Trang. In general, the quality of roads from Hai Phong to the Tay Trang border checkpoint is good, except for a few sections that need to be improved. Based on the Asia Highway Standard, all the road sections along Hai Phong–Tay Trang are of Class III (at the desirable standards), with 100% asphalt concrete surface; 93.5% are in 'fair' surface condition, and 6.5% in 'good' surface condition; and 80% are two-lane roads, while the rest are four-lane highways.

Annex 2 illustrates the specifications of all sections along the Hai Phong–Tay Trang route and points out that the roads along the Hai Phong–Ha Noi section are in good condition (100% flat terrain and four-lane highways or expressways). Yet, due to geographical features, there are several bottlenecks along this route, such as NH6 from Long Luong commune, Van Ho district, Son La province (Km155) to Tuan Giao–Dien Bien, especially Pha Din Mountainous Pass (50 km long); and NH279 from Dien Bien Phu city to Tay Trang border gate, especially Na Loi Mountainous Pass (Km67+00–Km69+750; 7 km long) (close to Dien Bien Phu city); and Tay Trang Mountainous Pass (Km59–Km116).

The worst route belongs to NH279 from Dien Bien Phu city to the Tay Trang border gate (33 km long, Km78 [formerly known as Km83]–Km116) and linking to NH2E in Lao PDR. This section is 100% mountainous terrain with narrow right of way width (<=10m), narrow carriageway width (6–7 m), tight horizontal curves, and no sidewalk, and thus is below the required standards of Class III. Despite being maintained and resurfaced every year, the road surface remains in poor condition and is often damaged (potholes, landslides, etc.) due to the high traffic volume of overloaded trucks passing by. The road quality of the Dien Bien–Tay Trang route is even worse than NH2E (in Lao PDR), which was repaired and upgraded by the Viet Nam Government's fund. The roads from Dien Bien Phu city to Tay Trang are not only curved, steep, and dusty, with a lot of potholes, but also appear to be directly exposed to damage.

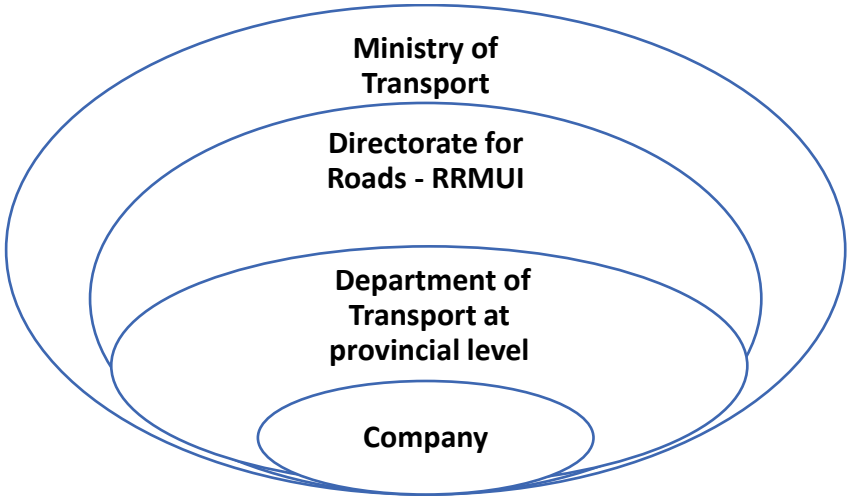
- **Quality of infrastructure**

i. **High traffic volume**: According to officials from the Directorate for Roads of Viet Nam, traffic volume along the Ha Noi–Tay Trang route has been growing since China closed some border crossing points with the northern provinces in 2019. In Quarter IV/2019, at the Mai Chau station (Km4+250) on NH6 (Son La province), the average daily number of vehicles was estimated at 2,024 (at least four-wheel vehicles, excluding motorcycles and bicycles). Despite poor road quality of the NH279, at Km35+200 (Muong Ang district), this figure reached 1,369 vehicles, more than 30% of which were heavy trucks.

ii. **Damage level of surfaces**: Based on the UNESCAP (2019) statistics, the road surface of the Hai Phong to Chui Bridge, Ha Noi route (106 km long) is quite good, with 37% in good condition, and the rest in fair condition. At the same time, the surface condition of all the roads along the Ha Noi to Tay Trang border checkpoint section is classified as 'fair'; however, from Dien Bien Phu city to the Tay Trang border checkpoint section, it is actually in bad condition. The road has been severely affected by overloaded trucks (stone and cement trucks going from/to a quarry and cement plants); roadside stone-mining activities at Tay Trang mountainous pass; and weather conditions, especially during the rainy season, while the local authority seems to manage these activities and road quality poorly.

iii. **Vulnerability to weather conditions**: From June to the end of September, drivers face a high risk of landslides as a consequence of a long-lasting and erratic rainy season, with it occasionally taking 3–4 hours for a trailer to get to Tay Trang border gate from Dien Bien Phu city. If a driver is not good enough, or not familiar with this route, he cannot pass bad curves, and may cause congestion. In winter, from September to December, fog also usually prevents drivers from observing the road.

Figure 3. Tiers of Governing Agencies of Hai Phong–Tay Trang Route



RRMUI = Regional Road Management Unit I
Source: Directorate of Roads Viet Nam, 2020

- **Road governing agencies**

In addition to the Ministry of Transport, which manages road, rail, inland waterway, sea, and air transport nationwide, and public services in general, there are three other layers responsible for managing the Hai Phong–Tay Trang border checkpoint route (see Figures 3 and 4).

i. **Directorate for Roads of Viet Nam**: This has two main functions, including management of roads, and maintenance and development of the road system. Under the Directorate for Roads of Viet Nam, the Regional Road Management Unit I (RRMU) is assigned for road management and maintenance, which is divided into RRMU I.1 specialising in the NH6, RRMU I.2 for NH279, and RRMU I.6 for NH5.

ii. **Department of Transport at provincial level (local authority)**: In accordance with the Law on the Capital No. 25/2012/QH13, Ha Noi Department of Transport is authorised to manage the section from Nga Tu So, Ha Noi to Xuan Mai, Ha Noi (NH6), including the construction and maintenance of national routes within the city.

iii. **Company 222, 224, and 226 or contractual companies under BOT model for major sections**: In particular, the Civil Engineering Investment and Construction Joint Stock Company (Company 222) is in charge of road management along the route from Dong Tien, Hoa Binh to Son La; Road Management and Construction One-member Limited Company (Company 224) along the route from Moc Chau, Son La to Son La, Dien Bien; and Road Management and Construction One-member Limited Company (Company 226) along the route Son La–Tay Trang.

Figure 4. Governing Agencies of Sections along Hai Phong–Tay Trang Route

NH	Section	Governing agencies	Company
5	Hai Phong–Ha Noi	RRMU I.6	BOT
6	Nga Tu So, Ha Noi–Xuan Mai, Ha Noi	Ha Noi Department of Transport	
	Xuan Mai, Ha Noi–Hoa Binh	RRMU I.1	BOT Hoa Lac No. 222
	Hoa Binh–Moc Chau	RRMU I.1	No. 222
	Moc Chau–Son La	RRMU I.1 (VRAMP project) *	No. 224
279	Son La–Tay Trang	RRMU I.2	No. 226

BOT = build-operate-transfer; NH = National Highway, RRMU = Regional Road Management Unit, VRAMP = Viet Nam Road Asset Management Project.
Note: (*) VRAMP projects run on the basis of a Performance Base Contract.
Source: Data provided by Directorate for Roads of Viet Nam, 2020

- **Border facilities at border checkpoints**

Regarding working time, procedures for trade, transited vehicles, and immigration, the working time varies across border checkpoints, which depends on the agreement between the governments of Viet Nam and Lao PDR. For example, at Lao Bao border gate, the working hour is from 7am to 10pm, while Tay Trang border checkpoint opens at 7am and closes at 7:30pm, but there are staff members working overnight in case of an emergency, particularly a medical emergency (patients from Lao PDR are sent to Viet Nam's hospitals for treatment).

The number of officials working at Tay Trang Customs Sub-Department is 22, including tenure and contract staffs. Since Tay Trang Customs Sub-Department is in charge of three border gates, namely Tay Trang international border gate, Huoi Puoc national border gate, and A Pa Chai local border gate, these staffs also have responsibilities for Huoi Puoc and A Pa Chai border checkpoints.

The procedures for cross-border trade are stipulated in the Decree No. 59/2018/ND-CP dated 20 April 2018 (amended Decree No. 08/2015/ND-CP dated 21 January 2018) on customs procedures, inspection, supervision and control procedures. In addition, procedures for custom declaration are specified in Article 16 of Circular No. 38/2015/TT-BTC (amended in Circular No. 39/2018/TT-BTC dated 20 April 2018) by the Ministry of Finance. Procedures for declaration of transited vehicles are specified in Articles 74 and 75 of Decree No.08/2015/ND-CP (amended in Article 74 of Decree No. 59/2018/ND-CP dated 20 April 2018) by the Government. In terms of immigration activities, since 1 February 2019, Tay Trang international border gate has become a checkpoint for foreigners holding e-visas upon entry or exit (under the Decree No. 17/2019/ND-CP). Tay Trang Customs Sub-Department and Border Safeguard Station are responsible for controlling and supervising goods and vehicles through the border.

The average time for cargo clearance and transited vehicles or passengers ranges from around 10 to 30 minutes, depending on the results of C/O classification and the duration of the specialised inspection, which takes about 30–50 hours. Tay Trang Customs Sub-Department has applied e-customs since 2014.

Table 7 shows custom fees for goods and vehicles crossing by Tay Trang border checkpoint.

Table 7. Fees for Regulated Vehicles at Tay Trang Border Checkpoint

Type of regulated vehicles	VND/per entry or exit
Vehicles (weighing less than 2 tonnes) or similar vehicles used to transport vegetables for export	50,000
Vehicles (weighing from 2–4 tonnes)	100,000
Vehicles (weighing from 4–10 tonnes)	200,000
Vehicles (weighing from 10–18 tonnes) or 20-feet trailer trucks	400,000
Vehicles (weighing up to 18 tonnes) or 40-feet trailer trucks	600,000
Passenger cars (fewer than 10 seats)	40,000
Passenger cars (10–30 seats)	60,000
Passenger cars (up to 31 seats)	100,000

VND = Viet Nam dong.
Source: Data collected at Tay Trang Customs Sub-Department.

Regarding infrastructure at Tay Trang, the international border gate invested in 2016 in 14 storage facilities, though they have not yet been put into operation due to low demand. As such, the Tay Trang Customs Department's infrastructure is poor. Though it does have luggage scanners, electronic scales, and cameras, there is no container scanner, cooling storage, parking lot, warehouse, or border economic zone. However, the officials of the General Department of Viet Nam Customs affirmed that the government can provide these devices, but it is unnecessary since the volume of goods exchange remains limited.

In terms of loading and unloading services at Tay Trang border gate, the People's Committee of Dien Bien province contracted the Uy Vu Dien Bien company to provide loading and unloading services. Uy Vu Dien Bien charges an infrastructure fee of VND600,000 for each transited vehicle. Logistics companies all oppose the fee.

3.2. Future plans for improvement, expansion, maintenance, or new construction

- **AH13**

With a total investment of VND1.05 trillion, the Ministry of Transport in 2015 decided to renovate and upgrade NH279 from Class V (mountainous) to Class IV (mountainous).[2] Capital allocation for site clearance was completed, whereas that for project implementation has been delayed. This project has been postponed since 2015 in accordance with Resolution No. 11/NQ-CP dated 24 February 2011. The midterm public investment plan '2021–2025: Ministry of Transport' addresses road rehabilitation and upgrading of the Dien Bien–Tay Trang route (including bypass roads in both Dien Bien Phu city and Muong Ang district) according to Decision No. 1943/QD-BGTVT dated 14 October 2019 by the Ministry of Transport. In addition, the Ministry of Transport and Directorate for Roads of Viet Nam annually budget for regular maintenance and repair of heavily damaged roads on the Dien Bien Phu–Tay Trang section.

[2] Based on Viet Nam Road Classification.

NH6: The road linking Hoa Binh to Son La and Dien Bien is expected to be upgraded into a highway and put into Viet Nam's expressway network development plan to 2020 and its vision towards 2030, as approved by the Prime Minister in Decision No. 326/QD-TTg dated 1 March 2016. Moreover, there is a proposal to rehabilitate and upgrade the AH13 component in Viet Nam via the left bank of the Da river (not along NH6).

- **AH14**

The Ministry of Transport has plans to upgrade some sections along the AH14 to meet the requirements of Asia Highway Standard Class III, especially with respect to developing a new NH5 (Hai Phong–Ha Noi).

Though the budget for road surface repair and drainage comes from the Road Maintenance Fund, regulations pertaining to the Fund create difficulties for road quality improvement and maintenance. This fund is to be used only for road maintenance rather road extension (for example, it cannot be used to expand road width), which hampers the ability to upgrade the road to the Asia Highway Standard. Additionally, the Central Road Maintenance Fund has insufficient capital to manage and maintain the roads.

- **Tay Trang border gate's infrastructure**

Tay Trang Customs Sub-Department plans to develop a border economic zone between Tay Trang and Pang Hok border checkpoint.

4. Institutional Arrangements

Viet Nam signed the Greater Mekong Sub-region Cross-Border Transport Agreement (GMS–CBTA) on 26 November 1999 and ratified all annexes and protocols in 2009 (ADB, 2011). This agreement is considered an important institutional mechanism for Viet Nam to reduce non-physical barriers and facilitate the cross-border movement of goods and people. The agreement covers many areas including transport, customs, health inspection (sanitary/phytosanitary and quarantine) and immigration.

Viet Nam has participated in meetings of the GMS–CBTA Joint Committee and subcommittee for the negotiation, finalisation, and ratification amongst six GMS countries (see Table 8); however, the implementation of the agreement has not progressed due to differences in national laws/regulations amongst country members and an infrastructure gap.

Table 8. GMS–CBTA Meetings of Joint Committee

Meetings	Avenue	Year
1st GMS–CBTA Meeting of the Joint Committee	Phnom Penh, Cambodia	30 April 2004
2nd GMS–CBTA Meeting of the Joint Committee	Beijing, China	20 March 2007
3rd GMS–CBTA Meeting of the Joint Committee	Vientiane, Lao PDR	17 June 2010
4th GMS–CBTA Meeting of the Joint Committee	Nay Pyi Taw, Myanmar	22 November 2013
5th GMS–CBTA Meeting of the Joint Committee	Chiang Mai, Thailand	16 December 2016
6th GMS–CBTA Meeting of the Joint Committee	Ha Noi, Viet Nam	15 March 2018
7th GMS–CBTA Meeting of the Joint Committee	Siem Reap, Cambodia	13 March 2019

GMS–CBTA = Greater Mekong Sub-region Cross-Border Transport Agreement, Lao PDR = Lao People's Democratic Republic.
Source: Authors' compilation.

Cross-border transport institutional arrangements

Although Viet Nam and Lao PDR are signatories to the GMS–CBTA, implementation has mainly been undertaken at the Lao Bao–Dansavanh border checkpoint. As such, the procedures for cross-border transport at Tay Trang border gate are still applied in accordance with the previous bilateral agreements, namely: i) the Agreement on road motorised vehicle facilitation between Viet Nam and Lao PDR signed 23 April 2009; ii) the Protocol for the implementation of the Agreement on road motorised vehicle facilitation between Viet Nam and Lao PDR signed on 15 September 2010; and iii) Circular No. 88/2014/TT-BGTVT regarding the guidance on implementation of certain articles of the Agreement on road motorised vehicle facilitation between Viet Nam and Lao PDR and its Protocol.

The GMS–CBTA is designed to simplify procedures for people crossing the border; however, vehicles and people crossing the border are required to show various documentations. For instance, at Tay Trang border checkpoint, vehicles and drivers from Viet Nam and foreign origins seeking entry or exit must present the following documents: 1) Passport or laissez-passer, border identity card; 2) Vehicle driving license; 3) Vehicle registration certificate; 4) Cross-border transport permit (pictures below); 5) Freight/passenger transportation permit (if any); 6) Vehicle technical safety and environment protection certificate; 7) Vehicle insurance certificate (if any); and 8) Quarantine certificate.

Moreover, vehicles crossing any border between Viet Nam and Lao PDR are required to carry a GMS cross-border transport permit, which is issued by governing agencies from each side

(Viet Nam or Lao PDR).[3] From the Viet Nam side, the governing agencies having the right to issue cross-border transport permits include Directorate for Roads of Viet Nam, and the Department of Transport at the provincial level. From the Lao PDR side, they are the Ministry of Public Works and Transport of Lao PDR, and the Department of Transport and the Department of Public Works and Transport at provincial levels and relevant agencies. A GMS cross-border transport permit includes basic information: 1) issuing authority; 2) beneficiary of permit; 3) period of validity; and 4) vehicle registered number.

Figure 5: Viet Nam–Lao PDR cross-border transport permit

(the image on the right must be stuck on the vehicle).

Source: Taken by IWEP on 10 December 2019.

A Memorandum of Understanding on the Early Harvest Implementation of the CBTA signed in March 2018 allows each GMS country to issue a quota of 500 Road Transport Permits and Temporary Admission Documents for goods and passenger vehicles registered, owned, and/or operated in their respective territories. Using these documents, foreign freight trucks have permission to enter another country's territory without trans-shipment; however, transportation operators seem to not to be interested in the employment of traffic rights stipulated in the Memorandum of Understanding. In Viet Nam, the number of transport companies registered remained limited: as of April 2019, there were four companies and 25 vehicles registering into this system in accordance with the Memorandum of Understanding.[4]

[3] Agreement on road motorised vehicle facilitation between Viet Nam and Lao PDR signed on 23 April 2009.

[4] https://www.thesaigontimes.vn/286928/It-doanh-nghiep-tham-gia-%22thu-hoach-som%22-ve-van-tai-tieu-vung-Mekong.html (accessed 29 April 2020).

Cross-border trade institutional arrangements

Cross-border trade between Viet Nam and Lao PDR is stipulated in the Agreement on the Transit of Goods between Viet Nam and Lao PDR signed in 2009 (amended in 2017). In addition, the procedures for cross-border trade are also set out in the above-mentioned documents. The Tay Trang Customs Sub-Department follows the guidance of the Agreement for transit goods so that it may ease the transit of goods through the territory of each country.

Amongst the 15 border checkpoints between Viet Nam and Lao PDR, the Lao Bao–Dansavanh border checkpoint appears to be the most active in terms of the implementation of the GMS–CBTA. This is demonstrated by the establishment of fast-track lanes, and the mechanisms of Single Stop Inspection (SSI) and Singe Window Inspection (SWI). Thanks to SSI, the duration of customs clearance decreased from 1.5 hours to 15 minutes. At the same time, there is no fast-track lane or SSI or SWI at Tay Trang-Pang Hok border gate due to the slow implementation of the GMS–CBTA.

The bottlenecks affecting the institutional arrangements for transport and trade at Tay Trang–Pang Hok border checkpoint are as follows:

1). **Poor infrastructure**: The SSI and SWI at Lao Bao–Dansavanh, Lao Cai–Hekou, and Moc Bai–Ba Vet border checkpoints are easily carried out thanks to good infrastructure and short distance between the two separate border checkpoints; whereas it is very difficult to implement SSI/SWI at the Tay Trang–Pang Hok border checkpoint because of its poor infrastructure and long distance between the border gates (6 km).

2). **Weak coordination**: Collaboration amongst agencies, especially between Tay Trang Custom Sub-Department and Dien Bien Department of Transport related to the implementation of CBTA, is sub-optimal. In addition, according to officials, the Dien Bien Department of Transport—one of the main agencies responsible for issuing Viet Nam–Lao PDR cross-border transport permits for vehicles—is not assigned to implement the CBTA.

5. Business Perspectives

5.1. Key informant interviewees

Key interviews with eight Vietnamese logistics and passenger transport enterprises that provide cross-border transport services via the Tay Trang–Pang Hok international border gate were conducted in December 2019 and January 2020, five in Dien Bien province, and three in Ha Noi, Viet Nam (see Table 9). All these enterprises confirmed their need to provide cross-border transport services.

Table 9. List of Informant Interviewees

No.	Respondents	Number of enterprises
1	Logistics companies	5
2	Passenger transport companies	2
3	Both	1
	Total	**8**

Source: Authors.

Both questionnaires and interviews were employed to obtain information from respondents. The questions addressed transportation along the Hai Phong–Ha Noi–Hoa Binh–Son La–Dien Bien–Tay Trang–Pang Hok border checkpoint route and provinces of Lao PDR, such as the major content of cargo, frequency, costs and charges, difficulties and challenges such as infrastructure and institutional obstacles, as well as expectations on cross-border transportation services to Lao PDR, Myanmar, and India.

5.2. Findings and discussion

- **Major content of cargoes**

A large proportion of Viet Nam's exports to Lao PDR consists of construction materials for China's transport and hydropower projects in northern Lao PDR or transit goods via Lao PDR to China (temporary import and re-export goods). In particular, cement from Dien Bien Cement Company is exported from Viet Nam via Tay Trang–Pang Hok to Sinohydro's hydroelectric site in Phongsaly, Lao PDR. In the rainy season, when this site is temporarily closed, the transportation of cement via Tay Trang–Pang Hok also stops.

In addition, agricultural products from the south or from Hai Phong in Viet Nam are also transported to Tay Trang–Pang Hok border checkpoint by Viet Nam transport enterprises. These agricultural products are transited via Lao PDR and then exported to China. Apart from being transited at Boten–Mohan on the Lao PDR–China border (about 260 km from Tay Trang–Pang Hok) and at Ban Mom Port on the Mekong River (about 340 km from Tay Trang–Pang Hok), observations showed that cargoes are also trans-shipped from Viet Nam trucks to Chinese trucks at Tay Trang–Pang Hok border checkpoint.

Most imports from Lao PDR to Viet Nam are Lao beer and thysanolaena or Thai goods such as MSG seasoning, clothes, and cosmetics (information from one company).

Figure 6: Trans-shipping in the area between the two border gates of Tay Trang and Pang Hok

*Transshipped goods are sweet potatoes. The sacks of potatoes are stuck with a note stating that the importing company is a Lao enterprise. The truck on the left carries the license plate of Yunnan Province, China. The right truck has a number plate from a southern province of Viet Nam.
Source: Taken by IWEP on 9 December 2019.

- **Volume of trade and people exchange**

Compared to other international border checkpoints between Viet Nam and Lao PDR such as Lao Bao–Dansavanh and Cha Lo–Na Phao, key respondents affirmed that the volume of trade at the Tay Trang–Pang Hok border gate remained small. In Dien Bien province, there are only two enterprises (owning 27 licensed buses) providing passenger transportation services by registered fixed routes, six enterprises with 16 vehicles providing passenger transportation services by contract (by travel agencies or tourist groups), and 18 enterprises with 82 vehicles providing goods transportation services.

The authors also faced many difficulties in looking for logistics enterprises providing transportation services to Lao PDR, particularly to northern Lao PDR via Tay Trang border gate. This can be attributed to a low demand for goods and people exchanges between the northern provinces of Lao PDR and Viet Nam, which, in turn, increases the transportation cost along this route. The destination of Vietnamese logistics enterprises providing cross-border transportation services is only Lao PDR, not Myanmar or Thailand.

Business interviews show that, due to low demand for imports from Lao PDR, trucks and containers to Viet Nam are often empty. It is also observed that many cross-border bus passengers are small traders carrying goods loaded on the roof or inside (sometimes seats are removed for a cargo hold).

Cross-border passengers accounted for a small percentage of the respondents' transportation services. Instead, all the enterprises focused more on developing domestic transportation services due to higher demand and number of routes. Also, the opening of new routes to Lao PDR is difficult because of demand imbalance between Viet Nam and Lao PDR. While Vietnamese enterprises want to increase the number of cars and open new routes to Lao PDR, their Laotian counterparts have no demand for business expansion and route development to Viet Nam. Most of the passenger cars from Dien Bien Phu city to Lao PDR are 29-seat minibuses; however, hardly any seats are occupied. After crossing the Tay Trang–Pang Hok border checkpoint, there are several destinations for Vietnamese vehicles in northern provinces of Lao PDR, including:

1. Dien Bien Phu (end) – Khua (end);
2. Dien Bien Phu (end) – Phongsaly (end, but may stop at Khua in order to let passengers get off if bus departed from Viet Nam or get on if bus departed from Lao PDR);
3. Dien Bien Phu (end) – Xay, Oudomxay (end, but may stop at Khua);
4. Dien Bien Phu (end) – Luang Nam Tha (end, but may stop at Khua and Xay);
5. Dien Bien Phu (end) – Bokeo (end, may stop at Khua, Xay, Luang Namtha); and
6. Dien Bien Phu (end) – Luang Prabang (end, may stop at Khua and Xay).

Passengers from Lao PDR to Viet Nam have to change buses at Dien Bien Phu and take domestic buses, as few Lao PDR transportation businesses operate in Viet Nam.

- **Bottlenecks and challenges**

Almost no businesses know that the route from Ha Noi to Tay Trang border gate along NH6 and 279 is an Asian Highway, but all the respondents complained about the road quality of the AH13 component in Viet Nam. In general, from the viewpoint of surveyed logistics enterprises, the quality of roads from Ha Noi to Dien Bien Phu is fair, except for those that are deemed unfavorable for trucks, including Cun slope and Thung Khe, Chieng Dong, Pha Din mountain passes on NH6, Tang Quai mountain pass, and Na Loi slope on NH279 due to topographic characteristics (steep, curved, foggy, slippery asphalt pavements, or landslides). For instance, on the NH6, particularly the Son La–Dien Bien section, there are many curves; while the lane marking is continuous, trucks often encroach on the other lane; or at NH6 (Km44+200), there are often traffic accidents due to the lack of warning signs, especially when there is fog.

The road quality from Dien Bien Phu to Tay Trang border gate remains poor, with many curves and steep slopes, while, since 1997, the road has been maintained instead of being upgraded. More importantly, the section of NH279 from Dien Bien Cement Plant to the quarry at the foot of Tay Trang mountain pass is very poor and dusty. The key respondents believe that trucks overloaded with cement and stones have damaged the road.

Figure 7: NH279 at the foot of Tay Trang Mountain Pass

*The width of NH279 at the foot of Tay Trang Mountain Pass (21°16'37.0'N 102°58'35.9'E) is not enough for two large trucks. The road surface is ruined by heavy loaded trucks.
Source: Taken by IWEP at noon of 9 December 2019.

Moreover, the enterprises also face several institutional issues at the border and along the route.

First, border officials have a lunch break from 11:00am to 1:30pm on both the Viet Nam and Lao PDR sides, which makes long wait times for drivers and passengers. The wait times of migration/immigration processes at the border often last 1 hour on each side. If there is any foreign passenger from a third country, the time may be extended to 2 or 3 hours.

Second, customs fees collected on the Lao PDR side do not follow the rules; in many cases, there are no receipts. On Saturdays, Sundays, holidays, and during non-working times, in the Pang Hok border checkpoint, the customs fee is even higher. Customs fees at the two border gates are listed as follows:

Tay Trang border gate:

- VND50,000/vehicle (29-seat cars), paid by transportation companies;
- No fee applied for passengers;

Pang Hok border gate:

- LAK80,000/vehicle (weekdays); LAK150,000/vehicle (weekends and non-working time); and
- LAK20,000/passenger (weekdays), LAK30,000/passenger (weekends and non-working time).

Third, some of the logistics enterprises must pay a 'monthly guarantee', that is, bribes for the traffic inspectors, traffic police, customs officials, and border guards.

- **Expectations regarding cross-border transportation services to Lao PDR, Myanmar, and India**

Most of the key respondents do not expect to develop their services to India, while few have plans to reach more destinations in Lao PDR, Thailand, and Myanmar. However, the plan to expand cross-border transportation services to Lao PDR, Myanmar, and India may encounter some challenges:

First, there is a low demand for goods and people transportation via Tay Trang–Pang Hok border gate since Dien Bien and six northern provinces of Lao PDR are poor and there are no industrial parks/zones in this area.

Second, the capacity of Viet Nam logistics enterprises remains limited, while their competitiveness is not as high as with Thai enterprises'. Viet Nam freight forwarders are mostly small in terms of the number of full-time employees, the number of vehicles, and vehicle status. At the same time, there are few enterprises providing transportation services via Tay Trang border gate and most are in Dien Bien province. Moreover, as Thai and Chinese vehicles are permitted to enter Lao PDR, Viet Nam trucks/cars have no advantages in the north of Lao PDR, only in the central and the south.

In addition, Viet Nam logistics enterprises also lack knowledge of infrastructure connectivity in the GMS region. For example, none of the interviewed businesses knew that the Myanmar–Lao PDR Friendship Bridge has been in use since 2015 (Luang Namtha and Tachileik), while there was only one enterprise that knew about the Lao PDR–Thai Friendship Bridge in Bokeo and Chiang Rai.

Third, institutional barriers discourage expansion. A business in Dien Bien province mentioned its desire to open the Dien Bien Phu–Xayabury route. The Directorate for Roads of Viet Nam and Lao PDR's Department of Roads agreed, but the Xayabury government has not approved it. Other routes proposed by logistics enterprises such as Dien Bien–Vientiane, Dien Bien–Houn (Oudomxay), Dien Bien–Yot Ou (Phongsaly), Dien Bien–Boun Neua (Phongsaly), and Dien Bien–Long (Luang Namtha), have been approved by the Viet Nam Government, but not by the Lao PDR side.

Fourth, Vietnamese cars can only go to Lao PDR, but not to Thailand as a result of the difference between right-handed and left-handed drive.

6. Policy Recommendations and Ways Forward

The biggest obstacle to the development of a trilateral connection between northern Myanmar, northern Lao PDR, and northwestern Viet Nam lies in the low demand for cargo and passenger transportation. This obstacle is not easy to overcome. The economy of the northwest region in Viet Nam is probably more developed than its counterparts in Lao PDR and Myanmar, so Viet Nam has more conditions for promoting bridges along the AH13 corridor. Therefore, connecting northwestern Viet Nam to southwestern Yunnan, as well as Viet Nam to northern Thailand via northern Lao PDR, would help develop the connectivity between Viet Nam and northern Lao PDR and northern Myanmar. Exchange events between northwestern Viet Nam and northern Lao PDR are quite frequent in forms of bilateral cooperation. Trilateral events (Viet Nam–Lao PDR–Thailand, or Viet Nam–Lao PDR–Myanmar), as well as quadrilateral events (Viet Nam–Lao PDR–Thailand–Myanmar) should be enhanced to facilitate connectivity amongst these countries.

Another big hurdle comes from road quality in certain sections along the Hai Phong–Tay Trang border gate route. It is not necessary to upgrade the entire route given the low demand for goods and people exchanges and a plan to open an alternative route. Also, the Government and investors are willing to grant funds to upgrade roads if there is high possibility of growing demand. However, as NH6 and NH279 contribute to enhanced external connectivity and economic development of northwestern Viet Nam, the government should pay more attention to and spend more resources for the upgrading of roads and signaling systems at unfavorable points (for instance, the mountain passes and slopes of Cun, Thung Khe, Chieng Dong, Pha Din, Tang Quai, and Na Loi). In addition, the section of NH279 from Dien Bien Phu to Tay Trang cannot be replaced in the long run, so it is necessary to improve the road quality to ensure good connection with Lao PDR via Tay Trang–Pang Hok border gate.

Based on the reflections of transport enterprises and the authors' field observations, trucks on NH279 between Dien Bien Phu and Tay Trang need to be better controlled in order to prevent damage the road. Since many cement and stone trucks run on this section, the road between Dien Bien Phu and Tay Trang should be widened and upgraded using financial support from these cement and stone-mining enterprises. The trade-off between protecting NH279 and cement and stone production should also be seriously considered.

Viet Nam and Lao PDR customs agencies need to improve public services at Tay Trang–Pang Hok border gate, including reducing lunchtime, shortening time for procedures, and improving the transparency of procedures and fees.

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Annex 1. Lao PDR and Viet Nam Trade Relations 2016–2019

	2016			2017			2018			2019		
	Export	**Import**	**Total**	**Export**	**Import**	**Total**	**Export**	**Import**	**Total**	**Export**	**Import**	**Total**
With Lao PDR (US$)	477,757,435	345,655,184	823,412,619	520,429,097	369,043,140	889,472,237	595,202,784	436,715,567	1,031,918,351	700,843,261	461,826,168	1,162,669,429
Viet Nam's total value (US$)	176,580,786,635	174,803,799,524	351,384,586,159	215,118,607,296	213,006,717,300	428,125,324,596	243,697,324,373	236,868,855,739	480,566,180,112	264,189,366,962	253,070,916,399	517,260,283,361
Rate (%)	0.27	0.2	0.23	0.24	0.17	0.21	0.24	0.18	0.21	0.27	0.18	0.22

Lao PDR = Lao People's Democratic Republic.
Source: General Department of Viet Nam Customs, 2020.

Annex 2. Specification of Sections along Hai Phong–Tay Trang

Section	Length (km)	Terrain (km)			Lanes (km)		Surface condition (km)			No of major inter-sections	Bridges		
		Flat	Hilly	Mountainous	2 lanes	4 lanes	Good	Fair	Bad		Number	Length (m)	Vertical clearance <4.5 m
Chua Ve, Hai Phong (Km106)–Hong Bang, Hai Phong (Km92+460)	13.54	13.54				13.54	13.54						
Hong Bang, Hai Phong (Km92+460)–Hai Duong (Km77+830)	14.63	14.63				14.63	14.63			1	1	172.3	
Hai Duong–Hung Yen (Km33+720)	44.11	44.11				44.11		44.11		2	8	900.91	
Hung Yen (Km33+720–Km 11+135)	22.585	22.585				22.585		22.585		1	3	126.49	
Hung Yen–Chui Bridge, Ha Noi (Km0)	11.135	11.135				11.135	11.135			2			
Ha Noi (Km0)–Luong Son, Hoa Binh (Km38+000)	38	38			38			38		2	6	363.19	
Luong Son, Hoa Binh (Km38)–Dong Tien, Hoa Binh (Km70+932)	32.932			32.932	32.932			32.932					
Dong Tien, Hoa Binh (Km70+932)–Son La (Km153+000)	82.068			82.068	82.068			82.068					
Son La (Km155–km366+270)	213.27			213.27	205.43	7.84		213.27		3	25	1040.67	
Son La (Km366+270–Km388+207–Tuan Giao, Dien Bien	16.937			16.937	16.937			16.937		1	6	368.92	
Tuan Giao, Dien Bien (Km0)–Tay Trang, Dien Bien (Km116)	116			116	108.924	7.076		116		2	19	816.24	

Annex 2. Specification of Sections along Hai Phong–Tay Trang (Cont.)

Section	ROW width (km)		Carriageway Width (km)			Width of Median (km)		Type of shoulder (km)		Shoulder Width (km)		Sidewalk (km)		Class
	<=10m	10–30 m	6–7 m	7–14 m	>=14 m	<=1 m	>1 m	Hard	Soft	1–2 m	>=2 m	With	Without	
Chua Ve, Hai Phong (Km106)–Hong Bang, Hai Phong (Km92+460)		13.54			13.54		13.54		13.54		13.54	13.54		III
Hong Bang, Hai Phong (Km92+460)–Hai Duong (Km77+830)		14.63			14.63		14.63		14.63		14.63	14.63		III
Hai Duong–Hung Yen (Km33+720)		44.11			44.11		44.11		44.11		44.11	44.11		III
Hung Yen (Km33+720–Km 11+135)		22.585			22.585		22.585		22.585		22.585	22.585		III
Hung Yen–Chui Bridge, Ha Noi (Km0)		11.135			11.135		11.135		11.135		11.135	11.135		III
Ha Noi (Km0)–Luong Son, Hoa Binh (Km38+000)		38		38					38		38		38	III
Luong Son, Hoa Binh (Km38)–Dong Tien, Hoa Binh (Km70+932)		32.932		32.932					32.932		32.932		32.932	III
Dong Tien, Hoa Binh (Km70+932)–Son La (Km153+000)		82.068		82.068					82.068		82.068		82.068	III
Son La (Km155–Km366+270)	62.48	150.79	62.48	142.95	7.84		7.84		213.27		213.27	7.84	205.43	III
Son La (Km366+270–Km388+207–Tuan Giao, Dien Bien	16.937		16.937						16.937		16.937		16.937	III
Tuan Giao, Dien Bien (Km0)–Tay Trang, Dien Bien (Km116)	116		108.924		7.076		7.076		116		116	7.06	108.924	Below III

Source: UNESCAP, 2019

Annex 3. Volume of Traffic at Major Stations along NH6 and NH279

NH	Station	Minivan	Light-duty truck	Medium-duty truck (2 axles – 6 wheels)	Heavy-duty truck (3 axles)	Heavy-duty truck (4 axles)	Small passenger car	Large passenger car	Trailer	Total (>= 4-wheel vehicles)	Motorcycle	Bicycle
6	Km101+800	1,526	638	772	165	281	219	425	9	**4,035**	5,393	265
	Km162+200	570	230	271	135	232	87	161	-	**1,686**	1,110	-
	Km272+360	**Assigned for VRAMP**										
	Thuan Chau (Km334+470)	411	204	128	116	134	61	136	-	**1,190**	3,261	650
	Tuan Giao (Km382+450)	377	97	111	87	133	34	80	-	**919**	1,915	650
	Mai Chau (Km4+250)	504	415	503	197	164	250	261	-	**2,024**	3,925	1,171
279	Muong Ang (Km35+200)	390	143	274	277	150	70	65	-	**1,369**	2,797	1,904

NH = National Highway, VRAMP = Viet Nam Road Asset Management Project.
Source: Data provided by Directorate for Roads of Viet Nam, 2020

A Geographical Simulation Analysis of the Impacts of the Trilateral Highway and Its Eastward Extensions

Background paper

So Umezaki and Satoru Kumagai

Maps shown in the study are not to scale. All maps shown in this study are only for demonstrative and study purpose. The shape and boundaries and borders of countries/states shown here do not represent the actual size and shape of countries/states, and the actual size, shape and borders of domestic, national and international boundaries of country/countries shown in the figures/tables/charts and titles.

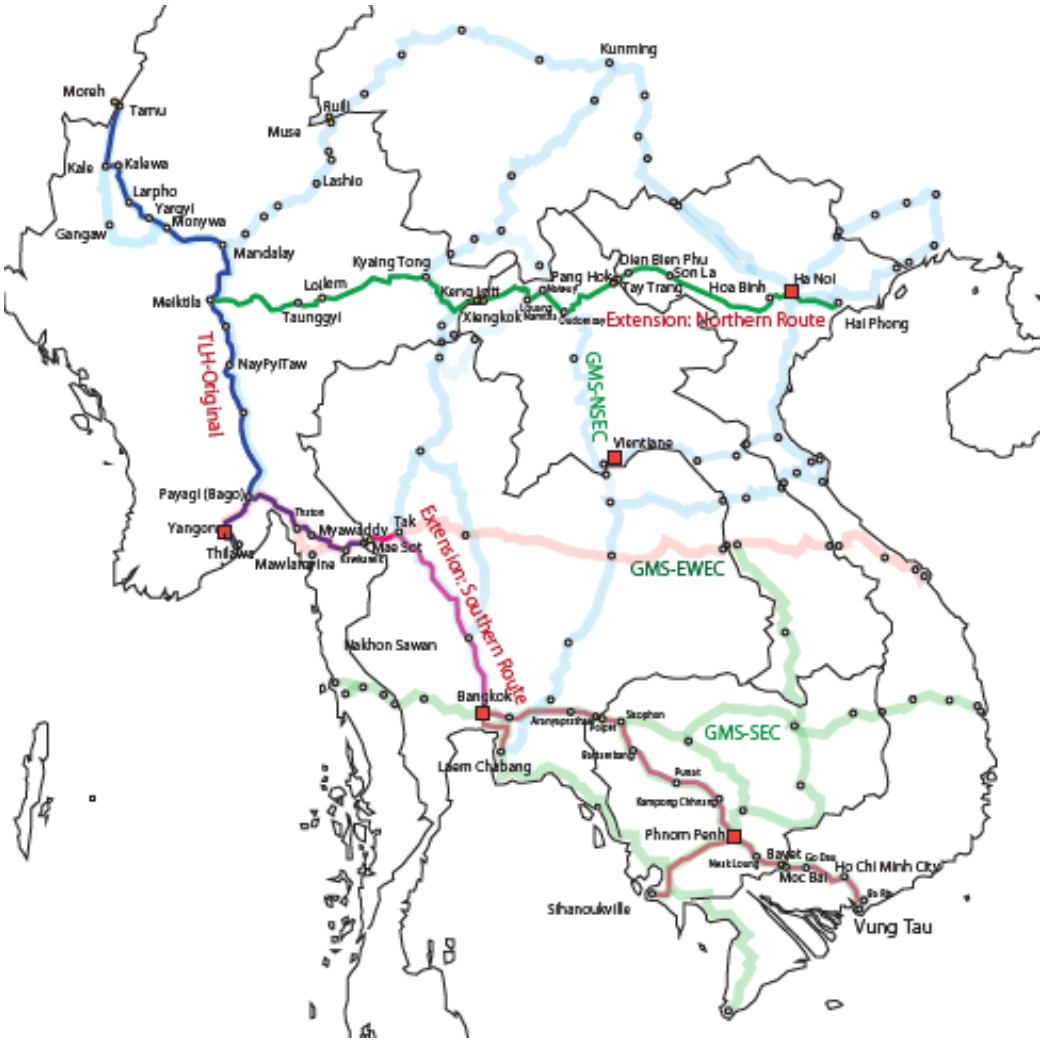
1. Introduction

The India–Myanmar–Thailand Trilateral Highway (TLH) was first conceived at the Trilateral Ministerial Meeting on Transport Linkages in Yangon in April 2002, where India, Myanmar, and Thailand agreed to make all efforts to establish trilateral connectivity by 2016. Since then, particularly after the change of government in Myanmar in 2011, progress has been made in the development of the TLH, including the opening of a new Myawaddy–Kawkareik bypass road (Thailand–Myanmar side) in 2015 and Integrated Check Post (ICP) at Moreh (India) in January 2019. The latter, however, is yet to be fully operational. The TLH is still a project under construction, and, therefore, its contribution to the economic growth and development of the region has not yet reached its potential.

Under the circumstances, the countries concerned started to consider the possibility of extending the TLH eastward to connect to the Lao People's Democratic Republic (Lao PDR), Cambodia, and Viet Nam. At the 16th ASEAN Highways Sub-Working Group Meeting (16th AHSWG) in August 2018, the Thai government proposed two potential routes for the eastward extension. As illustrated in Figure 1, the northern route branches off the original TLH at Meiktila in central Myanmar, runs eastward through Loilem, Kyaing Tong, and Keng Latt, then crosses the border at the Myanmar–Lao PDR Friendship Bridge to Xieng Kok in the Lao PDR. It then runs through Louang Namtha, Oudomxay, and Pang Hoc, crosses the border to enter Tay Trang in Viet Nam, runs through Dien Bien Phu, Son La, Hoa Binh, Ha Noi, and connects to Hai Phong. The southern route is a direct extension from Mae Sot in Thailand,

the terminal point of the TLH, and runs through Tak, Nakhon Sawan, Bangkok, Hinkong, Kabinburi, and Aranyaprathet. It crosses the border to Poipet in Cambodia, runs through Sisophon, Battambang, Kampong Chhnang, Phnom Penh, Neak Loung, and Bavet, crosses the border to Moc Bai in Viet Nam, runs through Go Dau, Ho Chi Minh City, Ba Ria, and connects to Vung Tau. The southern route has two branch routes to establish connectivity to international ports, one from Bangkok to Laem Chabang and the other from Phnom Penh to Sihanoukville.[1]

Figure 1. Trilateral Highway and Eastward Extension Routes



Source: Drawn by Authors based on ADB (2018b).

[1] The southern extension route overlapped with economic corridors under the Greater Mekong Subregion Cooperation (GMS) Programme led by the Asian Development Bank (ADB). The section between Mae Sot and Tak is on the East–West Economic Corridor (EWEC); the section between Tak and Bangkok is on the North–South Economic Corridor (NSEC); and the remaining sections are on the Southern Economic Corridor (SEC).

The objective of this study is to investigate the expected economic impacts of the development of the TLH and its eastward extension using the Institute of Developing Economies/Economic Research Institute for ASEAN and East Asia Geographical Simulation Model (IDE/ERIA–GSM).[2]

2. Model and Scenarios

2.1. IDE/ERIA–GSM

Since 2007, IDE–JETRO has been developing the IDE–GSM. The theoretical foundation of the IDE/ERIA–GSM, which is co-developed with ERIA, follows 'new economic geography', in particular Puga and Venables (1996), who captured the characteristics of multi-sector and country general equilibrium.[3]

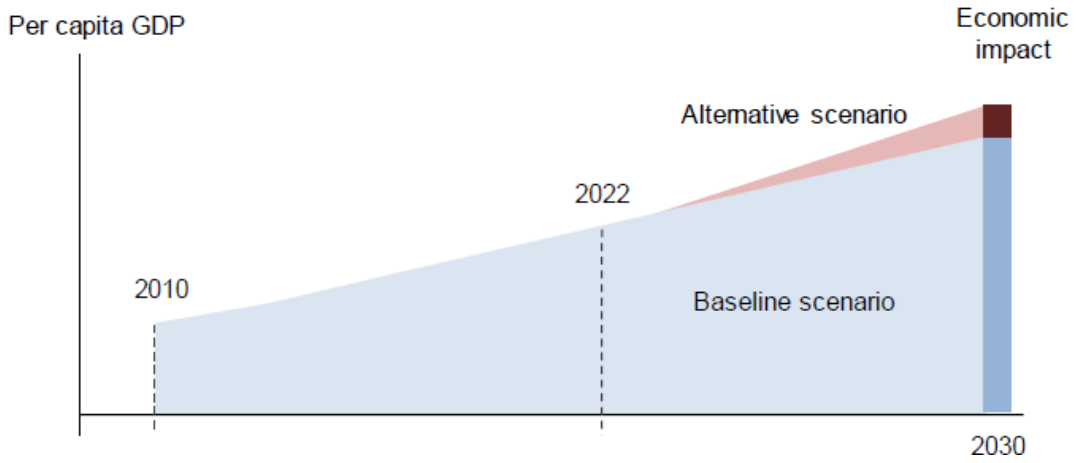
The IDE/ERIA–GSM features agriculture, five manufacturing sectors (automotive, electric and electronics, apparel, food processing, and other manufacturing), and the services and mining sectors. The model allows workers to move within countries and between sectors with frictions. A notable difference between the IDE/ERIA–GSM from that of Puga and Venables (1996) lies in the specification of the agricultural sector. The IDE/ERIA–GSM explicitly incorporates land size in its production and keeps its technology as constant returns to scale. This model incorporates the type of physical or institutional integration that will favourably or adversely affect regions of interests. It also incorporates the impact of policy measures to facilitate international transactions on the magnitude and location of trade traffic. These enable us to identify potential bottlenecks and how to reap the full benefits of economic integration. The basic structure of IDE/ERIA–GSM is depicted in Figure A1 in the Appendix. Each region possesses eight economic sectors, namely agriculture, mining, five manufacturing sectors, and the services sector.

Figure 2 shows the differences in gross regional product (GRP) between the baseline scenario and alternative scenarios through calculating the economic impact of the development of various logistics infrastructure. The baseline scenario assumes national and regional growth based on official statistics and international organisation estimations after 2010. The alternative scenario assumes that several logistics infrastructures (expressways) will be completed by 2025. We compare the GRP between these two scenarios in 2030. If the per capita GRP of a region under the scenario with specific criteria is higher (lower) than that

[2]A recent and comparable application of the IDE/ERIA–GSM is Keola and Kumagai (2019), who investigate the economic impacts of the Vientiane–Hanoi Expressway.
[3]The earlier version of IDE/ERIA–GSM is explained in Kumagai et al. (2013). For further details of the IDE/ERIA–GSM, see the Appendix of this paper.

under the baseline scenario, we regard this surplus (deficit) as a positive (negative) economic impact of the development of logistics infrastructure. It should be noted that the baseline scenarios have already assumed around 6% growth at the national level. In other words, the negative impacts do not necessarily mean that the GRP of a region or an industry would actually shrink compared to its current size. Instead, it just means that they would be smaller than what they might have expanded to, i.e. the baseline. More precisely, suppose the results predict that agriculture in region A would be –1% compared to the baseline in 2030. Moreover, suppose the baseline predicts agriculture would expand from 50 to 100, by whatever units, between 2025 and 2030. Out of 50, –1% is 0.2; therefore, it predicts that agriculture would expand from 50 to 99.8 instead of 100 in 2030.

Figure 2. Difference between the Baseline and Alternative Scenarios



GDP = gross regional product.
Source: IDE/ERIA–GSM Team.

2.2. Baseline and Alternative Scenarios

We conduct a simulation analysis of the following five alternative scenarios. In the IDE/ERIA–GSM, the quality of road infrastructure is categorised into four classes in terms of the average speed to connect one point with another. The average speed on road segments with standard quality is set at 38.5 kilometres per hour (km/h).[4] The status quo of the road infrastructure is classified with reference to the recent assessment of the GMS Economic Corridors by ADB (2018a–h). Basically, the average speed on the road segments with Class III or below, and/or those in 'poor' conditions, is set at 19 km/h. In addition, each of the five scenarios is simulated in two stages in terms of the quality of the road infrastructure; the first and the second stages represent 'moderate improvement' and 'significant improvement' to increase the average

[4]For more details, see Table A5 in the Appendix. The four classes are (1) very poor [walking speed: 4 km/h], (2) poor [19 km/h], (3) standard [38.5 km/h], and (4) highway quality [60 km/h].

speed to 38.5 km/h and 60.0 km/h, respectively.[5]

Based on the updated information on the status of the TLH and its potential extension routes obtained through our stocktaking studies, we set the baseline scenario as follows. Along the original alignment of the TLH, road sections under 'poor' quality, which are classified as '2' in the model, as of 2020 are (i) Kalewa–Yargyi (115 km), (ii) Thaton–Hpa-An (51 km), (iii) Hpa-An–Eindu (20 km), and (iv) Eindu–Kawkaleik (71 km). Road sections under 'poor' quality along the eastward extension routes are (v) Payangazu–Kalaw (76 km), (vi) Taunggyi–Loilem (91 km), (vii) Loilem–Takaw (177 km), (viii) Takaw–Kentung (190 km), (ix) Tarlay–Kyainglat (56 km), (x) Xieng Kok–Muang Sing (69 km) in the Lao PDR, and (xi) Tay Trang–Na Thin (19.2 km) in Viet Nam. Except for (x) and (xi), all 'bad' quality sections are in Myanmar. In addition, reflecting the fact that the Myanmar–Lao PDR Friendship Bridge, the border between Kyainglat in Myanmar and Xieng Kok in Lao PDR, is yet to be fully utilised as an international border gate, we set the baseline that Myanmar can use the bridge only for transit export to China, Viet Nam, and Thailand via the Lao PDR, meaning that Myanmar cannot export to the Lao PDR through the bridge. In addition, Myanmar cannot import through the bridge wherever the origin countries are. These are the elements of the status quo.

Scenario 1 **On-time completion of ongoing road infrastructure projects**

Most of the 'bad' quality sections have already been undergoing upgrading or improvement works with specific timelines for completion. The information on the design standards and timelines is reflected in alternative scenarios as the already prescribed future. Specifically, the following are included in this scenario.

- [Myanmar] The Kalewa–Yargyi section will be upgraded (class 2 → class 3) in 2022 and beyond, reflecting the fact that the upgrading work is planned to be completed in May 2021.
- [Myanmar] The Bago–Payagyi–Kyaikhto section will be upgraded (3 → 4) in 2025 and beyond, reflecting the fact that the bypass road is planned to be completed in December 2024.
- [Myanmar] The Thaton–Hpa-An–Eindu section will be upgraded (2 → 3) in 2025 and beyond, reflecting the ongoing and planned upgrading work by ADB and Thailand.
- [Myanmar] The Eindu–Kawkareik section will be upgraded (2 → 3) in 2021 and beyond, reflecting the fact that the road improvement will be completed in March 2020 and the Gyaing Kawkaleik Bridge is planned to be completed in May 2021.

[5]Although 'significant improvement' is expected to generate larger economic impacts, it will cost much more than 'moderate improvement'. It is a fundamental issue of policy domain to decide the quality of infrastructure by comparing the expected benefits and costs.

- [India/Myanmar] Improvements in border-crossing procedures at the Moreh/Tamu border in 2021 and beyond.
- [Myanmar/Thailand] Improvements in border-crossing procedures at the Myawaddy/Mae Sot border in 2021 and beyond.

Scenario 2a **Eastward extension (northern route)**

- Scenario 1
- [Myanmar] The Payangazu–Kalaw section will be upgraded (2 → 3) in 2021 and beyond, based on the observation of ongoing improvement work.
- [Myanmar] The Taunggyi–Loilem–Ta kaw–Keng Tung section will be upgraded (2 → 3) in 2025 and beyond. As of December 2019, foreigners' entry into this section is restricted for security reasons. However, in order to activate this extension route, normalisation of this section is necessary.
- [Myanmar] The Tarlay–Kyainglat section will be improved (2 → 3) in 2025 and beyond. Brownfield investment in this section has been listed in the Initial Rolling Pipeline of Potential ASEAN Infrastructure Projects (Initial Pipeline) under the Master Plan on ASEAN Connectivity 2025, which was revealed in June 2019.[6]
- [Lao PDR] The Xieng Kok–Muang Sing section will be upgraded (2 → 3) in 2025 and beyond.
- [Viet Nam] The Tay Trang–Na Thin section in Viet Nam will be upgraded (2 → 3) in 2021 and beyond, reflecting the ongoing repair and improvement works.
- [Lao PDR/Viet Nam] Improvements in border-crossing procedures at the Pang Hoc/Tay Trang border in 2021 and beyond.

Scenario 2b **Eastward extension (northern route) + internationalisation of the Myanmar–Lao PDR Friendship Bridge**

- Scenario 2a
- [Myanmar/Lao PDR] Internationalisation of the Myanmar–Lao PDR Friendship Bridge at the Kyainglat/Xieng Kok border in 2021 and beyond by removing specific settings in the baseline scenario to allow international trade between Myanmar and the Lao PDR, including transit trade via each country in the same way as other border points.

Scenario 3 **Eastward extension (southern route)**

- Scenario 1

[6]ASEAN Secretariat, 'ASEAN identifies potential infrastructure projects,' Press Release, 10 June 2019. According to World Bank et al. (2019), '(t)his project is at an early stage of development and it is understood that no studies on the project have been carried out to date', as of November 2019.

- [Thailand/Cambodia] Improvements in border-crossing procedures at the Ban Khlong Luek/Poipet border in 2021 and beyond.
- [Cambodia/Viet Nam] Improvements in border-crossing procedures at the Bavet–Moc Bai border in 2021 and beyond.

Scenario 4a **All**

- Scenario 2b
- Scenario 3

Scenario 4b **All (challenging)**

- Scenario 4a
- [All] Upgrade all TLH and eastward extension sections to 'highway quality' (3 → 4), enabling trucks to drive at 60.0km/h on average.

3. Simulation Results and Implications

3.1. By Country

The simulation results are shown in Figures 3 and 4. Tables 1–6 illustrate more details of the results of scenarios S1–S4b, respectively. At first glance, several characteristics can be pointed out. First, the impacts on India and Thailand are much smaller than those on Myanmar, both in terms of the difference in the value (Figure 3) and percentage (Figure 4), as expected from the fact that most of the TLH is in Myanmar's territory. Second, the impact of the internationalisation of the Myanmar–Lao PDR Friendship Bridge is very small, indicating that the potential demand for transportation crossing the border is limited. Relating to this point, the expected impact on the Lao PDR is small. Third, the comparison between S4a and S4b shows that the better the quality of the road, the larger the impacts are. Fourth, the expected impacts on Cambodia and Viet Nam crucially depend on the choice of the extension routes.

Scenario 1 (S1), together with the completion of the ongoing projects and improvements in border-crossing procedures at the Moreh/Tamu and Myawaddy/Mae Sot borders, implies the completion of the original alignment of the TLH. Under this scenario, Myanmar's gross domestic product (GDP) is expected to increase by 0.12% compared to the baseline in 2035, while the impacts on India and Thailand are also positive but very small. Reflecting the original alignment of the TLH, in which almost all road segments are in Myanmar's territory, Myanmar is expected to enjoy most of the gains from the TLH, amounting to 74.9% of the increase in GDP in the three countries, while Thailand and India share 22.0% and 3.1%,

respectively. Thailand and India have already invested in the construction of roads along the TLH. First, Thailand aided Myanmar to construct the bypass road between Myawaddy and Kawkaleik, which used to be the most significant bottleneck for road connectivity between Myanmar and Thailand. In addition, Thailand 'agreed to shoulder the B1.8 billion (US$52 million) cost for improving a 68 km road linking the towns of Eindu and Thaton in southern Myanmar' (Greater Mekong Subregion Secretariat, 2018). India has been assisting Myanmar in the construction of the Kalewa–Yargyi section of the TLH. It is important for each member of the trilateral cooperation to pay appropriate attention to the balance between the cost and benefit related to the TLH.

The impacts of the eastward extension routes differ significantly by country and by the choice of the route. The overall impact is larger in the case of the northern route (S2b), where the total gain in GDP in India, Myanmar, and Thailand amounts to US$677 million (Table 3), which is significantly more than US$509 million, the comparative figure for the southern route (S3) (Table 4). Myanmar will capture most of the gains in both cases. As expected, the southern route will benefit Cambodia and Viet Nam, while the expected benefit for the Lao PDR is very small, even in the case of the northern route. The difference between the results of S1b and S1a shows that the impact of the internationalisation of the Myanmar–Lao PDR Friendship Bridge is marginal, implying that the potential demand for trade across the Kyainglat/Xieng Kok border is limited. According to the World Bank et al. (2019), the estimated cost for improving the Tarlay–Kyainglat section (56 km) is US$71 million. It could cost more to pave the 69 km earthen section between Xieng Kok and Muang Sing in the Lao PDR. Again, it is important for Myanmar and the Lao PDR to examine deliberately the balance of the costs and benefits to realise this scenario (S2b).

Tables 3 and 4 allow us to compare the expected benefits of the two potential routes for the eastward extension. The total gains of the six countries (India, Myanmar, Thailand, Cambodia, Lao PDR, and Viet Nam) are slightly larger in the case of the northern route (S2b, US$686 million) than the southern route (S3, US$674 million). However, the distribution of the benefits is different. As mentioned above, the total expected gains for India, Myanmar, and Thailand in S2b are US$677 million, which comprises 98.7% of the total gains for the six countries. That is, the expected gains for Cambodia, the Lao PDR, and Viet Nam amount only to US$9 million (1.3%). In contrast, the southern extension route will benefit Cambodia and Viet Nam significantly, at US$97 million and US$68 million respectively (Table 4). That is, the southern route is much more preferable for Cambodia and Viet Nam, and the same for Lao PDR to a lesser extent, than the northern route. In addition, the expected impacts of the northern and southern routes need to be compared while taking the necessary costs into account. The southern route does not require additional costs to improve the road

infrastructure on the extension parts because the road sections are already in better condition than those on the northern extension route. Even though the total expected gains for the six countries are slightly larger in the northern route (S2b), it could cost significantly more than the southern route (S3). Another important point is the expected impacts on Myanmar, which is US$562 million in S2b in contrast to US$358 million in S3. Indeed, if we compare the expected gains in GDP, the northern route is preferable only for Myanmar among the six countries.

It is natural to expect the highest gains in the case of the 'all' development scenario (S4a), which includes both the northern and southern routes in addition to the original alignment of the TLH (Table 5). The additional scenario (S4b) to upgrade all routes to highway standard is expected to magnify the impacts to all six countries (Table 6). Again, these results need to be evaluated together with the cost consideration.

Figure 3. Impacts by Country (US$ million, difference vs. baseline)

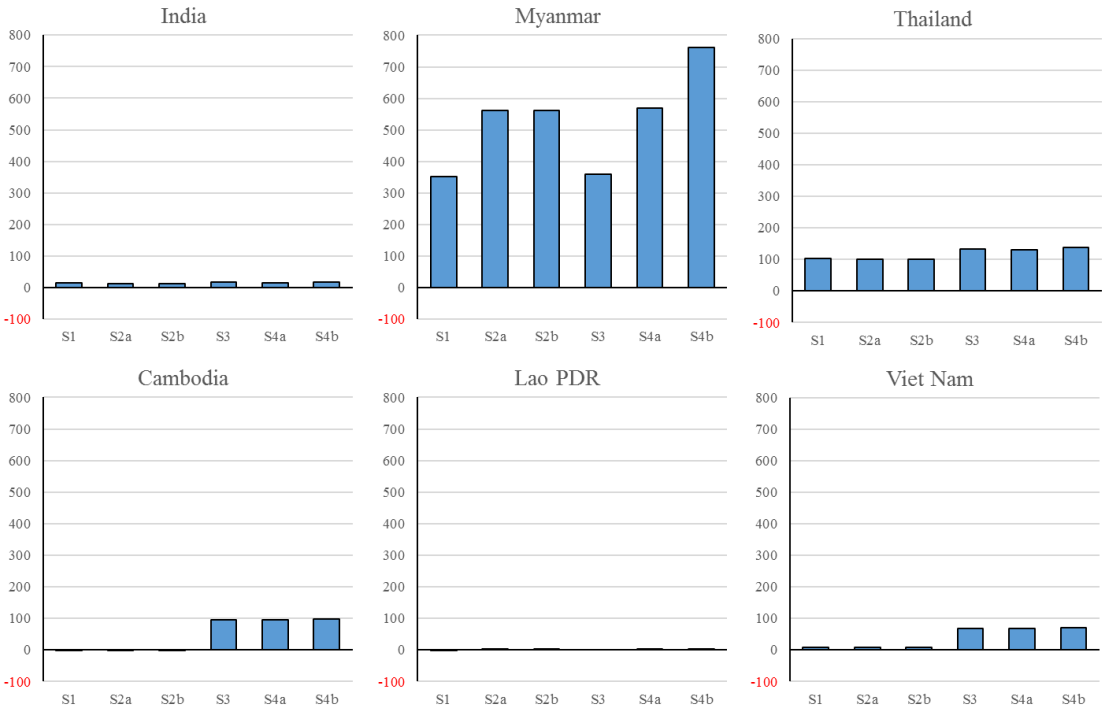


Figure 4. Impacts by Country (%, difference vs. baseline)

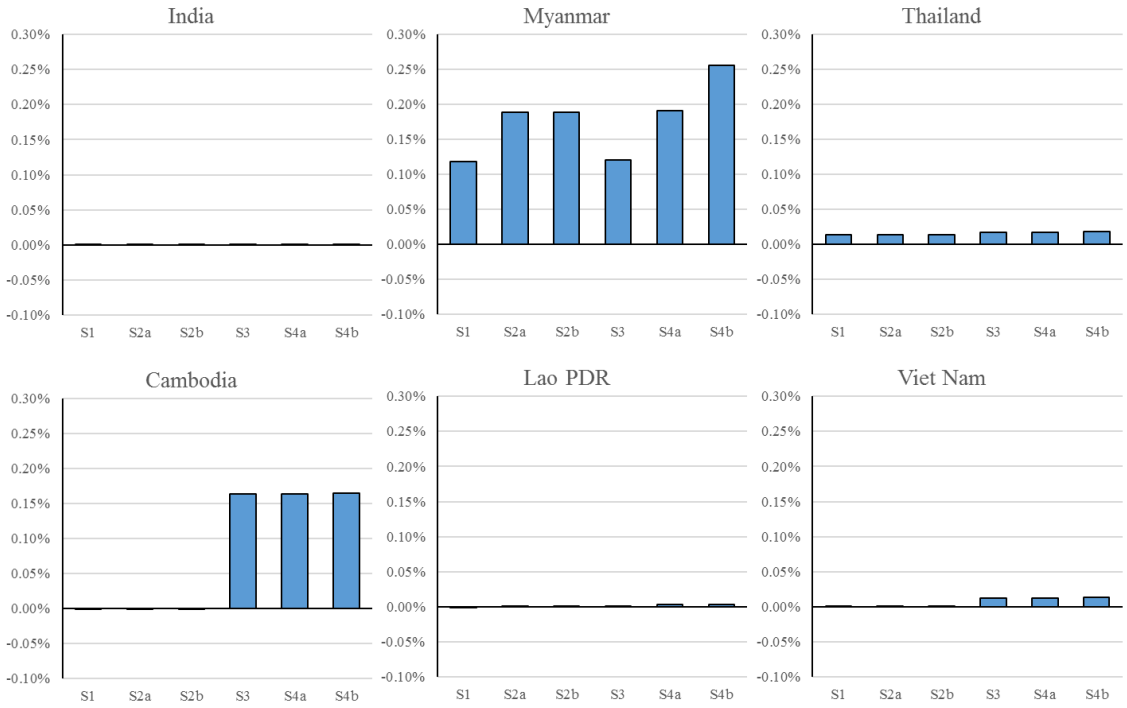


Table 1. Results of S1 by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	23.51	▲ 0.86	0.05	▲ 0.06	▲ 2.35	▲ 5.57	▲ 0.41	0.07	14.39
Myanmar	5.04	9.79	1.19	1.32	372.44	8.51	▲ 46.78	0.06	351.56
Thailand	2.98	▲ 1.38	▲ 0.58	2.28	100.78	▲ 3.12	2.33	▲ 0.04	103.25
Cambodia	0.03	0.00	0.00	0.10	▲ 0.43	0.01	0.07	0.00	▲ 0.21
Lao PDR	▲ 0.00	0.00	▲ 0.00	0.00	▲ 0.31	▲ 0.00	0.19	▲ 0.00	▲ 0.12
Viet Nam	0.55	▲ 0.00	0.01	0.26	7.70	0.07	0.03	0.00	8.63
China	▲ 0.31	▲ 0.94	▲ 1.66	0.56	▲ 37.07	5.00	0.46	0.42	▲ 33.54
Japan	0.07	▲ 0.91	▲ 0.29	▲ 0.03	▲ 3.26	▲ 2.16	19.18	▲ 0.00	12.61
IMT	31.53	7.55	0.66	3.54	470.87	▲ 0.18	▲ 44.86	0.09	469.20
IMT+CLV	32.11	7.55	0.68	3.91	477.83	▲ 0.10	▲ 44.56	0.09	477.50
ASEAN10	8.72	8.66	0.06	4.05	484.06	4.41	▲ 36.34	0.02	473.63
EA16	32.21	5.94	▲ 1.31	4.59	439.77	▲ 0.81	▲ 2.80	0.48	478.05

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

Table 2. Results of S2a by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	24.08	▲ 1.22	0.00	▲ 0.13	▲ 2.93	▲ 5.04	▲ 1.18	0.07	13.64
Myanmar	14.58	7.34	1.11	1.01	294.24	0.54	242.70	0.05	561.56
Thailand	3.13	▲ 1.36	▲ 0.58	2.36	98.74	▲ 3.16	2.21	▲ 0.02	101.32
Cambodia	0.03	0.00	0.00	0.10	▲ 0.42	0.01	0.06	0.00	▲ 0.21
Lao PDR	0.05	▲ 0.01	▲ 0.01	▲ 0.06	0.01	▲ 0.24	0.26	0.36	0.37
Viet Nam	0.57	0.00	0.01	0.39	7.74	0.05	0.02	0.14	8.92
China	0.36	0.02	▲ 1.31	0.50	▲ 38.23	7.41	▲ 0.28	0.54	▲ 31.00
Japan	0.15	▲ 0.85	▲ 0.30	▲ 0.04	▲ 3.00	▲ 2.14	16.81	▲ 0.00	10.63
IMT	41.79	4.76	0.53	3.24	390.05	▲ 7.67	243.73	0.10	676.51
IMT+CLV	42.44	4.75	0.53	3.67	397.38	▲ 7.84	244.07	0.60	685.60
ASEAN10	18.54	6.28	▲ 0.03	3.89	404.14	▲ 3.88	252.67	0.54	682.15
EA16	43.36	4.22	▲ 1.13	4.26	357.44	▲ 6.05	280.81	1.12	684.03

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

Table 3. Results of S2b by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	24.08	▲ 1.22	0.00	▲ 0.13	▲ 2.93	▲ 5.05	▲ 1.18	0.07	13.63
Myanmar	14.58	7.34	1.11	1.01	294.27	0.53	242.69	0.05	561.59
Thailand	3.13	▲ 1.36	▲ 0.58	2.36	98.74	▲ 3.16	2.21	▲ 0.02	101.31
Cambodia	0.03	0.00	0.00	0.10	▲ 0.42	0.01	0.06	0.00	▲ 0.21
Lao PDR	0.05	▲ 0.01	▲ 0.01	▲ 0.06	0.01	▲ 0.24	0.27	0.36	0.37
Viet Nam	0.57	0.00	0.01	0.39	7.78	0.05	0.02	0.15	8.96
China	0.36	0.02	▲ 1.31	0.50	▲ 38.24	7.41	▲ 0.28	0.54	▲ 31.01
Japan	0.15	▲ 0.85	▲ 0.30	▲ 0.04	▲ 3.00	▲ 2.14	16.81	▲ 0.00	10.63
IMT	41.79	4.76	0.53	3.24	390.07	▲ 7.67	243.72	0.10	676.53
IMT+CLV	42.44	4.75	0.53	3.67	397.44	▲ 7.85	244.08	0.60	685.66
ASEAN10	18.54	6.28	▲ 0.03	3.89	404.20	▲ 3.89	252.68	0.54	682.22
EA16	43.36	4.22	▲ 1.13	4.26	357.49	▲ 6.05	280.82	1.13	684.09

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

Table 4. Results of S3 by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	23.82	▲ 1.11	0.58	▲ 0.79	▲ 2.95	▲ 4.51	1.78	0.10	16.93
Myanmar	5.27	9.65	1.17	1.32	379.79	8.21	▲ 46.99	0.06	358.47
Thailand	8.17	5.17	▲ 1.67	17.67	109.07	▲ 7.97	2.76	0.01	133.20
Cambodia	4.68	2.07	0.31	73.16	19.00	2.92	▲ 5.53	0.02	96.64
Lao PDR	0.01	▲ 0.02	▲ 0.01	▲ 0.08	0.49	▲ 0.08	0.23	0.01	0.54
Viet Nam	5.73	3.54	0.37	20.19	37.57	3.30	▲ 2.96	0.12	67.86
China	2.99	▲ 3.65	▲ 0.51	▲ 16.94	▲ 42.01	15.92	▲ 0.21	0.53	▲ 43.88
Japan	0.13	▲ 0.44	0.21	▲ 0.54	▲ 3.33	▲ 0.85	21.26	▲ 0.00	16.43
IMT	37.25	13.71	0.08	18.20	485.91	▲ 4.27	▲ 42.45	0.17	508.60
IMT+CLV	47.68	19.30	0.76	111.47	542.97	1.86	▲ 50.71	0.32	673.64
ASEAN10	24.29	19.88	0.06	111.46	549.68	6.21	▲ 44.23	0.23	667.57
EA16	51.79	14.05	1.19	92.80	499.57	14.71	▲ 4.63	0.86	670.34

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

Table 5. Results of S4a by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	24.38	▲ 1.48	0.53	▲ 0.86	▲ 3.52	▲ 3.99	1.01	0.09	16.17
Myanmar	14.81	7.20	1.08	1.01	301.61	0.23	242.48	0.05	568.48
Thailand	8.32	5.20	▲ 1.67	17.74	107.03	▲ 8.01	2.64	0.03	131.27
Cambodia	4.68	2.07	0.31	73.16	19.02	2.92	▲ 5.54	0.02	96.64
Lao PDR	0.06	▲ 0.03	▲ 0.02	▲ 0.13	0.70	▲ 0.31	0.32	0.37	0.96
Viet Nam	5.75	3.54	0.37	20.31	37.58	3.28	▲ 2.97	0.26	68.12
China	3.65	▲ 2.70	▲ 0.17	▲ 17.01	▲ 43.17	18.32	▲ 0.94	0.65	▲ 41.35
Japan	0.20	▲ 0.38	0.20	▲ 0.55	▲ 3.08	▲ 0.83	18.88	▲ 0.00	14.45
IMT	47.51	10.92	▲ 0.05	17.89	405.12	▲ 11.76	246.13	0.18	715.93
IMT+CLV	58.00	16.50	0.61	111.23	462.41	▲ 5.88	237.94	0.82	881.64
ASEAN10	34.11	17.50	▲ 0.03	111.30	469.66	▲ 2.08	244.79	0.75	876.01
EA16	62.93	12.33	1.37	92.48	417.13	9.47	278.99	1.50	876.21

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

Table 6. Results of S4b by Country and Industry (US$ million)

	Agriculture	Automotive	Electrics & Electronics	Textile	Food Processing	Other Manufacturing	Services	Mining	Real GDP
India	25.49	▲ 1.62	0.52	▲ 0.90	▲ 3.96	▲ 4.12	1.04	0.11	16.57
Myanmar	19.66	5.90	1.27	1.05	306.42	▲ 1.60	428.76	0.05	761.52
Thailand	8.52	5.13	▲ 1.65	17.93	112.44	▲ 8.33	3.05	0.03	137.12
Cambodia	4.70	2.08	0.32	73.45	19.06	2.93	▲ 5.52	0.02	97.04
Lao PDR	0.06	▲ 0.03	▲ 0.02	▲ 0.13	0.69	▲ 0.31	0.34	0.37	0.96
Viet Nam	5.81	3.57	0.43	20.48	38.35	3.86	▲ 3.07	0.26	69.68
China	3.84	▲ 2.35	▲ 0.49	▲ 17.09	▲ 45.90	19.29	▲ 1.33	0.75	▲ 43.27
Japan	0.23	▲ 0.55	0.03	▲ 0.58	▲ 3.32	▲ 1.64	20.78	▲ 0.00	14.94
IMT	53.67	9.41	0.15	18.08	414.90	▲ 14.05	432.86	0.19	915.21
IMT+CLV	64.25	15.03	0.87	111.88	473.00	▲ 7.58	424.61	0.84	1,082.90
ASEAN10	39.29	16.16	0.13	111.97	481.02	▲ 3.96	432.64	0.76	1,078.02
EA16	69.47	11.03	1.05	92.98	424.84	7.30	469.10	1.62	1,077.40

Note: IMT = India, Myanmar, and Thailand; CLV = Cambodia, Lao PDR, and Viet Nam; EA16 = 10 ASEAN Member States, plus Australia, China, India, Japan, the Republic of Korea, and New Zealand. Black triangles (▲) indicate negative numbers.

3.2. By Country and Industry

As shown in Table 1, the completion of the original TLH (S1) is expected to increase the real GDP of India, Myanmar, and Thailand by US$14.4 million, US$351.6 million, and US$103.2 million, respectively, against the baseline in 2035. As discussed above, Myanmar will gain most of the benefits, and the increment is equivalent to 0.12% of the baseline GDP. The positive impact is driven mainly by the manufacturing sector (US$393.2 million), of which the food processing sector (US$372.4 million) plays a major role. The expected decline in the service sector (▲US$46.8 million) will offset the gain to some extent. Thailand will be the second-largest beneficiary (US$103.2 million), led mainly by the growth of the food processing sector (US$100.8 million), whereas the other manufacturing (▲US$3.1 million), automotive (▲US$1.4 million), and electrics and electronics (▲US$0.6 million) sectors are expected to lose slightly in comparison with the baseline. Although the impact on India is limited, the agriculture sector is expected to gain the most (US$23.5 million), part of which will be offset by the expected decline in the manufacturing sector (▲US$8.8 million). The expected impacts on Cambodia and the Lao PDR are negative, though the size is small. The improvement in logistics infrastructure, as specified in S1, increases the attractiveness of Myanmar as a trade partner relative to Cambodia and the Lao PDR. In this line of discussion, China is the biggest loser in S1 as its real GDP is expected to decrease by US$33.5 million from the baseline in 2035. Most of the negative impacts are found in the food processing sector (▲US$37.1 million), probably in exchange for the growth of the industry in Myanmar and Thailand as mentioned above.

The northern extension route (S2b) is expected to increase the impacts of the original TLH (S1) significantly in Myanmar by 59.7% from US$351.6 million to US$561.6 million (Table 1 and Table 3). The Lao PDR and Viet Nam will gain, but the impacts are small. In this scenario, Thailand (US$101.3 million) is the second-largest beneficiary after Myanmar, followed by India (US$13.6 million), and the positive impacts are slightly smaller than in S1. Although a major part of the expected gains in Myanmar can be attributable to the food processing sector (52.4%), in this scenario, the service sector will contribute significantly (43.2%, US$242.7 million). This is a striking contrast with S1, under which the service sector is expected to decline by US$46.8 million (Table 1). The positive impact on India is contributed mainly by agriculture (176.5%), a large part of which will be offset by the negative impacts on the manufacturing and services sectors. The impacts of the northern extension route on Cambodia are negligible. Although China will be negatively affected, the negative impacts are smaller than in the original TLH (S1), probably because some of the negative impacts of the original TLH can be offset by the positive effects of enhanced connectivity along the extension route.

The southern extension route also magnifies the impacts of the original TLH but in a different way from the northern extension route (Table 4). The additional impacts on India, Myanmar, and Thailand are all positive, but in favour of India and Thailand. Compared with S1 (Table 1), India, Myanmar, and Thailand will gain 17.7%, 2.0%, and 29.0%, respectively. This result is quite reasonable in the sense that the southern extension route connects the TLH effectively with the GMS economic corridors, which are already developed more than in the northern route. As illustrated in Figure 1, the section between Mae Sot and Tak is a part of the EWEC, the section between Tak and Bangkok is a part of the NSEC, and the remaining sections are on the SEC. There used to be several bottlenecks along these corridors, such as the road section between Poipet and Sisophon and the lack of a bridge over the Mekong River in Neak Loung. Under the GMS Economic Cooperation Program, these bottlenecks have already been removed through the improvement of the road and the construction of Tsubasa Bridge. Cambodia will gain an additional US$96.6 million over the baseline in 2035 at the cost of the Lao PDR, which will benefit only a small amount (US$0.5 million). Viet Nam is expected to be the fourth largest beneficially (US$67.9 million) after Myanmar (US$358.5 million), Thailand (US$133.2 million), and Cambodia. The total gain of the six countries (IMT+CLV) amounts to US$673.6 million, slightly less than the case of the northern extension route (US$685.7 million). However, the distribution of the gains differs significantly. Only Myanmar would prefer the northern extension route to the southern extension route, and Thailand, Cambodia, and Viet Nam would prefer the southern extension route. For the Lao PDR, the expected impacts of eastward extension routes, both northern and southern, are very small and the

difference is negligible. In this case, a cost–benefit consideration may lead the Lao PDR not to invest in upgrading the northern extension route because it would cause a certain amount of costs, while the expected benefit is small. Also, from a regional perspective, it should be noted that the costs for road improvement will be smaller in the case of the southern extension route because most of the necessary improvements have already been done.

Tables 5 and 6 show the simulation results of the most comprehensive scenario in this study, which includes the completion of the original TLH, the northern extension route, and the southern extension route. An important implication of this scenario is that distributional concerns on S2b and S3 can be mitigated significantly.

The distributional implications across sectors are more or less the same for all scenarios. The additional growth in Myanmar will be supported by the food processing sector, and the contribution of the services sector is significant only when the northern extension route is developed. Despite the overall benefits, the Indian manufacturing sector may be negatively affected. In contrast, the manufacturing sectors in Myanmar and Thailand are expected to gain significantly. Cambodia will also expand its manufacturing sector, led mainly by the textile sector.

3.3. By sub-national region

A major benefit of the IDE/ERIA–GSM is that it can estimate the economic impacts on a sub-national level. This sub-section visually illustrates the simulation results of scenarios 1–4b. At first glance, two important implications can be drawn from Figures 5–10. First, the economic impacts are unevenly distributed in favour of the regions along the road to be upgraded. In contrast, other regions may be negatively affected in terms of the difference with the baseline scenario. Second, the economic impacts are expected to spread to wider regions far beyond the scope of logistics enhancement.

As already discussed above, the completion of the original TLH (S1) will increase Myanmar's real GDP by US$351.6 million in comparison with the baseline. Looking at the impact density, which is defined as the economic impact in US dollar terms per km^2, Mandalay gains most (US$29,239/$km^2$), followed by Nyaung-U (US$8,190/ km^2), Monywa (US$4,699/km^2), Sagain (US$3.937/km^2), and Meiktila (US$3,798/$km^2$). All these provinces are along the TLH and in the central dry zone. In contrast, Nay Pyi Taw will be negatively and most significantly affected (▲US$3,647/$km^2$), probably because several economic activities are attracted to Mandalay and the surrounding provinces where the business environments will be improved, particularly from the logistics perspective. In addition, Pyay (▲US$34/$km^2$), Kengtung (▲US$28/km^2), Matman (▲US$14/$km^2$), and Myitkyina (▲US$6/km^2) will be negatively

affected in comparison with the baseline. The relative improvement of the investment climate in the regions along the TLH implies a relative deterioration of the investment climate in other provinces. Although the total impact on Myanmar is positive, an uneven distribution of the gains may cause difficulties in implementation. Indeed, this can be a serious bottleneck in Myanmar, where regional disparities already prevail, and the uneven distribution of the economic impacts could worsen the existing ethnic conflicts. In India, several regions in the Northeast Region (NER), particularly those in Assam and Manipur, are expected to gain, although the positive impacts are small. In Thailand, several regions far away from the TLH will be affected significantly, namely Samut Prakarn (US$19,091/km^2), Samut Sakhon (US$15,661/km^2), Bangkok (US$11,234/km^2), Rayong (US$5,361/km^2), Ayudhya (US$1,964/km^2), and Chonburi (US$1,884/km^2), which are existing centres of economic activity in Thailand.

Figure 5. Impact Density of S1 on Sub-National Regions

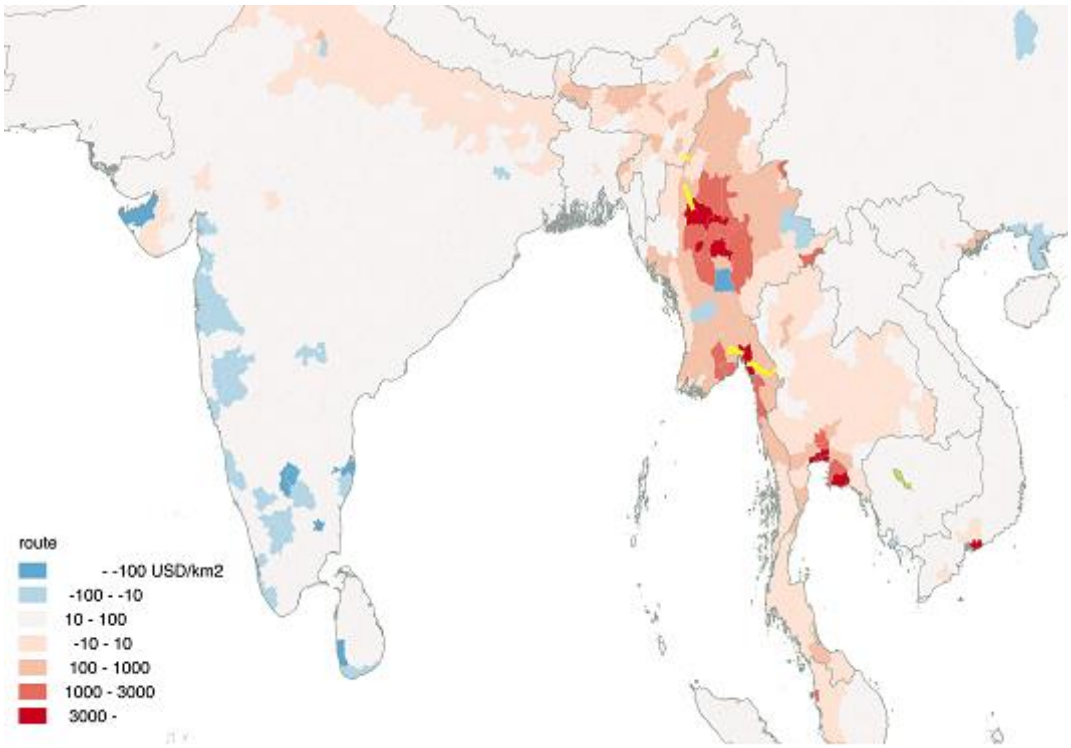


Figure 6. Impact Density of S2a on Sub-National Regions

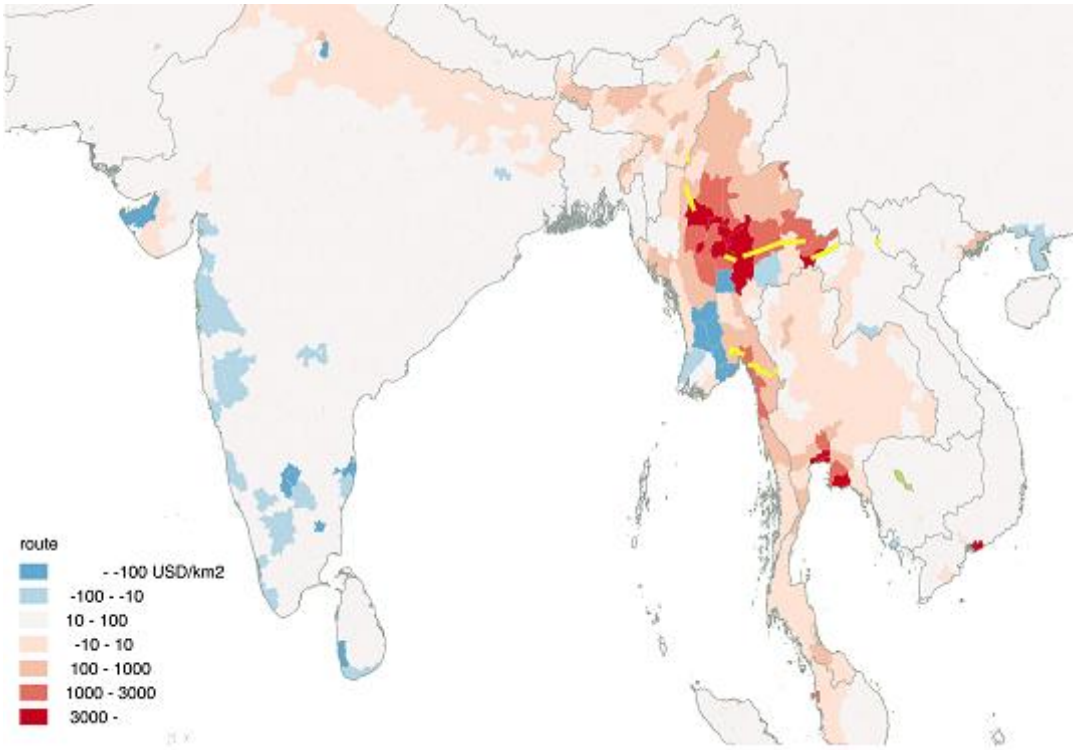


Figure 7. Impact Density of S2b on Sub-National Regions

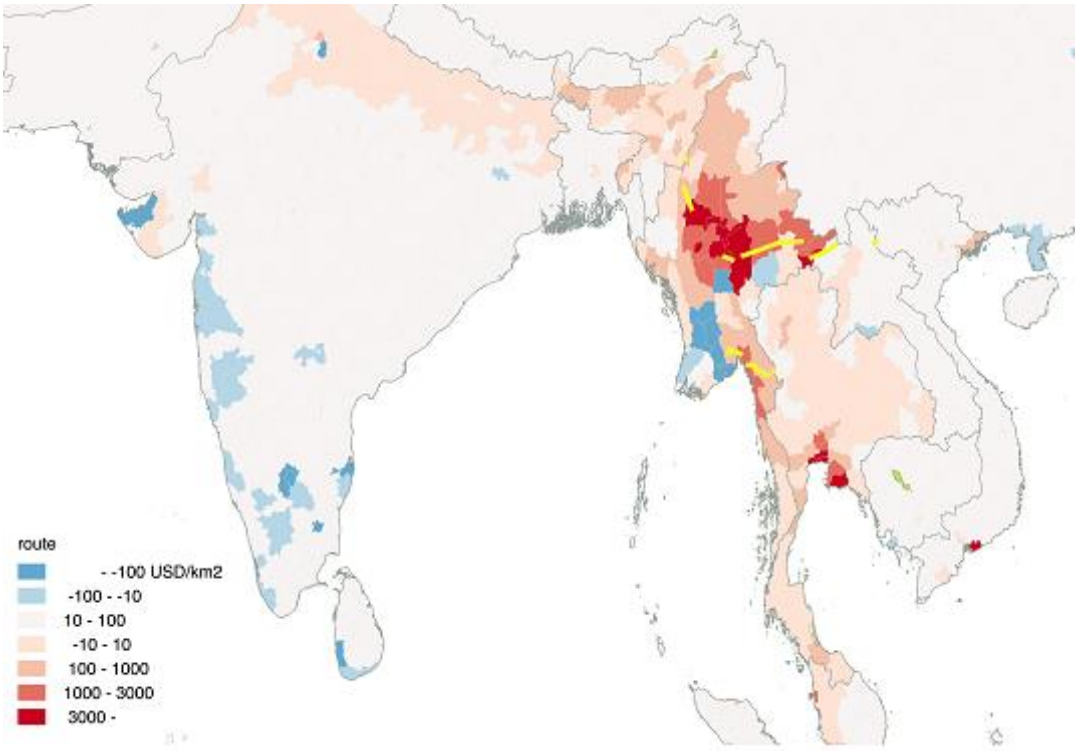


Figure 8. Impact Density of S3 on Sub-National Regions

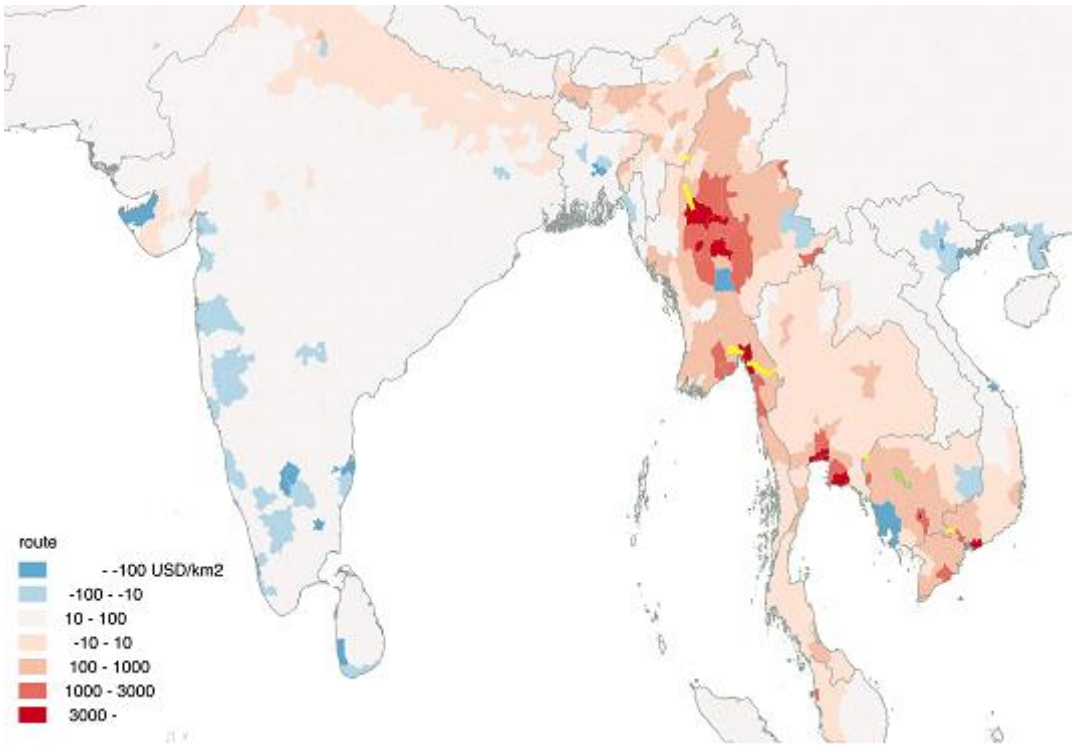


Figure 9. Impact Density of S4a on Sub-National Regions

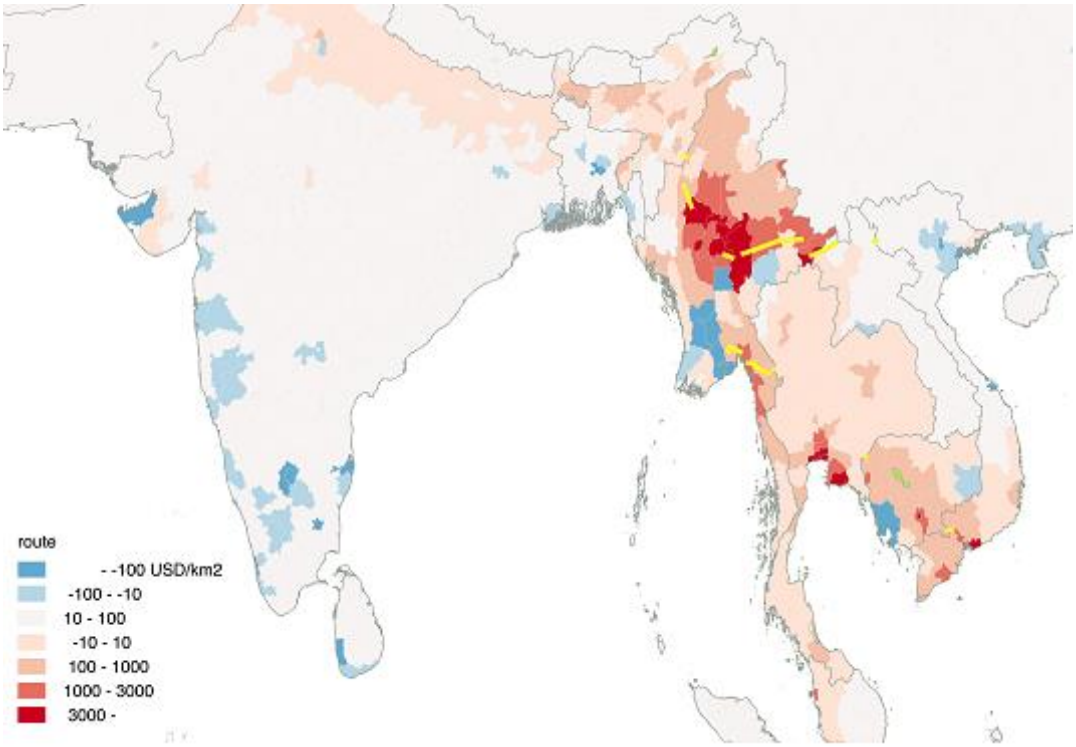
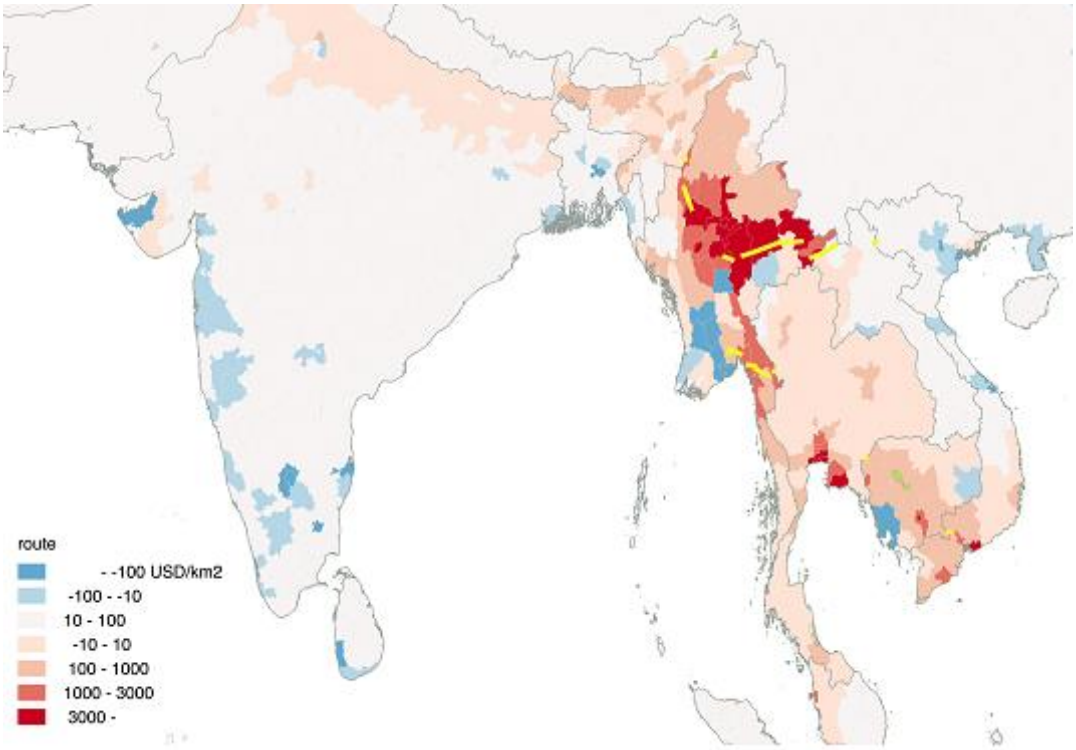


Figure 10. Impact Density of S4b on Sub-National Regions



It is important to highlight that several regions far away from the scope of the TLH could be significantly affected, such as Ba Ria–Vung Tau (US$3,795/km^2) in Viet Nam, Kuala Lumpur (US$5,838/km^2) and Pulau Pinang (US$1,556/km^2) in Malaysia, and Singapore (US$2,078/km^2).

The northern extension route is expected to affect significantly the neighbouring regions (Figure 7). Mandalay (US$32,506/km^2) maintains its position as the largest beneficiary, followed by Tachileik (US$7,823/km^2). Taunggyi (US$5,007/km^2), Kengtung (US$2,457/km^2), Loilem (US$2,015/km^2), and Monghpyak (US$1,800/km^2), and these are expected to gain significantly in comparison with the baseline and S1 as well. Comparing the impact densities between S2b and S1, Tachileik is the most significantly affected (+US$7,470/km^2), followed by Taunggyi (+US$3,941/km^2), Mandalay (+US$3,267/km^2), Kengtung (+US$2,486/km^2), and Loilem (+US$2,486/km^2). In contrast, the most significant, negative change caused by the northern extension route is in Yangon, where the expected impacts would be from US$1,097/km^2 (S1) to ▲US$574/km^2 (S2b). That is, the development of the northern extension route will attract more economic activities to the regions along the road from other parts of the country, including Yangon.

The northern provinces in the Lao PDR and Viet Nam will also be positively affected. In the Lao PDR, three provinces along the northern extension route, Oudomxai (US$16/km^2), Phongsali (US$10/km^2), and Luang Namtha (US$8/km^2), will be positively affected, although the impacts are small. In Viet Nam, in addition to Ba Ria–Vung Tau, Quang Ninh (US$129/km^2), Hanoi (US$94/km^2), and Haiphong (US$12/km^2) will be positively affected in both comparisons with the baseline and S1.

The southern extension route (S3) will have more significant and wider impacts on provinces in Thailand, Cambodia, and Viet Nam than the case of the northern extension route, probably because it establishes a connection to already better-developed road networks (Figure 8). In Myanmar, in addition to the regions along the original alignment of the TLH toward India, those toward Thailand will also be positively affected, such as Thaton (US$3,198/km^2) and Mawlamyine (US$2,014/km^2). In Cambodia, Phnom Penh will be positively and very significantly affected (US$203,542/km^2) as compared to US$81/km^2 in the case of S1, mainly led by the impacts on the textile sector. In Viet Nam, Ba Ria–Vung Tau will have the largest impact (US$22,023/km^2).

The 'all' development scenario (S4a) will of course have the largest and most widespread economic impacts on the region as a whole. In Myanmar, the large cities along the TLH, Mandalay (US$32,690/km^2), Monywa (US$4,989/km^2), Meiktila (US$4,347/km^2), Sagain (US$4,340/km^2), and Kyaukse (US$3,278/km^2), will be significantly and positively affected. In Cambodia, Phnom Penh (US$203,532/km^2) will gain the most, followed by Kandal (US$2,350/km^2), which surrounds Phnom Penh, Pailin (US$1,809/km^2) near the Thai border, and Svay Rieng (US$690/km^2) facing the border with Viet Nam. In Viet Nam, Ba Ria–Vung Tau (US$21,965/km^2) and Ho Chi Minh City (US$2,620/km^2) will be the two largest beneficiaries. In contrast, the metropolitan cities in the north, Hanoi (▲US$973/km^2) and Hai Phong (▲US$209/km^2), will be slightly but negatively affected. Regions along the northern extension route will be positively affected, such as Tachileik (US$12,958/km^2), Taunggyi (US$5,018/km^2), Kengtung (US$2,458/km^2), and Loilem (US$2,222/km^2) in Myanmar, and Oudomxai (US$17/km^2), Phongsali (US$8/km^2), and Louang–Namtha (US$6/km^2) and Louang Namtha (US$1,355/km^2) in the Lao PDR. These relatively less-developed regions in less-developed countries such as Myanmar and Lao PDR have been facing difficulties in economic growth due mainly to the weak connectivity to other parts of the region. The simulation results of S2b and S4a clearly demonstrate that the northern extension route is an effective way to open important opportunities for these provinces to embark on economic development, led mainly by the food processing, services, and agriculture industries.

In Thailand, the biggest positive impact is expected in Bangkok and the surrounding regions, and the impacts are significantly bigger than those under S1. In India, the expected impacts of S4a are similar to those of S1, implying that the eastward extension route will not have significant additional impacts over the original alignment of the TLH. In the NER of India, the largest economic impact is expected in Dimapur (US$325/km^2) in Nagaland, followed by Dibrugarh (US$319/km^2), Darrang (US$307/km^2), Sibsagar (US$284/km^2), and Nalbari (US$227/km^2) in Assam; East Imphal (US$266/km^2), West Imphal (US$241/km^2), Kohima (US$202/km^2), and Thoubal (US$139/km^2) in Manipur.

3.4. Impacts on Narrowing the Development Gaps

As discussed above, the upgrading of the road infrastructure and improving the border-crossing procedures are expected to have positive economic impacts on the regions along the road. While some regions away from the route could suffer from negative impacts (vis-à-vis the baseline), other regions may experience positive impacts even though the region is far away from the route, as we observed in Thailand and Viet Nam. That is, the impacts of the transport corridors are expected to spread to wider regions differently. In order to investigate the distributional consequences of the development of the TLH and its eastward extensions, we computed a variant of the Gini coefficient using the simulation results, which contain estimates of the gross regional domestic products (GRDP) and population in each region. In the calculations, we assume perfect equality in each region.

Table 7. Impacts on Gini Coefficients

	# of regions	Base(20)	Base(35)	S1(35)	S2a(35)	S2b(35)	S3(35)	S4a(35)	S4b(35)
India	576	0.447	0.459	0.459	0.459	0.459	0.459	0.459	0.459
Myanmar	69	0.288	0.329	0.331	0.330	0.330	0.331	0.330	0.330
Thailand	76	0.505	0.469	0.468	0.468	0.468	0.468	0.468	0.468
Cambodia	24	0.283	0.306	0.306	0.306	0.306	0.306	0.306	0.306
Lao PDR	17	0.197	0.208	0.208	0.208	0.208	0.208	0.208	0.208
Viet Nam	61	0.448	0.460	0.459	0.459	0.459	0.459	0.459	0.459

Source: Authors' computation based on the simulation results.

As shown in Table 7, the distributional impacts of each scenario are very small. Although the impacts of each scenario differ by region, the distributional impacts are almost invisible because the additional impacts generated by each development scenario are expected to be too small.

4. Conclusions and Policy Recommendations

Important implications from this simulation analysis can be summarised as follows.

First and foremost, the expected impact of the TLH, including its eastward extensions, is not large in terms of both increasing GDP and narrowing the development gaps in the region. This is mainly because of the lack of strong economic agglomeration along the route. Although Bangkok, Ho Chi Minh City, and Hanoi are included in the eastward extension routes, they are located on only one side of the original alignment of the TLH. In order to transform a transport corridor into an economic corridor by stimulating two-way trade, it is important to have at least two economic agglomerations on both sides of the route.[7] The vast potential of Myanmar and the NER of India can only be explored through a series of pragmatic policies to untangle various bottlenecks.

Second, Myanmar is the largest beneficiary in the TLH and its extension routes, reflecting the fact that most of the original alignment of the TLH is in Myanmar's territory. Thailand is the second beneficiary, and the impacts on India are positive but limited in scale. As mentioned above, developing the TLH as a transport corridor is not sufficient to generate bottom-line benefits for the NER of India.

Third, although the additional impacts caused by the northern extension route and by the southern extension route are more or less similar in terms of the total amount, the distributional implications differ substantially. If we compare only in terms of the expected economic impacts, Myanmar would prefer the northern extension route and others would prefer the southern extension route.

Fourth, developing a transport corridor in general will have positive economic impacts on the regions along the route at the cost of negative impacts on other parts of the countries or regions. In order to pursue both economic growth and the narrowing development gaps, therefore, transport corridors need to be designed carefully or with proper redistribution policy measures if necessary. Otherwise, uneven economic impacts may cause unnecessary conflicts in the region or even within countries.

Fifth, the economic impacts will be larger when the degree of improvement in road infrastructure is larger. This implication has two aspects. The lower the quality of the original road, which is usually equivalent to a lower level of economic development, the larger is the potential to enjoy positive economic impacts in the region. The large economic impact induced by the northern extension route is probably because it passes through the Shan State

[7] A similar argument can be found in ERIA (2010), claiming that among the three economic corridors in the GMS, the SEC would generate the largest economic impact on the region because of its alignment in having Bangkok and Hi Chi Minh City on both sides of the route.

of Myanmar, where economic development is still in the early stages, reflecting weak connectivity to neighbouring countries. The other aspect is drawn from the comparison between S4a and S4b, that the larger the improvement in the road quality, the larger the expected economic impacts will be. In both cases, the degree of improvement in road infrastructure depends on the size of investment. The northern extension route will require larger investment in improving road infrastructure because it needs to start from the lower status quo. In contrast, the southern extension route has already been better developed as GMS economic corridors and, therefore, the necessary improvement is much smaller than the northern extension route. Similarly, constructing a highway-quality road requires bigger investment than constructing a standard-quality road.

These are important issues for policy considerations to balance the costs and benefits. Given the relatively fragile security condition in some parts of Myanmar and India, it is important for policy makers to consider the distributional consequences of corridor development in addition to the usual concerns on the total return on investment. As already discussed above, the country-wise distribution of the expected economic impacts would differ significantly by the choice of the eastward extension routes. In this context, it is very reasonable for Thailand to assist Myanmar to upgrade the road infrastructure along the Thai side of the TLH because it is expected to generate economic benefits for Thailand as well as Myanmar. This is also true for India in its assistance to develop the Kalewa–Yargyi section of the TLH. How about the case of the northern extension route? As Myanmar is the only expected beneficiary, it might be difficult to expect bilateral assistance from neighbouring countries as those donors need to pay particular attention to the return on investment. In addition, it might be difficult to expect assistance from ADB, as the route is not designated as a part of the GMS Economic Corridors. It might be possible if the countries concerned dare to share a common vision to develop a second EWEC to open long-aspired opportunities for the remaining less-developed regions, namely the Shan State of Myanmar, northern provinces in the Lao PDR, and northwestern parts of Viet Nam. In a recent review of the configuration of the GMS economic corridors, ADB (2018b, 2018i) identifies several sub-corridors in the NSEC based on an extensive assessment of the whole system of the GMS Economic Corridors (ADB, 2018a–h). Despite its timely and promising progress, the connectivity among the sub-corridors of the NSEC seems to be weak because of the lack of a route skewering the sub-corridors in an east–west direction. Developing the northern extension route of the TLH as a second EWEC would enhance the impacts of the sub-corridors of the NSEC by generating synergies from having multiple choices for trade routes.[8]

[8] In this direction, the relationship between the GMS and India may become a bottleneck.

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Appendix: System of the IDE–GSM

Satoru Kumagai, IDE–JETRO

Introduction

This technical appendix shows an overview of the Geographical Simulation Model developed by the Institute of Developing Economies (IDE–GSM). The IDE–GSM has several unique features, such as sub-national analysis with industrial classifications, multi-modal choice, and evaluation of the economic impacts of infrastructure improvements, free trade agreements (FTA), and trade facilitation measures. Such a broad scope of analysis comes from the model and data. The model is based on spatial economics, which can capture the concentration of households and firms, such as the clustering of suppliers and urbanisation, which are essential issues in most developing countries, particularly in Asia (Krugman, 1991; Fujita, Krugman, and Venables 1999). The data include detailed data on the sub-national gross regional domestic product by industry in Asia with rest of the world, covering more than 3,000 regions in 98 countries/economies, with 71 'rest of the world' countries. All of the regions and countries are on the transport networks by road, railway, ship, and air, if they exist. With such data and the model, IDE–GSM enables us to evaluate the regional impacts of improvements in regional connectivity in physical infrastructure, such as new roads and bridges for missing links and the upgrading of existing roads, and in non-physical infrastructure, such as trade facilitation measures, the harmonisation of custom procedures, and reductions in administrative procedures for trades.

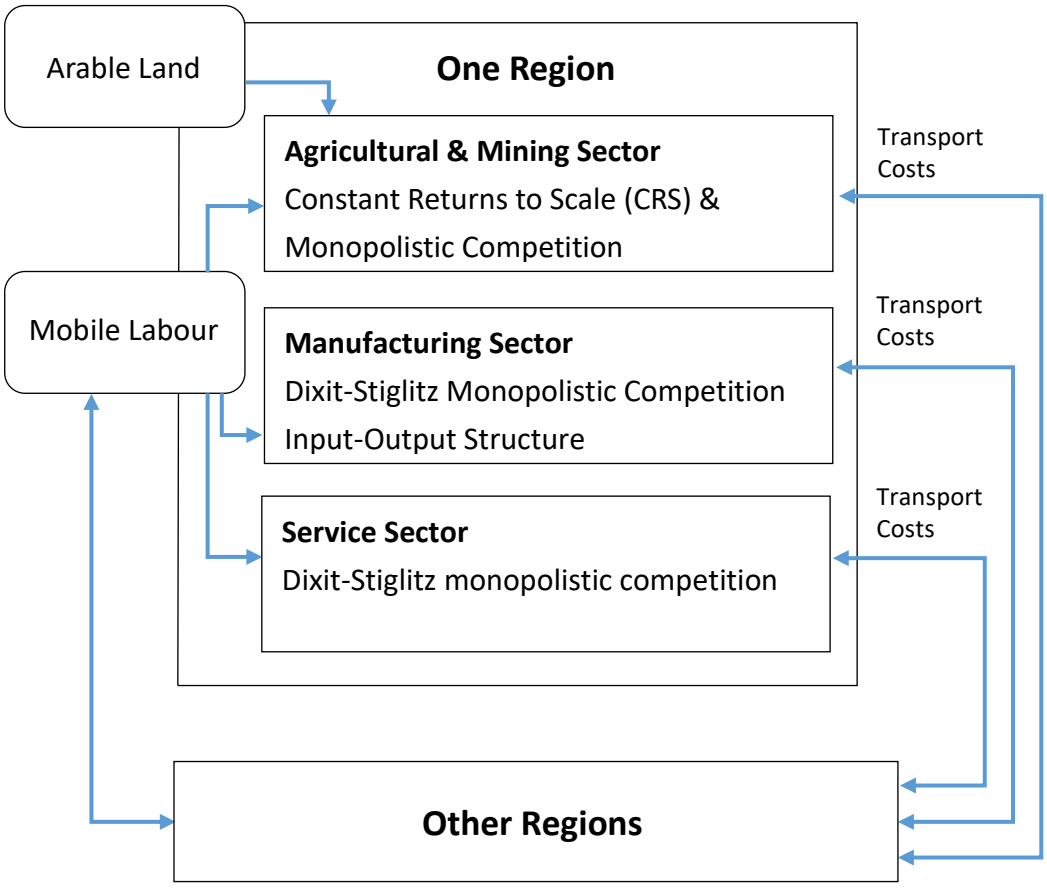
The main objective of the IDE–GSM is to analyse regional dynamics in population and economic growth with and without specific infrastructure projects. It allows impact analysis on the regional economies at the subnational level. IDE–GSM can help to prioritise various infrastructure development projects and offer an objective evaluation tool for policy recommendations in infrastructure development.

The analysis typically shows the difference with and without projects, in other words, with scenarios and benchmark cases. This comparison clearly shows the impacts of specific scenarios and makes it easy to compare the scenarios, namely, development projects. By comparing scenarios by each scenario or by some sets of them, it is possible to access the possible best combination.

The Model[a]

Our model is multi-regional and multi-sectoral.[b] It features agriculture and mining, five manufacturing sectors, and the service sector. Our model accommodates worker mobility within countries and between sectors.

Figure A1. Basic Structure of the Model in the Simulation



Source: Authors.

The theoretical foundation follows Puga and Venables (1996), who capture the multi-sector and country general equilibrium of NEG. Therefore, the explanation below mainly pertains to equations in equilibrium. However, it is noteworthy that our model differs from that of Puga and Venables (1996) in the specifications of the agricultural sector. We have explicitly incorporated land size in its production and keep its technology as constant returns to scale.[c]

[a] The model is a modified version of Kumagai and Isono (2011)
[b] For other simulation analysis based on 'new economic geography' (NEG), see Teixeira (2006) and Roberts et al. (2012).
[c] For detailed derivations, see Puga and Venables (1996) and Fujita, Krugman, and Venables (1999).

All products in the three sectors are tradable. The transport cost is assumed to be an iceberg type. That is, if one unit of a good is sent from an area to another, a good with less than one unit arrives. Depending on the lost part, the supplier sets a higher price. The increase in price compared to the price of the producer is considered as the transport cost. Transport costs within the same area are considered negligible.

Our simulation model determines the following regional variables: nominal wage rates in three sectors; land rent; regional income; regional expenditure on manufactured goods; the price index of three sectors; average real wage rates in three sectors; population share of a location in a country; and population shares of a sector in three industries within one location.

The agricultural and mining sectors assume monopolistic competition with constant returns to scale technology and Armington's assumptions. The manufacturing and service industries use a Dixit–Stiglitz-type monopolistic competition and increase returns to scale technology. While an input–output linkage is assumed in the manufacturing industry, no linkage is assumed in the services industry.

Regional incomes in the NEG model correspond to regional GDPs in our simulations. Assuming that revenues from land at location *r* belong to households at location *r*, GDP at location *r* is expressed as follows:

$$Y_i = \sum_{J \in \{5 \text{ manufacturing industries,services}\}} w_{Ji} L_{Ji} + \sum_{H \in \{\text{agriculture, mining}\}} p_{Hi} f_{Hi} + TA_i$$

where w_{Ji} is the nominal wage rates in the manufacturing sector and the services sector at location *i*, and L_{Ji} is the labour input of the manufacturing sector and the services sector at location *i*, p_{Hi} is the price of an agricultural/mining product at location *i*, f_{Hi} is the agricultural/mining products at location *i*, respectively. TA_i is the re-distributed tariff revenue at location *i*.

The price indices of agricultural/mining goods, manufactured goods, and services products at location *i* are expressed as follows:

$$G_{H,i}^{-(\sigma_A-1)} = \sum_{j=1}^{R}\left[A_{Hj}^{-1}\alpha_H^{-1}\left(\frac{F_{Hj}}{L_{Aj}}\right)^{-(1-\alpha_H)} w_{Hj}T_H(j,i)\right]^{-(\sigma_H-1)}$$

$$G_{ki}^{-(\sigma_k-1)} = \left(\frac{\sigma_k-1}{\sigma_k}\right)^{\sigma_k}\sum_{j=1}^{R} L_{kj}\,A_{kj}^{\sigma_k}w_{kj}^{1-\sigma_k(\alpha_k)}G_{kj}^{-(1-\alpha_k)\sigma_k}T_k(j,i)^{-(\sigma_k-1)}, and$$

$$G_{Si}^{-(\sigma_S-1)} = \left(\frac{\sigma_S}{\sigma_S-1}\right)^{-(\sigma_S-1)}\frac{1}{\mu_S}\sum_{j=1}^{R} L_{Sj}\left(A_{Sj}\right)^{\sigma_S}\left(w_{Sj}\right)^{-(\sigma_S-1)}T_S(j,i)^{-(\sigma_S-1)}.$$

Where F_{Hi} is the land used for production at location *i*, α_I is the labour input share for production, μ_I is the consumption share of products, A_{Ii} is a productivity parameter for location *i*, $T_I(j,i)$ stands for the iceberg transport costs from location *j* to location *i*, and $\sigma_I$is the elasticity of substitution between any two differentiated manufactured goods for agricultural, manufactured, and services goods, respectively. Nominal wages in the agricultural sector, manufacturing sector, and services sector at location *i* are expressed as follows:

$$w_{Hi} = A_{Hi}\alpha_H\left(\frac{F_{Hi}}{L_{Hi}}\right)^{1-\alpha_H} p_{Hi},$$

$$w_{ki} = \left\{\frac{\sigma_k-1}{\sigma_k}A_{ki}\left[\alpha_k\sum_{j=1}^{R} E_{kj}\,G_{kj}^{\sigma_k-1}T_k(i,j)^{1-\sigma_k}\right]^{1/\sigma_k} G_{ki}^{-\beta}\right\}^{1/(1-\beta)}, and$$

$$w_{Si} = \left(\frac{\sigma_S-1}{\sigma_S}\right)^{1-1/\sigma_S} A_{Si}\left[\sum_{j=1}^{R} Y_j\,G_{Sj}^{\sigma_S-1}T_S(i,j)^{1-\sigma_S}\right]^{1/\sigma_S}.$$

The variables are decided using a given configuration of labour. Derived regional GDP, nominal wage rates, and price indexes are used to determine labour's decision on a working sector and place. The dynamics for labour to decide on a specific sector within a location are expressed as follows:

$$\dot{\lambda}_{I,i} = \gamma_I \left(\frac{\omega_{Ii}}{\omega_i} - 1\right)\lambda_{I,i}, I \in \{\text{the list of all industries}\}$$

where $\dot{\lambda_{I,\iota}}$ is the change in labour (population) share for a sector within a location, γ_I is the parameter used to determine the speed of switching jobs within a location, $\omega_{I,i}$ is the real wage rate of any sector at location *r*, ω_i is the average real wage rate at location *i*, and $\lambda_{I,i}$ is the labour share for a sector in the location.

The dynamics of labour migration between regions is expressed as follows:

$$\dot{\lambda_\iota} = \gamma_L \left(\frac{\omega_i}{\overline{\omega_C}} - 1\right)\lambda_i$$

where $\dot{\lambda_\iota}$ is the change in the labour share of a location in a country, γ_L is the parameter for determining the speed of migration between locations, λ_i is the population share of a location in a country, and $\overline{\omega}_C$ shows the average real wage rate of the country. ω_i shows the real wage rate of a location and is specified as follows:

$$\omega_i = \frac{Y_i / \sum_{I\in\{the\ list\ of\ all\ industries\}} L_{Ii}}{\prod_{I\in\{the\ list\ of all\ industries\}} G_{Ii}^{\mu_I}}.$$

where μ_I shows the consumption share of each industry.

Data

Data for the IDE/GSM cover 98 countries/economies and 71 'rest of the world' countries/economies. The 98 countries/economies are divided into more than 3,065 regions, and we utilise country data for the rest of the world. In total, we have 3,136 regions in the model. Primarily based on official statistics, we derive regional-level GDP (RGDP) for the agricultural sector and mining sector, five manufacturing sectors, and the services sector for 2010. The five manufacturing sectors are the automotive (Auto), electronics and electric appliances (E&E), garment and textile (Textile), food processing (FoodProc) and other manufacturing (OtherMfg) sectors. The population and area of arable land for each region

are compiled from multiple statistical sources. The administrative unit adopted in the simulation is one level or two levels below the national level. For instance, the administrative unit is one level below the national level for Cambodia, Japan, the Republic of Korea, the Lao PDR, Malaysia, the Philippines, Taiwan, Thailand, and Viet Nam. For Bangladesh, China, India, Indonesia, and Myanmar, the administrative unit is two levels below the national level. Brunei Darussalam, Hong Kong, Macao, and Singapore are treated as one unit, respectively. For the United States, the administrative unit is the state level, while for the European Union, the administrative unit is the NUTS-2 level in this version of the IDE–GSM.

Parameters

Our transport cost comprises physical transport costs, time costs, tariff rates, and non-tariff barriers (TNTBs). Physical transport costs are a function of distance travelled, travel speed per hour, physical travel cost per kilometre, and holding cost for domestic/international transshipment at border crossings, stations, ports, or airports. Time costs depend on travel distance, travel speed per hour, time cost per hour, holding time for domestic/international transshipment at border crossings, stations, ports, or airports. Travel speed per hour is provided in the next section. These parameters are derived from JETRO (2008) of 'ASEAN Logistics Network Map 2008' and by estimating the model of the firm-level transport mode choice with the 'Establishment Survey on Innovation and Production Network'[d] for 2008 and 2009, which includes manufacturers in Indonesia, the Philippines, Thailand, and Viet Nam. Based on these parameters, we calculate the sum of physical transport and time costs for all possible routes between the two regions. Employing the Floyd–Warshall algorithm for determining the optimal route and transport mode for each region and good, we obtain the sum of physical transport and time costs for each pairing of two regions by industry (Cormen et al. 2001).

We assume that firms choose a transportation mode from among the following three: air, sea, and land:

$$V_M \equiv U_M + \varepsilon_M = \alpha \cdot Abroad_{ji} + \sum_s \beta_s^M u_s \ln d_{ji} + \sum_k \gamma_k^M v_k + \varepsilon_M ,$$

where ε_M denotes unobservable mode characteristics, while $Abroad_{ji}$ takes unity if regions i and j belong to different countries and is zero otherwise; d_{ji} is the geographical distance between regions i and j. u_s is an industry dummy. When ε_M is independent and follows the identical type I extreme value distribution across modes, the probability that the firm chooses mode M is given by:

[d] This survey was conducted by the Economic Research Institute for ASEAN and East Asia (ERIA).

$$\Pr\left(Y_i = M \mid Abroad_{ji}, \ln d_{ji}\right) = \frac{e^{U_M}}{1 + e^{U_{Air}} + e^{U_{Truck}} + e^{U_{Sea}}}$$

for M = Air, Sea, Truck. (1)

The coefficients are estimated by maximum likelihood procedures. In other words, a multinomial logit (MNL) model is used to estimate the probability that a firm chooses one of the three transportation modes: air, sea, and truck. In the following, 'truck' is the base mode.

The geographical distance affects firms' modal choices through not only a per-unit physical charge for shipments but also shipping time costs due to the nature of the demand for shipments. Transportation time has a larger influence on the price of products that decay rapidly over time; for example, time-sensitive products include perishable goods (fresh vegetables), new information goods (newspapers) and specialised intermediate inputs (parts for just-in-time production). Lengthy shipping times may lead to a complete loss of commercial opportunity for products and their components, which is more likely to be significant for goods with a rapid product life cycle and high demand volatility. Given the value of timeliness in selling a product, the time costs are small for timely shipments (short transport time). In other words, time costs will be the highest for shipping by sea and the lowest for shipping by air. On the other hand, the physical transport costs will be highest for air and the lowest for sea. Truck transport will have a medium level of costs compared to air and sea transport. As a result, the coefficient for the geographical distance represents the (*average*) difference in the sum of the above two kinds of transport costs (time and physical transportation) per distance between truck and air/sea.

Furthermore, three points are noteworthy. Firstly, as mentioned above, shipping time costs obviously differ among industries. Such differences among industries are controlled by introducing the intercepts of industry dummy variables (u_s) with distance variables. Secondly, the level of port infrastructure is obviously different among countries. This yields different impacts of the aforementioned two kinds of transport costs among shipping countries. To control such differences among the countries in which the reporting firms locate, we introduce country dummy variables (v_k). Lastly, qualitative differences between intranational and international transactions are controlled by introducing a binary variable (*Abroad*), taking unity if transactions are international ones and zero otherwise.

Our main data source is the Establishment Survey on Innovation and Production Network for selected manufacturing firms in four countries in East Asia for 2008 and 2009 (Table A1). The four countries covered in the survey are Indonesia, the Philippines, Thailand and Viet Nam. The sample population is restricted to selected manufacturing hubs in each country (the

Jabodetabek area, i.e. Jakarta, Bogor, Depok, Tangerang, and Bekasi, for Indonesia; the Calabarzon area, i.e. Cavite, Laguna, Batangas, Rizal, and Quezon, for the Philippines; the Greater Bangkok area for Thailand; and the Hanoi area and Ho Chi Minh City for Viet Nam). This dataset includes information on the mode of transport that each firm chooses in supplying its main product and sourcing its main intermediate inputs. From there, the products' origin and destination can also be identified. In our analysis, however, the combination of origin and destination is restricted to one accessible by land transportation.

Table A1. Combination of Trading Partners in the Dataset

	Indonesia	Philippines	Thailand	Viet Nam
Cambodia				1
China			6	52
Hong Kong				5
Indonesia	449			
Malaysia				2
Myanmar			1	
Philippines		254		
Singapore				2
Thailand			151	7
Viet Nam				382

Source: Establishment Survey on Innovation and Production Network.

Let us take a brief look at a firm's choice of transportation mode. Table A1 reports the combination of trading partners in our dataset. There are three noteworthy points here. Firstly, as mentioned above, firms in the Philippines and Indonesia are restricted to those with intra-national transactions, although most of the firms in the other countries in our dataset are also engaged in intra-national transactions. Secondly, there are a relatively large number of Vietnamese firms trading with China. Third, Table A2 shows the transportation mode by the location of firms, indicating that most of our sample firms tend to choose truck transportation. Intuitively, this may be consistent with the first fact that most of the firms trade domestically.

Table A2. Chosen Transportation Mode by Location of the Firms

	Indonesia	Philippines	Thailand	Viet Nam
Air	19	7	2	11
Sea	17	11	6	51
Truck	413	236	150	389

Source: Establishment Survey on Innovation and Production Network.

The MNL result is provided in Table A3. There are three noteworthy points. Firstly, in trading with partners abroad, firms are likely to choose air or sea. Secondly, the coefficients for distance are estimated to be significantly positive, indicating that the larger the distance between trading partners, the more likely the firms are to choose air or sea. Specifically, this result implies that the two kinds of transport costs per distance are lower for air and sea than for truck. Third, the intercept term of distance in machinery industries has a significantly positive coefficient for air. This result may indicate large time costs in the machinery industry.

Table A3. Multinomial Logit Analysis Results

Truck as a basis	Air			Sea		
	Coef.		S.D.	Coef.		S.D.
Abroad	3.573	***	0.736	2.915	***	0.428
ln Distance (Food as a basis)	0.444	***	0.170	1.268	***	0.167
*Textiles	0.104		0.126	-0.151		0.094
*Machineries	0.300	**	0.135	0.112		0.086
*Automobile	0.201		0.174	-0.104		0.154
*Others	0.148		0.106	-0.068		0.066
Constant	-5.711	***	0.760	-9.621	***	0.993
Country dummy: Indonesia as a basis						
Philippines	-0.336		0.470	0.364		0.446
Thailand	-2.239	**	0.904	-0.794		0.624
Viet Nam	-2.483	***	0.683	-0.437		0.419
Statistics						
Observations	1,312					
Pseudo R-squared	0.3407					
Log-likelihood	-321.5					

*Note:****, **, and * show 1%, 5%, and 10% significance, respectively.
Source: Authors' calculation.

Lastly, we conduct some simulations to get a more intuitive picture of the transportation modal choice. Specifically, employing our estimators, we calculate the distance between trading partners for which the two transportation modes become indifferent in terms of their probability. For example, suppose that a firm in the food industry in Bangkok trades with a partner located in another city. Our calculation reveals how far the city is from Bangkok if the probability of choosing air/sea is equal to that of choosing truck transportation. In the calculation, we set Abroad to the value of one, i.e. international transactions. The results are reported in Table A4. In Bangkok, for example, firms in the machinery industry choose air or sea if their trading partners are located more than 400 km away. On the other hand, firms in the food industry basically only use truck transportation.

Table A4. Probability-Equivalent Distance with Truck Transportation (Kilometres): Domestic and International Transportation from Bangkok

	Domestic		International	
	Air	**Sea**	**Air**	**Sea**
Food	60,300,000	3,699	19,254	371
Textiles	2,022,900	11,218	2,968	825
Machineries	44,009	1,899	361	229
Automobile	225,394	7,693	886	628
Others	684,540	5,909	1,634	520

Source: Authors' calculation based on the MNL results in Table A3.

We estimate some parameters necessary for calculating the transport costs. Specifically, we estimate transportation speed and holding time. Our strategy for estimating these is straightforward and simple. We regress the following equation:

$$Time_{ij}^{M} = \rho_0 + \rho_1 Abroad_{ij}^{M} + \rho_2 Distance_{ij}^{M} + \varepsilon_{ij}^{M}.$$

The coefficients $\rho_0^M$and ρ_1^M represent mode M's holding time in domestic transportation and its additional time in international transportation, respectively. The inverse of ρ_2^M indicates the average transportation speed in mode M. We use the same data as in the previous section. However, the estimation in this section does not require us to restrict our sample to firms with transactions between regions accessible by truck.

The OLS regression results are reported in Table A5. Although some of the holding time coefficients, i.e. ρ_0^M and ρ_1^M, are estimated as being insignificant, their magnitude is reasonable. As for the distance coefficient, its magnitude for sea and truck transportation is reasonable, but that for air is disappointing and too far from the intuitive speed, say, around 800 km/h. One possible reason is that 'time' in our dataset always includes the land transportation time to the airport. This causes the air transportation speed to be understated.

Table A5. OLS Regression Results: Holding Time and Transportation Speed

	Air	Sea	Truck
Estimation Results			
Abroad	9.010	11.671	10.979***
	[8.350]	[13.320]	[2.440]
Distance	0.018*	0.068***	0.026***
	[0.010]	[0.018]	[0.002]
Constant	6.123	3.301	2.245***

	[7.940]	[13.099]	[0.739]
Holding Time (Hours)			
Domestic	9.010	11.671	10.979
International	15.133	14.972	13.224
Speed (Kilometres/Hour)	55.556	14.706	38.462
Observations	51	34	754
R-squared	0.1225	0.3698	0.1772

Notes: ***, **, and * show 1%, 5%, and 10% significance, respectively. The dependent variable is transportation time.
Source: Authors' calculation.

We specify a simple linear transport cost function, which consists of physical transport costs and time costs. We assume the behaviour of the representative firm for each industry as follows:

- A representative firm in the machinery industry will make a choice between truck and air transport and choose the mode with a higher probability in (1).
- A representative firm in the other industries will choose between truck and sea transport and choose the mode with the higher probability in (1).

Specifically, the transport cost in industry *s* by mode *M* between regions *i* and *j* is assumed to be expressed as:

$$C_{ij}^{s,M} = \underbrace{\left[\left(\frac{dist_{ij}}{Speed_M}\right) + \left(1 - Abroad_{ij}\right) \times ttrans_M^{Dom} + Abroad_{ij} \times ttrans_M^{Intl}\right]}_{Total\ \ Transport\ \ Time} \times ctime_s + \underbrace{dist_{ij} \times cdist_M}_{Physical\ \ Transport\ \ Cost} + \underbrace{\left(1 - Abroad_{ij}\right) \times ctrans_M^{Dom} + Abroad_{ij} \times ctrans_M^{Intl}}_{Physical\ \ Transshipment\ \ Cost} \quad (2)$$

where $dist_{ij}$ is the travel distance between regions *i* and *j*, $speed_M$ is the travel speed per one hour by mode *M*, $cdist_M$ is the physical travel cost per one kilometre by mode *M*, and $ctime_s$ is the time cost per one hour perceived by firms in industry *s*. The parameters $ttrans_M^{Dom}$ and $ctrans_M^{Dom}$ are the holding time and cost, respectively, for domestic transshipment at ports or airports. Similarly, $ttrans_M^{Intl}$ and $ctrans_M^{Intl}$ are the holding time and cost, respectively, for international transshipment at borders, ports, or airports.

The parameters in the transport function are determined as follows. Firstly, by using the

parameters obtained from the results of the estimation and borrowing some parameters from the ASEAN Logistics Network Map in JETRO (2008), we set some of the parameters in the transport function as in Table A6. Notice that our estimates of $Speed_{\text{Air}}$ and $ttrans_{\text{Air}}^{Intl}$ in Table A6 went beyond our expectations. Thus, we set $Speed_{\text{Air}}$ at the usual level (800 km/h) and we made $ttrans_{\text{Air}}^{Intl}$ consistent with the JETRO (2008).

Secondly, after substituting those parameters for equation (2) under domestic transportation, $C_{ij}^{s,M}$ becomes a function of $dist_{ij}$ and $ctime_s$. To meet the above-mentioned assumptions on firms' behaviour, we add the following conditions:

Table A6. Parameters in the Transport Cost Function

	Truck	Sea	Air	Unit	Source
$cdist_M$	1	0.24	45.2	US$/km	Map
$Speed_M$	38.5	14.7	800	Km/hour	Table A5
$ttrans_M^{Dom}$	0	11.671	9.01	Hours	Table A5
$ttrans_M^{Intl}$	13.224	14.972	12.813	Hours	Table A5 and Map
$ctrans_M^{Dom}$	0	190	690	US$	Map
$ctrans_M^{Intl}$	500	N.A.	N.A.	US$	Map

Notes: Costs are for a 20-foot container. The parameter $ctrans_M^{Dom}$ is assumed to be half of the sum of the border costs and transshipment costs in international transport from Bangkok to Hanoi. The parameters $sttrans_M^{Dom}$ and $ctrans_M^{Dom}$ for sea and air include one-time loading at the origin and one-time unloading at the destination.
Source: Authors' estimation and ASEAN Logistics Network Map 2008.

- The transport cost using trucks becomes the lowest among the three modes when $dist_{ij}$ is zero for each industry.
- If the transport cost is depicted as a function of $dist_{ij}$, a line is drawn by the function where truck intersects with it at only one point for air and sea for the machinery industry, and at only one point for the other industries with all non-negative $dist_{ij}$.

Under the probability equivalent (domestic) distances in Table A4, the transport cost $C^{s,Air}$ should be equal to $C^{s,Truck}$ in machineries, and $C^{s,Sea}$ should be equal to $C^{s,Truck}$ in the other industries. By using this equality, we calculate $ctime_s$ for each industry as in Table A7. The functions meet the above conditions.

Table A7. Time Costs per One Hour by Industry Perceived by Firms (*ctimes*): US$/hour

	Food	Textile	Machineries	Automobile	Others
$ctime_s$	15.7	17.2	1803.3	16.9	16.5

Source: Authors' calculation.

Thirdly, by substituting these parameters again, including $ctime_s$ and $ctrans_{\text{Truck}}^{Intl}$ under international transportation, $C_{ij}^{s,Truck}$ becomes a function of only $dist_{ij}$, and $C_{ij}^{s,M}$ for air and sea becomes a function of $dist_{ij}$ and $ctrans_{\text{M}}^{Intl}$. Then, by using the probability-equivalent (international) distances in Table A4 again, we can calculate $ctrans_{\text{Air}}^{Intl}$ and $ctrans_{\text{Sea}}^{Intl}$ for each industry. Lastly, $ctrans_{\text{Sea}}^{Intl}$ is uniquely set as the average among the other industries. These parameter values are reported in Table A8. The functions obtained also fulfil the above conditions.

Table A8. Costs for Transshipment in International Transport ($ctrans_M^{Intl}$): US$

	Truck	Sea	Air
$ctrans_M^{Intl}$	500	504.2	1380.1

Source: Authors' calculation.

Additionally, $ttrans^{Dom}$ and the railway speed are estimated by the same dataset and the same estimating equation. Due to the minimal use of railways in international transactions in the dataset, we adopt the same value for the time and cost of international transactions as in trucks from Table A9. Finally, we set the cost per km as half the value of road transport.[e]

[e] The ASEAN Logistics Network Map 2008 offers an example where the cost per kilometre for railway is 0.85 times that of trucks. However, it is only for the case when we ship a quantity that can be loaded onto a truck. Railways have much larger economies of scale than trucks in terms of shipping volume, so some industries, such as coal haulage, incur much lower costs per ton-kilometre. Therefore, we need to deduct this from the value in the ASEAN Logistics Network Map 2008.

Table A9. Parameters for Rail Transport

	Railway	Unit	Source
$cdist_M$	0.5	US$/km	Half of Truck
$Speed_M$	19.1	Km/hour	Estimation
$ttrans_M^{Dom}$	2.733	Hours	Estimation
$ttrans_M^{Intl}$	13.224	Hours	Same as Truck
$ctrans_M^{Intl}$	500	US$	Same as Truck

Source: Authors' calculation.

The sum of tariff and non-tariff barriers (TNTB) by countries is estimated by employing the 'log odds ratio approach', which was initiated by Head and Mayer (2000). Namely, we estimate the industry-level border barriers for each country (not each subnational region). This approach looks more appropriate than other approaches because the theoretical model underlying this approach is basically the same as our GSM. We estimate the ratio of the 'consumption of products from country *j* in country *i* (X_{ij})' to the 'consumption of products from country *i* in country *i* (X_{ii})'. For brevity, we omit an industry subscript. Specifically, such a ratio is given by the following.

$$\frac{X_{ij}}{X_{ii}} = \left(\frac{n_j}{n_i}\right)\left(\frac{a_{ii}}{a_{ij}}\right)^{1-\sigma}\left(\frac{t_{ij}}{t_{ii}}\right)^{1-\sigma}\left(\frac{p_j}{p_i}\right)^{1-\sigma}$$

n, *a*, *t*, *σ*, and *p* represent the mass of varieties, a parameter on preference weight, transport costs, the elasticity of substitution across varieties, and product prices, respectively.

To estimate this model with the available data, we assume the following. First, the mass of varieties is assumed to be related to the size of GDP. Second, we assume that the ratio of preference parameters is explained by linguistic commonality (*Language*), colonial relationship (*Colony*), and geographical contiguity (*Contiguity*). These variables are expressed as binary variables. Third, the transport costs are assumed to be expressed as the following.

$$\ln\left(\frac{t_{ij}}{t_{ii}}\right) = Border_i + \alpha \ln\left(\frac{Distance_{ij}}{Distance_{ii}}\right) + \beta \ln Cost_{ij}$$

$Border_{ij}$ shows the TNTB, while $Distance_{ij}$ is the geographical distance between countries *i* and *j*. The domestic distance, i.e. $Distance_{ii}$, is computed as the following.

$$Distance_{ii} = \frac{2}{3}\sqrt{\frac{Area_i}{\pi}}$$

π and *Area* are the circular constant and surface area, respectively. *Cost* is the sum of the physical transport costs and time costs, for which the computation has been explained. Last, the product prices are assumed to be a function of wages, for which GDP per capita is used as a proxy.

Under these assumptions, the above equation can be rewritten as follows.

$$\ln\left(\frac{X_{ij}}{X_{ii}}\right) = \gamma_1 \ln\left(\frac{GDP_j}{GDP_i}\right) + \gamma_2 Language_{ij} + \gamma_1 Colony_{ij} + \gamma_3 Contiguity_{ij} + \gamma_4 \ln\left(\frac{Distance_{ij}}{Distance_{ii}}\right) + \gamma_5 \ln Cost_{ij} + \gamma_6 \ln\left(\frac{GDP\ per\ capita_j}{GDP\ per\ capita_i}\right) + u_i + \epsilon_{ij}$$

u_i shows the fixed effects for country *i* and, from the theoretical point of view, the log value of the product between *Border* and (1−σ). Therefore, we compute the TNTB by employing the estimates for these fixed effects and the elasticity of substitution. The estimation is conducted for agriculture, manufacturing, and services separately. In the case of manufacturing, we estimate the model by pooling the data for five sectors while controlling for sector fixed effects.

We estimate the above model for the year 2007. The data sources are as follows. The consumption data are obtained from the GTAP 8 Data Base. The data on GDP and GDP per capita are obtained from the World Development Indicators (World Bank). Those on geographical distance and three dummy variables on preferences are from CEPII database. With this methodology, we estimate the industry-level fixed effects for 69 countries.

The estimation results by the ordinary least square (OLS) method are reported in Table A10. Almost all variables have significant coefficients with expected signs, though the coefficients for GDP per capita ratio are positively significant in manufacturing and services. This estimation provides us the estimates on industry-level fixed effects for 69 countries. In order to obtain those in the other countries, we assume that those in each country are highly correlated with GDP per capita and regress (log of) GDP per capita in addition to industry dummy variables on the estimates of these fixed effects. The estimation results are the following.

Estimates on Fixed Effects = −17.797 + 1.245 * ln GDP per capita + 1.365 * Food

+ 2.555 * Textile + 2.052 * Electric Machinery + 1.569 * Automobile

+ 2.523 * Other Manufacturing − 1.149 * Services

The number of observations is 483, and the adjusted R-squared is 0.7386. The base for the industry dummy variables is agriculture. Using the estimation results and the data on GDP per capita, we predict industry-level fixed effects for the other 126 countries. As a result, we obtain these for 195 countries in total. Applying the elasticity of substitution to these estimates, we compute the tariff equivalent of the TNTB.

Table A10. OLS Results

	Agriculture	Manufacturing	Services
GDP ratio	0.968***	1.346***	0.677***
	(0.020)	(0.011)	(0.008)
Language	1.115***	0.684***	0.146***
	(0.126)	(0.070)	(0.048)
Colony	0.508**	0.173	0.268***
	(0.204)	(0.114)	(0.078)
Contiguity	1.821***	1.090***	0.464***
	(0.186)	(0.103)	(0.071)
Distance ratio	-0.555***	-1.000***	-0.016
	(0.086)	(0.036)	(0.038)
Cost	-0.743***	-0.576***	-0.459***
	(0.194)	(0.206)	(0.068)
GDP per capita ratio	-0.593***	0.134***	0.301***
	(0.024)	(0.013)	(0.009)
Sector Dummy (Base: Automobile)			
Food		-0.207***	
		(0.064)	
Textile		1.016***	
		(0.070)	
Electric Machinery		0.491***	
		(0.053)	
Other Manufacturing		0.981***	
		(0.053)	
Number of Observations	4,592	23,460	4,692
Adjusted R-squared	0.6076	0.6192	0.8508

Notes: *** and ** indicate 1% and 5% significance, respectively. Robust standard errors are in parentheses. All specifications include import country dummy variables.
Source: Authors' calculation.

Next, we obtain the NTBs by subtracting tariff rates from the TNTB. Our data source for the tariff rates is the World Integrated Trade Solution, particularly Trade Analysis and Information System (TRAINS) raw data. For each trading pair, we aggregate the lowest tariff rates among all available tariff schemes at the tariff-line level into single tariff rates for each industry by taking a simple average. The available tariff schemes include multilateral free trade agreements (FTAs) (e.g. ASEAN+1 FTAs) and bilateral FTAs (e.g. the China–Singapore FTA) alongside other schemes, such as the Generalized System of Preferences. Moreover, we somewhat take into account the gradual tariff elimination schedule in six ASEAN+1 FTAs in addition to the ASEAN Free Trade Area (AFTA). For example, in the case of ASEAN–Japan Comprehensive Economic Partnership (AJCEP), tariff rates among member countries began to gradually decline from 2008. The tariff rates in Japan and the ASEAN forerunners against members are, for simplicity, assumed to linearly decrease to become the final rates in 2018, and those for the ASEAN latecomers decrease linearly to the final rates in 2026.[f] 'Final rates' takes into account the final rates set in each agreement; namely, even if the tariff rates for a product were not zero in 2009, they are set to zero in 2026 if they involve preferential products. We obtain information about whether each product finally attains zero rates in ASEAN+1 FTAs from the FTA database developed by ERIA. We set the final rates for all products in the case of AFTA at zero due to the lack of such information. As a result, we obtain separately the (bilateral) tariff rates and (importer-specific) NTBs by industry on a tariff-equivalent basis. Finally, our total transport costs are the product of the sum of physical transport and time costs and the sum of tariff rates and NTBs.

Another important setting for the transport cost is the 'cumulation rule' in multilateral FTAs, particularly ASEAN+1 FTAs and AFTA. There are several types of cumulation rules: bilateral, diagonal, and full. Some scholarly studies try to quantify the trade creation effect of diagonal cumulation. Particularly in Hayakawa (2014), which examines Thai exports to Japan, the tariff equivalent of the diagonal cumulation rule in the AJCEP is estimated at around 3%. Based on this estimate, we formalise the effect of the diagonal cumulation rule among ASEAN+1 FTAs as 3% below NTBs in trading among members after each FTA's entry into force.

We adopt the elasticity of substitution for each sector mainly from Hummels (1999) and estimate it for services, as 3.8 for Agriculture, 5.1 for FoodProc, 8.4 for Textile, 6.0 for E&E, 4.0 for Auto, 5.3 for OtherMfg, and 3.0 for services. Estimates for the elasticity of services are obtained from the estimation of the usual gravity equation for services trade, including as independent variables the importer's GDP, exporter's GDP, importer's corporate tax,

[f] We do not insert the exact schedule of the gradual tariff reductions due to the lack of ready-made information. The ASEAN forerunners are Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The latecomers are Cambodia, the Lao PDR, Myanmar, and Viet Nam.

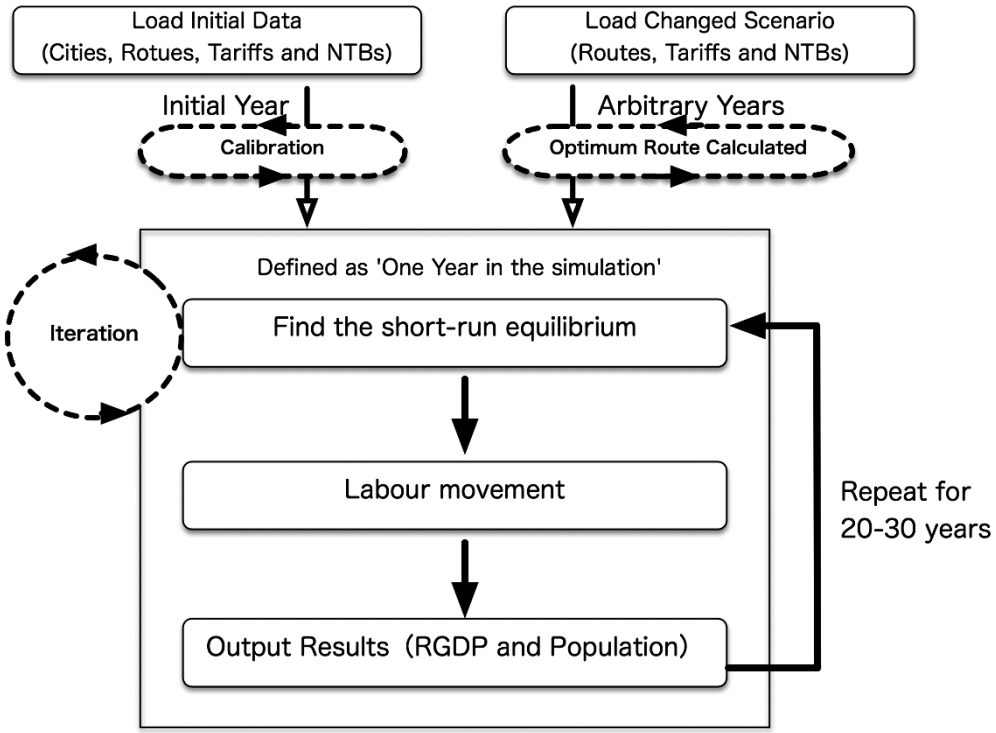
geographical distance between countries, a dummy for FTAs, a linguistic commonality dummy, and a colonial dummy. The elasticity for services is obtained from the transformation of a coefficient for the corporate tax because it changes the prices of services directly. For this estimation, we mainly employ data from 'Organisation for Economic Co-operation and Development Statistics on International Trade in Services.'

Parameters β, μ, and ρ are obtained as follows. The consumption share of consumers by industry (μ) is uniformly determined for the entire region in the model. It would be more realistic to change the share by country or region, but we cannot do so because we lack sufficiently reliable consumption data. Therefore, the consumption share by industry is set to be identical to the industry's share of GDP for the entire region as follows: 0.040 for Agriculture, 0.033 for FoodProc, 0.018 for Textile, 0.026 for E&E, 0.020 for Auto, 0.172 for OtherMfg, and 0.687 for services. The single labour input share for each industry ($1 - \beta$) is uniformly applied for the entire region and the entire time period in the model. Although it may differ among countries/regions and across years, we use an 'average' value, in this case that of Thailand as a country in the middle-stage of economic development, which is again taken from the Asian International Input–Output Table 2005 by IDE and *Zai-Asia Oceania Nikkei Kigyo Jitta Chosa 2013* by JETRO. As a result, the parameter of β is 0.39 for Agriculture, 0.39 for FoodProc, 0.36 for Textile, 0.44 for E&E, 0.43 for Auto, 0.41 for OtherMfg, and 0.0 for services.

Simulation Procedure

This sub-section explains our simulation procedure, which are depicted in Figure A2. First, with the given distributions of employment and regional GDP by sector and region, the short-run equilibrium is obtained. The equilibrium nominal wages, price indices, output, and GDP by region are calculated.

Figure A2. Simulation Procedure



Source: Authors.

Observing the achieved equilibrium, workers migrate among regions. Workers migrate from the regions with lower real wages to the regions with higher real wages. Within a region, workers move from lower-wage industries to higher wage industries. One thing we need to note is that the process of this adjustment is gradual, and the real wages between regions and industries are not equalised immediately.

After the migration process, we obtain the new distribution of workers and economic activities. With this new distribution and predicted population growth, the next short-run equilibrium is obtained for a following year, and we observe the migration process again. These computations are iterated typically for 20 years from 2010 to 2030.

Calculation of the Economic Impacts

To calculate the economic impacts of specific trade and transport facilitation measures (TTFMs), we take the differences of the RGDPs between the baseline scenario and a specific scenario with TTFMs. The baseline scenario contains minimal additional infrastructure development after 2010. On the other hand, the alternative scenario contains specific TTFMs in 2015, for example according to the information on the future implementation plans of TTFMs.

We compare the RGDPs between two scenarios typically in 2030. If the RGDP of a region under the scenario with TTFMs is higher (lower) than that under the baseline scenario, we regard this surplus (deficit) as the positive (negative) economic impact of the TTFMs.

A notable merit of the calculation of the economic impact by taking the difference between the scenarios is the stability of the results. The economic indices forecast by a simulation depend on various parameters, while the differences in the economic indices are quite stable regardless of the changes in the parameters.

Making the Scenarios

Baseline scenario

The following assumptions are maintained in the baseline scenario:

- The national population of each country is assumed to increase at the rate forecast by the UN Population Division until the year 2030.
- International migration is prohibited.
- Tariff and non-tariff barriers (TNTBs) are changing based on the FTA/EPAs currently in effect.
- We give different exogenous growth rates on technological parameters for each country.

The final point should be noted precisely. In the IDE–GSM, each industry in each city has a different productivity parameter '*A*'. We can interpret this parameter *A* containing the following factors:

- Education/skill level
- Logistics infrastructure within the region
- Communications infrastructure within the region
- Electricity and water supply
- Firm equipment
- Utilisation ratio/efficiency of infrastructure and equipment

We give different exogenous growth rates for the productivity parameter '*A*' for each country to replicate the GDP growth trend from 2010 to 2023, which is estimated and provided in the World Economic Outlook by the International Monetary Fund. After the year 2023, we gradually reduce the calibrated growth rates of the technological parameters to half in 20 years.

In the baseline scenario, transport settings are unchanged throughout the simulation period 2010–2030, except for some minor updates in 2015. For instance, the average speed of land traffic is set at 38.5 km/h. However, the speed on roads through mountainous areas is set to half (19.25 km/h), and certain roads are set at 60 km/h: namely, roads in Thailand outside traffic-congested metropolitan Bangkok, the road from the border of Thailand to Singapore through the west coast of Malaysia, and roads No. 9 and No. 13 from Vientiane to Pakse in the Lao PDR. The average speed for sea traffic is set at 14.7 km/h between international class ports and at half that on other routes. The average air traffic speed is set at 800 km/h between the primary airports of each country and at 400 km/h on other routes. The average railway traffic speed is set at 19.1 km/h.

Trade and Transport Facilitation Measures (TTFMs)

We have various trade and transport costs in the model. By changing these costs, we can replicate the TTFMs in the model as follows:

- Upgrading of the road: increase in the average speed of cars for a road
- Customs facilitation: reduction of the time and money costs at the national borders
- FTA/RTA: reduction of the import tariffs between member countries and also reduction of the NTBs taking into account the 'cumulation' effect of an FTA/RTA
- Overall improvements in business environments: reduction of NTBs for a country

Special Economic Zones (SEZs) and Free Trade Zones (FTZs)

In the model, each industry in each city has a different productivity parameter, *A*. The increase in this regional productivity captures the improvements in investment climates included in *A*. Such practical examples include the establishment of SEZs/FTZs.

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Rules on Cross-border Movement of Vehicles for the Trilateral Highway

Background paper

Masami Ishida

1. Introduction

The history of the Trilateral Highway (TLH), which connects India, Myanmar, and Thailand, is longer than might be expected. On 6 April 2002, at a meeting in Yangon, the three countries agreed to develop a highway between Mae Sot in Thailand and Moreh in India in 2 years (*First Post*, 2014; Institute of Developing Economies, 2003).

Work on the highway did not even start 'in 2 years'. Before the agreement, however, the first Thai–Myanmar Friendship Bridge over the Moei River, between Mae Sot in Thailand and Myawaddy in Myanmar, was opened on 15 August 1997. The two countries had to overcome several hurdles:

(1) Social unrest spread because of the conflict between the Karen National Union (KNU) and the Armed Forces of Myanmar in the borderlands.
(2) The section of National Highway No. 8 in Myanmar, between Thingan Nyinaung and Kawkareik, which was developed by the United Kingdom during the colonial period, was too narrow for two cars to pass each other.
(3) The vehicle weight on the first Friendship Bridge was limited to 25 tons, which meant that a heavy truck had to trans-ship the cargo to a small truck before crossing. Later, the rule was changed to limit to five the number of trucks crossing the bridge simultaneously.

The first issue was improved with the peace agreement between the KNU and the Armed Forces of Myanmar on 7 February 2012 (*The Myanmar Times,* 2012). On 28 August 2013, the Government of Myanmar opened the Myawaddy border to foreign visitors and opened

three other borders with Thailand (*The Myanmar Times,* 2013). The second issue was resolved by the opening of a two-lane road on 30 August 2015, built with the assistance of the Government of Thailand. The third issue improved with the official opening on 30 October 2019 of the second Thai–Myanmar Friendship Bridge, suitable for heavy vehicles, connecting Mae Sot, Tak Province in Thailand with Myawaddy, Kayin State in Myanmar (*The Myanmar Times,* 2019).

Before the TLH agreement, in March 1993, the Government of India started to support Myanmar in constructing the 160-kilometre Tamu–Kalewa–Kalemyo road, which was completed on 13 February 2001 (*The Hindu,* 2001). The Government of India continued to maintain the Tamu–Kalewa–Kalemyo road until 2009 at which time the road's development was put on hold. When India's Prime Minister Manmohan Singh visited Myanmar on 27–29 May 2012 and met with Myanmar's President Thein Sein, they agreed, on request of the Myanmar government, to build 71 bridges in the Tamu–Kyigone–Kalewa road section of the TLH. India's Border Road Organization, however, could not start assistance quickly because of a shortage of human resources. India's Prime Minister Shri Narendra Modi approved the construction of 69 bridges on 11 September 2015 (Government of India, 2015; Singh, 2012).[1] The border between Tamu in Myanmar and Moreh in India was upgraded to an international checkpoint in August 2018 in accordance with the Land Border Crossing Agreement between India and Myanmar, signed on May 11 2018 (*The Hindu*, 2018).

In this way, the border gates between Thailand and Myanmar and between Myanmar and India have become international entry and exit checkpoints, and the road infrastructure in surrounding areas has been developed. The rules on cross-border movement of vehicles, however, have yet to be dissolved. A cross-border transport agreement (CBTA) between Thailand and Myanmar has been prepared as part of the Greater Mekong Subregion (GMS) Economic Cooperation Program CBTA (GMS–CBTA), which includes Cambodia; Lao People's Democratic Republic (Lao PDR); Myanmar; Thailand; Viet Nam; and Yunnan Province and Guangxi Zhuang Autonomous Region, China.[2] India signed the Motor Vehicles Agreement

[1] Two bridges were constructed by the Myanmar government.

[2] The Association of Southeast Asian Nations (ASEAN) concluded the ASEAN Framework Agreement on Facilitation of Goods in Transit in 1998 and the ASEAN Framework Agreement on the Facilitation of Inter-State Transport in 2009. This paper, however, does not examine them because some related protocols have not been signed.

for the Regulation of Passenger, Personal and Cargo Vehicular Traffic between Bangladesh, Bhutan, India and Nepal (BBIN–MVA) with three other countries on 15 June 2015. Which rules and what kinds of rules should be applied to the TLH? This paper intends to answer this question.

The next section reviews the literature. The third compares the articles of the GMS–CBTA and the BBIN–MVA. The fourth introduces simplified versions of the GMS–CBTA, the Initial Implementation of the CBTA (II-CBTA), and Early Harvest Implementation of the CBTA (EH–CBTA). The fifth recommends policy to coordinate the two agreements and apply them to the TLH. The sixth summarises the paper and shows challenges and prospects.

2. Literature Review

It is necessary to review the literature on the TLH, the GMS–CBTA, and the BBIN–MVA.

One of the most-quoted papers on the TLH is Kimura, Kudo, and Umezaki (2011). It is the first chapter of the Comprehensive Asian Development Plan II, compiled by the Economic Research Institute for ASEAN and East Asia (ERIA). This paper, however, treats not only the TLH but also other infrastructure development projects such as the Mekong–India Economic Corridor and the Myanmar–China Economic Corridor. ERIA Study Team (2020), the parent paper for several background papers, including this one, focuses on the TLH, including the eastward extension to Cambodia, Lao PDR, and Viet Nam. The eastward extension is based on a proposal by India's Prime Minister Modi at the 14th India–Association of Southeast Asian Nations (ASEAN) Summit at Vientiane on 8 September 2016. Bana and Yohme (2017) report this event in detail, stress the geopolitical significance of the TLH, and treat the project as India's window to Thailand, Cambodia, Lao PDR, Myanmar, and Viet Nam.

Not a few papers touch briefly on the GMS–CBTA (Krongkaew, 2004; Nguyen et.al, 2016). Papers that depict the whole picture of the GMS–CBTA, however, are not many. Ishida (2013) covers its history, the background of all the articles, and the details on the II-CBTA. Ishida (2012) focuses on the issues of the border control regimes, based on interviews with government officials at border checkpoints in Thailand, Cambodia, Lao PDR, and Viet Nam. Ishida (2014) compares the GMS–CBTA and the ASEAN framework agreements. These

papers, however, do not mention the EH–CBTA because they were presented before all the countries ratified all the annexes and protocols in 2015. This paper introduces the Early Harvest programme in the fifth section.

More papers discuss the BBIN–MVA. For instance, Das (2016) depicts international relations of the BBIN, including cross-border hydropower trade between Nepal and Bhutan, and India, and discusses the BBIN–MVA in detail. Hassan (2016) shows the history, objectives, and prospects of BBIN connectivity. Sharmeen (2017) evaluates the BBIN–MVA based on interviews with researchers, policymakers, and sector experts in Bangladesh. Hassan (2016) and Sharmeen (2017) are Bangladeshi, but Hassan (2016) stresses the benefits of the BBIN–MVA, especially for Bhutan and Nepal, while Sharmeen (2017), a member of the National Core Committee of Transit of Bangladesh, evaluates the transit fees charged by Bangladesh as too low and believes that it is not ready to provide extensive service to its neighbours, considering its poor infrastructure. Accessibility to the Port of Chittagong is key for neighbouring countries and North-East India.

Few papers have compared the GMS and the BBIN and none has deeply compared the GMS–CBTA and BBIN–MVA. This paper compares the articles of the two agreements and answers the research question in the previous section.

3. Comparison of the GMS–CBTA and the BBIN–MVA

3.1 Major Differences

The length of history, fundamental tones, and cooperative regimes of the BBIN–MVA and the GMS–CBTA will be compared first. Technical issues will be compared later, but only the existence or non-existence of rules on transit facilities will be discussed in this sub-section.

Numbers of articles and annexes. The GMS–CBTA has 44 articles in the main agreement, 17 annexes, and 3 protocols, with a total of 407 articles (Table) (Ishida, 2013), although the annexes and protocols have overlapping articles. The BBIN–MVA has 17 articles and 3 annexes.

Period from discussion to signing and/or ratification. The GMS–CBTA falls under the framework of the GMS Economic Cooperation Program. At the 4th Ministerial Conference on 15–16 September 1994, the member countries started to discuss the need for 'software' for a transport system to eliminate the barriers to cross-border transport. The six countries signed the main agreement, 17 annexes, and 3 protocols, and ratified the main agreement on 17 September 2003. All the annexes and protocols were ratified by all six countries in 2015. Discussions and negotiations took more than 20 years. The draft of the BBIN–MVA, however, was proposed by the Government of India to the South Asian Association for Regional Cooperation Summit in November 2014, but was not signed because Pakistan had reservations. The draft was signed at the transport ministerial meeting of Bangladesh, Bhutan, India, and Nepal on 15 June 2015 (Government of India, 2015). It took only 7 months from proposal to signing. However, agendas of trade, connectivity, and transit, and of water resource management and power and hydropower trade and grid connectivity (Hassan, 2016) had been discussed under an inter-governmental Joint Working Group of the BBIN.[3] Yet, the GMS–CBTA discussion was longer and deeper.

Tone. Because the starting point for the negotiation of the GMS–CBTA was the elimination of cross-border barriers, its tone is not regulatory but liberalising compared with the BBIN–MVA. Many clauses of the GMS–CBTA request the contracting parties to liberalise something with the stronger auxiliary 'shall'. The BBIN–MVA has a regulatory tone but does not include the auxiliary 'shall'; it uses 'will', except in Article XVII, which stipulates, 'Each Contracting party shall keep an original of this Agreement'. For instance, the BBIN–MVA stipulates that authorised customs, police, and security agency officers have the right to inspect and to search vehicles operating in their territories (Sub-article [1], Article X). Similar articles can be found in other laws, regulations, and agreements related to cross-border transport facilitation. The GMS–CBTA, however, stipulates that 'the Contracting Parties shall gradually adopt the following measures in order to simplify and expedite border formalities in accordance with Annex 4', and lists the single-window inspection and the single-stop inspection (Article 4, main agreement).

[3] Hassan (2016) does not mention the time it took to start discussing the agenda but it must have been between 1997 and 2014. In 1997, Bangladesh's proposal to establish the South Asian Growth Quadrangle, composed of BBIN member countries, was recognised at the Ninth Summit of the South Asia Association for Regional Corporation at Male.

Cooperative regime for deliberation and negotiation. The GMS–CBTA requests, using 'will', the contracting parties to each establish their own permanent national transport facilitation committee (NTFC), and the representatives of the NTFCs to form together a joint committee (Articles 28 and 29, main agreement). The BBIN–MVA does not prescribe such an organisational regime.

Rules on transit transport. The GMS–CBTA prescribes a rule on transit transport (Articles 7 and 8, main agreement; Annex 6). The BBIN–MVA does not prescribe detailed rules on transit facilities, including the exemption of customs inspection and customs payments in middle countries, as long as cross-border cargoes are sealed. The BBIN–MVA refers to 'transit' in some articles: for instance, 'transit or in the destination Contracting Parties' (Sub-article [7], Article IV) and 'transit fees' (Sub-article [4], Article VII). It may be agreed that Bangladesh can receive transit fees from transport operators of other contracting parties (Sharmeen, 2017). The GMS–CBTA does not directly refer to transit fees and stipulates that 'the Host Country shall, with regard to the levying the charges, not discriminate' (Sub-article [a], Article 2, Protocol 2). However, 'the least developed Contracting Parties (determined on the basis of the United Nations' designation of least developed countries [LDCs]) may apply preferential toll rates and other charges to the vehicles registered within their territories when undertaking domestic transport (Sub-article [b], Article 2, Protocol 2). In practice, for instance, if a motor vehicle registered in Thailand transports goods to Viet Nam by way of Lao PDR or Cambodia, then Lao PDR and Cambodia can collect transit fees from that motor vehicle whilst not charging domestic transport operators. If a motor vehicle registered in Lao PDR transports goods to Laem Chabang Port in Thailand for export to Europe, however, Thailand shall not charge transit fees as long as Thailand does not charge domestic transport operators.

3.2 Similarities

Even though such major differences exist between the BBIN–MVA and the GMS–CBTA, both agreements have many common or similar articles. They are enumerated following the order of the BBIN–MVA's articles.

a) The BBIN–MVA stipulates that, on the admission of entry of vehicles registered in other contracting parties, 'all the vehicles of a Contracting Party will require a permit for plying through the other Contracting Party(ies) and the permit will be issued in compliance of all the technical requirements...' (Sub-article [1], Article III). The GMS–CBTA stipulates that 'the Contracting Parties shall admit Vehicles registered by another Contracting Party to enter their territory' (Article 11, main agreement). The articles are similar even though their tones are different. Both agreements admit the transport of people and goods. Under the BBIN–MVA, transport permits for regular passenger transport, regular cargo transport, personal vehicles other than regular passenger transport, and non-regular passenger vehicles are issued upon request of a registered operator's filling in forms A, B, C, and D, respectively. Under the GMS–CBTA, the permits for scheduled and non-scheduled passenger and cargo transport are issued in accordance with Article 4, Protocol 3. Under the BBIN–MVA, the transport permit for regular or scheduled transport is for multiple entries, valid for 1 year, and renewable every year (Sub-article [7], Article III). The validity of the GMS–CBTA is stipulated for 1 year (Article 4, Protocol 3). Multiple visas under the BBIN–MVA are issued for crew members (Article V) and under the GMS–CBTA for people engaged in transport operation (Article 5). The BBIN–MVA prescribes that 'sector and the details of route, route maps, location of permitted rest or recreation places, tolls and check posts … will be specified in the Protocol in the format as at Annexure-I' (Sub-article [8], Article III). Under the GMS–CBTA, Protocol 1 defines permissible routes, and points of entry and exit for cross-border transport of goods and people (Article 20, main agreement) and lists the permissible corridors, routes, and border crossings in its attachment.

b) The BBIN–MVA requests cross-border transport drivers to carry several documents (Sub-article [2], Article IV) and requires 'a valid registration certificate'. The GMS–CBTA states that 'every motor vehicle in cross-border traffic shall carry a valid certificate of registration' (Article 5, Annex 2). The registration certificate bears information such as the issuing authority, the owner or holder of the certificate, and the technical requirements of a vehicle. The serial numbers of the chassis and engine are technical requirements in the registration certificate of the GMS–CBTA and in the permit for each trip under the BBIN–MVA. The BBIN–MVA requires a valid transport

permit (Sub-Article 2, Article IV) and the GMS–CBTA requires a GMS road transport permit (Article 1, Protocol 3). The BBIN–MVA requires the crew to have pre-verified passports and the passengers internationally recognised valid travel documents such as a valid driving license and a valid insurance policy (vii, Sub-article [2], Article IV). Under the GMS–CBTA, those crossing the border require a valid travel document (Article 2, Annex 5); a driving permit (Article 17, main agreement); and compulsory third-party motor vehicle liability insurance (Article 16, main agreement).

c) Article VI of the BBIN–MVA enumerates restrictions and follows the principle of cabotage: vehicles registered by one contracting party are not permitted to transport local passengers and goods within the territory of other contracting parties. Cabotage does not prohibit picking up passengers or goods in the transporter's own territory and transporting them to the territory of other contracting parties, or picking up passengers or goods in the territory of other contracting parties and transporting them to the transporter's own territory. Under the GMS–CBTA, cabotage shall only be permitted on the basis of a special authorisation from the host country, in step with free market forces (Article 19, main agreement).

d) Article VII of the BBIN–MVA prescribes fees and charges: 'all fees and charges of issue of permit for the vehicle of one Contracting Party will be levied only at the entry point of another Contracting Party'(Sub-article [3]), and provisions of internal laws or agreements will be applied to taxation and fees for cross-border procedures (Sub-article [1]). Under the GMS–CBTA, 'only legally authorised authorities are entitled to collect the charges' (Article 4, Protocol 2). Under the BBIN–MVA, 'no additional charges such as octroi or local taxes will be levied on transport of passenger vehicles' (Sub-decree [4]). Under the GMS–CBTA, 'any unauthorised collection of charges is prohibited' (Article 4, Protocol 2).

e) Under the BBIN–MVA, temporary admission of vehicles into their own territory and baggage carried by the crew are free from customs duty (Sub-articles [2] and [4], Article VII). The GMS–CBTA stipulates temporary admission to motor vehicles and spare parts without payment of import duties and taxes (Article 18, main agreement) and provides further detailed rules (Annex 8). Article VII of the BBIN–MVA prescribes fees and charges: 'the standard accessories of the vehicles, essential spares, fuel and oils contained in its supply tanks before entering in another contracting party should

be exempted from duties and taxes' (Sub-article [2]). The GMS–CBTA stipulates that 'the accessories, toolkit, and other articles that form normal equipment of the vehicle and the fuel in the ordinary/original supply tanks and the lubricants, maintenance supplies, and spare parts shall be exempted from import duties and taxes' (Article 2, Annex 8).

f) The BBIN–MVA stipulates road signs and signals and compliance with traffic laws (Article VIII) and that 'the designated authorities of the Contracting Parties will provide international road signs along the specified routes' (Sub-article [1], Article VIII). The GMS–CBTA also stipulates that 'the contracting parties to undertake gradually bring the traffic signs and signals on their territory' (Article 26, main agreement); vehicles of one contracting party must observe traffic laws in the territories of other contracting parties (Sub-article [2], Article VIII); and people, transport operators, and vehicles must comply with the laws and regulations of the host country (Article 30, main agreement).

g) Under the BBIN–MVA, authorised officers of customs and of land and dry ports have the right to inspect and search vehicles operating in their territory (Article X). The GMS–CBTA is intended to reduce cross-border barriers (Article 4, main agreement) .

h) Under the BBIN–MVA, 'in case of over-stay in any Contracting Party due to vehicle breakdown, accident, repair works or other unforeseen circumstances including natural calamities or disasters', a member of the driving crew will notify to the competent authority of that Contracting Party for the required period' (Article IX). The GMS–CBTA, covers vehicles in transit transport operation (Article 8, Annex 6); temporarily admitted vehicles (Article 8, Annex 8); and temporarily admitted containers (Article 9, Annex 14). The articles stipulate that 'the Host Country Customs Authorities will grant extension' in case the transport operator is unable to timely complete the transport operation in the territory of the host country and the operator requests an extension. The articles also stipulate the exemption of re-exportation of the vehicle in case of loss or destruction en route and the change of itinerary in case the transport operator is compelled to abandon the designated route due to force majeure.

i) Under the BBIN–MVA rules on insurance, non-regular and regular passenger transport and regular cargo vehicles must have an insurance policy (Sub-articles [1] and [2], Article XI). Non-regular passenger transport will be insured at least against

third-party loss in all the Contracting Parties where the vehicle is allowed to ply' (Sub-article [1], Article XI). The GMS–CBTA prescribes that 'motor vehicles traveling to the territory of other Contracting Parties shall comply with the compulsory third-party motor vehicle liability insurance required in the Host Country' (Article 16, main agreement).

j) Under the BBIN–MVA rules on business facilitation, transport operators of other contracting parties are permitted to open branch offices or appoint agents (Sub-article [1], Article XII). Authorised operators will obtain work permits for their employees deployed to a branch office in another contracting party. Authorised operators are permitted to open bank accounts in other contracting parties (Sub-article [2], Article XII). The GMS–CBTA prescribes that ' the Host Country shall grant permission to Transport Operators engaged in cross-border transport to establish representative offices for the purpose of facilitating their traffic operations' (Article 22, main agreement), but does not permit representative offices to obtain work permits or open bank accounts. However, permission might be reinforced by other laws and/or regulations in the host country. The GMS–CBTA has rules on supporting other contracting parties' vehicles that may be disabled on the roads (Sub-article [3]) and requests the host country to provide all possible assistance and to notify the competent authorities of the home country as soon as possible in case of a road traffic accident (Article 33, main agreement).

k) The BBIN–MVA prescribes the applicability of local laws (Article XIV) and rules that 'the National Laws of the respective Contracting Parties will govern matters other than those in this agreement' (Sub-article 2, Article XIV). Under the GMS–CBTA, 'People, Transport Operators and Vehicles shall comply with the laws and regulations in force in the territory of the host country' (Article 30, main agreement). The BBIN–MVA rules that ' the Contracting Parties will cooperate effectively with one another to prevent infringement and circumvention of the laws, rules and regulations of their respective countries in regard to matters relating to the movement of vehicles' (Sub-article [3], Article XIV). The GMS–CBTA stipulates that ' the Host Country may temporarily or permanently deny access to its territory to a person, a driver, a Transport Operator, or a Vehicle that has infringe the provision of the Agreement or its national laws and regulations' (Article 30). The article does not rule the

cooperation for the infringement but the GMS–CBTA has regulations to avoid such infringements. The BBIN–MVA will not affect the rights and obligations arising from other international commitments of the contracting parties and the existing bilateral agreements or arrangements between the contracting parties (Sub-articles [4] and [5], Article XIV). The CBTA stipulates that ' the Agreement or any actions taken thereto shall not affect the rights and obligations of the Contracting Parties under any existing agreements or international conventions to which they are also Contracting Parties' (Article 41, main agreement).

3.3 Technical Differences Following the Order of the BBIN–MVA Articles

The BBIN–MVA and the GMS–CBTA have technical differences:

a) Both fix the number of vehicles for specific purposes (Article III, BBIN–MVA; Article 20, main agreement, GMS–CBTA). The GMS–CBTA prescribes that 'each Contracting Party shall be entitled to issue up to 500 permits for cargo and non-scheduled passenger transportation' and 'the arrangement shall be subject to annual review and modification by the Joint Committee' (Article 5, Protocol 3). The BBIN–MVA, however, does not specify a number for the quota (Article III) but stipulates that 'Contracting Parties will decide on the number of cargo and personal vehicles and volume of traffic under this Agreement through consultation and agreement' (Article VI). The BBIN–MVA prescribes that 'installation of a tracking system on motor vehicles as well as containers at the cost of entering vehicle/container will be introduced within 2 years from the signing agreement' (Sub-article [13]). The GMS–CBTA stipulates that 'the Contracting Parties will endeavour to keep up with technical developments and to implement at their earliest convenience modern and advanced border crossing techniques such as: machine reading of passports, … , bar code readers for other documents'. However, a tracking system on motor vehicles and containers is not included amongst 'modern and advanced border crossing techniques' (Article 7, Annex 12).

b) For cross-border transport, the BBIN–MVA requires a list of passengers and their nationalities; a way bill and list of personal goods and/or articles in possession of the crew; and the registration certificate, transport permit, travel documents of the crew,

and insurance policy (Article IV). The GMS–CBTA does not require these documents. Both agreements require contracting parties to recognise driving licenses issued by other contracting parties on a reciprocal basis (Sub-article [2], Article IV, BBIN–MVA; Article 17, main agreement, GMS–CBTA). The driving licenses stipulated in the GMS–CBTA are based on the Agreement on the Recognition of Domestic Driving Licenses issued by ASEAN Countries, signed in Kuala Lumpur on 9 July 1985. The BBIN–MVA requires a conductor, helper, and cleaner of a regular passenger or cargo transport vehicle to hold a valid certificate, while the GMS–CBTA does not have such a detailed rule. The BBIN–MVA requires at least one member of the crew to be able to communicate in English or in a language understood (Article IV). The GMS–CBTA assumes such a rule because identification marks, registration certificates, and registration plates and the particulars must be in English (Article 3, Annex 2).

c) The BBIN–MVA stipulates restrictions. Major repair work is prohibited in another contracting party except in the event of accidents and break down (Sub-article [3], Article VI). Vehicles requiring urgent repair are allowed to have repairs done at nearby equipped workshops in the other contracting party and, in case of accidents, all consequential repairs may also be permitted in the contracting party where the accident occurred (Sub-article [4], Article VI). The BBIN–MVA regulates legal proceedings against the driver of the vehicle in case of an accident in accordance with laws of the contracting party where the accident occurred (Sub-article [5], Article VI). The GMS–CBTA does not have similar regulations. In case of a road traffic accident, the GMS–CBTA requests the host country to provide all possible assistance and notify the competent authorities of the home country as soon as possible (Article 33, main agreement). The BBIN–MVA stipulates that ‘the border check posts, land ports/dry ports and land customs stations of the Contracting Party(ies) will also endorse entry/exit particulars of the vehicles on the transport permit’ (Sub-article [7], Article VI). The GMS–CBTA does not specify who endorses the entry or exit particulars but it does specify that it ‘can be achieved … by the respective competent authorities’ to conduct single-window and single-stop inspections (Article 4 and Article 5, Annex 4). The ‘competent authorities’ here are supposed to be CIQ inspectors and not inspectors of ‘land ports/dry ports’.

d) On fees and charges, the BBIN–MVA prescribes that 'a Customs subgroup having participation from all the Contracting Parties will be set up to formulate the required Customs and other procedures and safeguards with regard to entry and exit of vehicles' (Sub-article [7], Article VII). The GMS–CBTA, however, does not stipulate forming a customs subgroup.

e) Both agreements require vehicles transporting goods to the territory of the other contracting parties to have an insurance policy at least against third-party loss (Article XI, BBIN–MVA; Article 16, main agreement, GMS–CBTA). The BBIN–MVA prescribes the provision of facilities by appropriate authorities of each contracting party to the insurance company of the other contracting parties to carry out all necessary steps such as survey, assessment, investigation, settlement of claims, and remittance in connection with such operation (Sub-article [3], Article XI). The BBIN–MVA also stipulates that such appropriate authorities will extend assistance for expeditious settlement of the claims and provide facilities to the persons concerned in the event of an accident resulting in damage to a third party's property or loss of life or injuries to third parties (Sub-article [4]). The GMS–CBTA does not facilitate insurance companies in other contracting parties.

f) On the movement of goods, the BBIN–MVA refers to the 'applicability of local laws' and prescribes that 'the Contracting Parties agree not to permit the movement of goods which are either prohibited or restricted under the prevailing laws and regulations of the respective countries, and any negative/sensitive list agreed upon by the Contracting Parties' (Sub-article [1], Article XIV). The GMS–CBTA stipulates that dangerous goods (Annex 1) and perishable goods (Annex 3) should be moved in different ways. The agreement shall not apply to the transport of dangerous goods (Annex 1), while the cross-border transport of the dangerous goods is exceptionally admitted on a case-by-case basis if the contracting permit follows the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the UN Recommendations on the Transport of Dangerous Goods – Model Regulations (Article 10, main agreement). The GMS–CBTA also states that 'the transport of Perishable Goods, as defined in Annex 3, shall be granted a priority regime for border crossing clearance formalities, set out in Annex 3, so that they may not be unduly delayed' (Article 10, main agreement). Annex 3 stipulates the rules on how to treat

live animals, perishable foodstuffs, and other perishable commodities with appropriate temperature, humidity, safety, hygiene, and space requirements.

3.4 Other Technical Differences

A comparison of the BBIN–MVA and the GMS–CBTA following the order of the BBIN–MVA's articles shows that the agreements have many common and similar articles and not many technical differences. A comparison of the agreements following the order of the GMS–CBTA's main agreement's articles, however, shows innumerable technical differences. The GMS–CBTA has detailed annexes such as Road and Bridge Design, Construction, and Specifications (Annex 11) and Commodity Classification System (Annex 15). Several rules prescribed in one sentence of the articles of the BBIN–MVA are stipulated as an annex or a protocol of the GMS–CBTA: e.g. Carriage of Dangerous Goods (Annex 1), Carriage of Perishable Goods (Annex 3), Road Traffic Regulation and Signage (Annex 7), Temporary Importation of Motor Vehicles (Annex 8), and Criteria for Driving Licenses (Annex 16). Enumerating all such technical differences is not realistic and it would be better to enumerate only the essential ones.

First, the GMS–CBTA provides Temporary Importation of Motor Vehicles (Annex 8) for motor vehicles and Container Customs Regime (Annex 14) for containers, but the annexes contain almost identical sentences. The EH–CBTA articles have the same sentences for motor vehicles and for containers. The BBIN–MVA, however, stipulates rules on motor vehicles but not on containers, except with respect to the installation of a tracking system (Sub-article [7], Article VI).

The GMS–CBTA stipulates rules on multimodal transport in Multimodal Carrier Liability (Annex 13a) and Criteria for Licensing of Multimodal Transport Operators for Cross-border Transport Operators (Annex 13b). Annex 13a stipulates liabilities of multimodal transport operators and of consignors in its attachment, and Annex 13b stipulates the eligibility of multimodal transport operators. The composition of these annexes is similar to that of Conditions of Transport (Annex 10) and Criteria for Licensing of Transport Operators for Cross-border Transport Operations (Annex 9). The BBIN–MVA does not stipulate such rules for multimodal transport.

The GMS–CBTA stipulates the priority for border-crossing formalities: (i) sick passengers, (and all) passengers; (ii) perishable goods, including fresh food; (iii) live animals; and (iv) other merchandise (Article 9, Annex 4). However, when border crossers are, upon medical examination, found to be infected with contagious disease endangering public health, the competent authority (i) may deny access to the territory or repel foreign individuals if their health condition enables them to travel, and advise them to return to their home country; (ii) if their health condition does not enable them to travel, shall offer them appropriate medical care and treatment in isolation or quarantine; and (iii) shall notify promptly the World Health Organization via appropriate channels in accordance with the applicable rules (Sub-article [d], Article 3, Annex 5).

4. Simplified Version of the GMS–CBTA

4.1 Initial Implementation of the GMS–CBTA

The scope of the GMS–CBTA is much broader than that of other similar facilitation agreements in Asia and the rules of the GMS–CBTA are stipulated in detail, which is to its advantage. However, it took 21 years from the initial discussion in September 1994 to ratification of all the annexes and protocols by all members in 2015. The negotiation of the drafting of some specific annexes and protocols required much time. The last ones signed were Transit and Inland Customs Clearance (Annex 6), Temporary Importation of Motor Vehicles (Annex 8), Container Customs Regime (Annex 14), and Frequency and Capacity of Services and the Issuance of Quotas and Permits (Protocol 3) (Table). The II-CBTA is a trial to implement the GMS–CBTA, with the annexes and protocols already signed at specific major borders (Ishida, 2013).

More concretely, the II-CBTA is a programme to implement single-window and single-stop inspections stipulated in Facilitation of Frontier Crossing Formalities (Annex 4). The borders designated for the II-CBTA programmes are Lao Bao (Viet Nam)–Densavanh (Lao PDR) and Savannakhet (Lao PDR)–Mukdahan (Thailand) in the East–West Economic Corridor, Poipet (Cambodia)–Aranya Prathet (Thailand) and Moc Bai (Viet Nam)–Bavet (Cambodia) in the Southern Economic Corridor, and Hekou (Yunnan)–Lao Cai (Viet Nam) in the North–South

Economic Corridor. Memorandums of understanding (MoUs) were concluded by the contracting parties in 2005–2007. The implementation deadlines were stipulated step by step but were not met except for the single-stop physical customs inspection, which was conducted at the Lao Bao–Densavanh border as the first of four steps (Ishida, 2013).[4]

The II-CBTA has been implemented at the Lao Bao–Densavanh border since 6 February 2015. Single-stop inspections are conducted in the following way. First, officers of customs, immigration, and quarantine (CIQ) of Lao PDR and Viet Nam are separated into two groups. Second, one Lao PDR group and one Viet Nam group stay at their own borders; another group from each country crosses the border. Third, Lao PDR CIQ officials on the Viet Nam side conduct procedures for exporting and exiting, and Viet Nam CIQ officials on the Viet Nam side conduct procedures for importing and entering. In the same way, Viet Nam CIQ officials on the Lao PDR side conduct procedures for exporting and exiting, and Lao PDR CIQ officials on the Lao PDR side conduct procedures for importing and entering. For example, if a truck transports goods from Lao PDR to Viet Nam, the CIQ inspections are exempted on the Lao PDR side. The truck has to be inspected for exporting and importing and for exiting and entering simultaneously on the Viet Nam side. Single-stop inspection is conducted for immigration. For instance, when travellers move from Lao PDR to Viet Nam, they meet Lao PDR and Viet Nam immigration officers sitting side by side. First, the travellers hand their passports to the Lao PDR officer, who checks and stamps the passports. The Lao PDR officer hands the passports to the Viet Nam officer, who checks and stamps the passports and hands them back to the travellers if there are no problems.

4.2 Early Harvest Implementation of the CBTA

After all six countries' ratification process in 2015, the government officials of the GMS contracting parties recognised that some parts of the GMS–CBTA had become outdated. At the Joint Committee Retreat on 14 July 2016, all the contracting parties consented unanimously that amendments to the GMS–CBTA should be required for its full implementation and agreed to issue and distribute 500 GMS road transport permits per

[4] The II-CBTA between Thailand and Myanmar took effect with an MoU signed in March 2019 between the two governments. With the adoption of the II-CBTA, trucks from Thailand are now allowed to enter Myanmar to Thilawa and Myanmar trucks can go directly to Laem Chabang Port (ERIA Study Team, 2020).

contracting party. The articles of the GMS–CBTA have been amended with support from the Australian Agency for International Development as 'CBTA 2.0'. At the GMS Summit on 31 March 2018, all six contracting parties signed the MoU on the EH–CBTA. Under the MoU, the EH–CBTA would be implanted starting 1 June 2018, except in Myanmar, where it would start from 2020.

Under the EH–CBTA, a competent organisation in each contracting party issues 500 GMS road transport permits to domestic transport operators in the country. Then the transport operators holding the permits request a competent organisation to issue a temporary admission document (TAD). The TAD may cover multiple temporary admissions into the territories of other contracting parties, along designated routes, valid for 12 months (subject to extension by the competent authority). The competent organisation issuing the GMS transport permit and the TAD are the same in Cambodia, Lao PDR, Viet Nam, and Yunnan and Guangxi, but separate in Myanmar and Thailand.

Two points might be confusing. The first is that the GMS road transport permit referred to in the EH–CBTA MoU corresponds to a valid certificate of registration referred to in the GMS–CBTA (Article 5, Annex 2). The second is that the TAD mentioned in the EH–CBTA MoU corresponds to the GMS road transport permit mentioned in the GMS–CBTA (Article 1, Protocol 3). The word 'permit' is used for 'registration certificate' instead of 'GMS road transport permit' in the EH–CBTA MoU.

5. Designing Agreements for the Trilateral Highway and for Greater Harmonisation

Let us go back to the research question stated in introduction: Which and what kinds of rules should be applied to the TLH? First, starting to negotiate to create a full-fledged transport agreement such as another CBTA is not realistic. We should not spend another 20 years in negotiation. A review of simplified agreements such as the II-CBTA and the EH–CBTA was attempted because implementing a simplified agreement as soon as possible is realistic, even though it might be temporary. Thus, the first step should be to prepare a simplified agreement on the TLH acceptable to Thailand, Myanmar, and India. At the same time, greater harmonisation should be negotiated between the four BBIN–MVA members and six GMS–CBTA members, keeping in mind that the CBTA 2.0 is being designed. Yet, harmonising the differences between the BBIN–MVA and the GMS–CBTA can guide future harmonisation. The following sub-sections explain a design for a simplified transport agreement and harmonisation of the BBIN–MVA and the GMS–CBTA.

5.1 A Simplified Agreement for the Trilateral Highway

The EH–CBTA MoU is a much simplified version of the GMS–CBTA, with 10 articles, 2 of which are on the temporary admission of motor vehicles and of containers (not stated as articles in the MoU but treated as articles, hereafter), which have 9 sub-articles. Neither the EH–CBTA nor the BBIN–MVA stipulate the rule on transit facilities, including exemption of tariff and inspection at border gates in transit countries. The simplest arrangement is for a TLH MoU, at least for Myanmar and India, to follow the stipulations of the EH–CBTA, whilst the rules of the GMS–CBTA remain effective for Thailand and Myanmar, and the BBIN–MVA for India.

To be usable for the TLH countries, the BBIN–MVA registration certificate (Article IV) and the EH–CBTA GMS road transport permit (Article 1) can be treated in the same way. These certificates are registered for each vehicle by the competent authority of the contracting parties. The EH–CBTA stipulates that 500 road transport permits may be issued (Article 1), whilst the BBIN–MVA stipulates that the number of registration certificates is to be fixed between contracting parties by type of vehicle and by route (Sub-article [10], Article III). The TLH MoU should stipulate a quota of 500 permits of all types if the Government of India

approves. If it does not, India could lose opportunities to acquire traffic rights for 500 vehicles. The planned highway in Myanmar between Tamu and Myawaddy and the eastward extension between Tamu and Keng Lap (a border with Lao PDR) should be designated in an MoU protocol. The word 'permit' used in the EH–CBTA should be 'registration certificate' in the TLH MoU to make the distinction clear.

The BBIN–MVA's 'permit' (Article III) and the EH–CBTA's TAD (Article 5) may be treated in the same way. 'Permit' should be 'admission' in the TLH MoU. Admissions are used for each cross-border trip and issued by competent authorities. Temporary admission free from customs duty is also applied under the BBIN–MVA (Sub-article [5], Article VII). The validity of the temporary admission is stipulated at 1 year (Sub-article (7), Article III, BBIN–MVA) or 12 months (Sub-article [e], Article 5, EH–CBTA), and multiple entries are admitted for regular passengers and cargo transport (Sub-article [7], Article III, BBIN–MVA; and Sub-article [c], Article 5, EH–CBTA). One trip under the EH–CBTA is 30 days (Sub-article [f], Article 5). While the BBIN–MVA does not stipulate the length of stay for regular passenger and cargo transport, it stipulates 30 days for non-regular passenger vehicles (Sub-article [6], Article III). Stipulating 30 days would be acceptable in the TLH MoU. The BBIN–MVA stipulates that an admission is countersigned by the competent authority of the other contracting parties (Sub-article [9], Article III). This process is expected to be omitted in the TLH MoU, with an article added stipulating the rejection of a driver or transport operator who has infringed the provisions of the agreement or national laws (Article 30, main agreement, GMS–CBTA).

Finally, the BBIN–MVA requires drivers of cross-border vehicles to carry the following documents (Sub-article [2], Article IV):

(1) pre-verified passports of the crew with multiple visas (Article V, BBIN–MVA; Article 5, main agreement, and Sub-article [b], Article 2, Annex 5, GMS–CBTA);
(2) a valid cross-border driver's license (Sub-article [2], Article IV, BBIN–MVA; Article 17, GMS–CBTA main agreement);
(3) a valid registration certificate (see above);
(4) a valid temporary admission document (see above);

(5) a valid insurance policy (Sub-article [2], Article IV, and Sub-article [2], Article XI, BBIN–MVA; Article 16, main agreement, and Article 6, Annex 9, GMS–CBTA); and

(6) a list of personal goods and articles possessed by the crew (Sub-article [2], Article IV, BBIN–MVA).

A valid pollution-under-control certificate (Sub-article [2], Article IV, BBIN–MVA) and/or emission condition (Article 13, main agreement, GMS–CBTA) should be included in the registration certificate. A valid certificate of fitness (Sub-article [2], Article IV, BBIN–MVA) and/or technical requirements (Article 13, main agreement, and Annex 2, GMS–CBTA) should be included in the registration certificate. A passenger list in case of regular and non-regular passenger transport, an internationally recognised valid travel document, a waybill of the cargo, and destinations are not stipulated in the GMS–CBTA as requirements. The adoption of these documents should be discussed amongst the three countries.

In the EH–CBTA, sub-articles for motor vehicles and containers are regulated separately. Because the sub-articles overlap, however, nine articles stipulated for containers should be deleted and one article explaining that these rules also apply to containers added.

It should be discussed whether or not facilities of the II-CBTA or single-window and single-stop inspection of the GMS–CBTA should be adopted for the border between Tamu in Myanmar and Moreh in India.

5.2 For Greater Harmonisation

BBIN–MVA and GMS–CBTA articles should be harmonised.

5.2.1 Harmonisation of Major Differences

The Joint Committee and the NTFCs that comprise it, as stipulated in the GMS–CBTA, are not mentioned in the BBIN–MVA. Establishing such a committee for India and for other BBIN countries and forming a joint committee would be favourable. The National Core Committee of Transit has been organised in Bangladesh (Sharmeen, 2017). If other countries form such committees and add articles from the National Core Committee of Transit and the Joint Committee to the TLH MoU, the BBIN–MVA and the harmonised agreement should be effective.

The differences in the rules on transit facilities and transit fees could be controversial. The GMS–CBTA stipulates the exemption of tariffs and inspections in transit countries, while the BBIN–MVA admits payment of transit fees by transport operators in other contracting parties. The GMS–CBTA admits charging of levies by LDCs to transport operators of other contracting parties even though domestic transport operators are free from levies. Confining the coverage to the TLH, Myanmar can receive transit fees from transport operators of India and Thailand, as long as Myanmar is designated as an LDC by the United Nations. For the greater harmonised agreement, Bhutan, Nepal, and Bangladesh are designated as LDCs, so they can receive fees from transport operators of other contracting parties. As most LDCs in Southeast Asia and South Asia are expected to graduate from LDC status in the 2020s, the effectiveness of applying the exceptional rules of the GMS–CBTA and the necessity of applying new rules should be discussed.

5.2.2 Technical Differences

Quota of 500 vehicles. India is expected to fix the quota at 500 vehicles for the TLH. For the greater harmonised agreement, the BBIN members are requested to discuss whether or not they will adopt the quota of 500 vehicles.

Documents required to cross borders. Countries should discuss what documents are required for the TLH and the greater harmonised agreement, for example, whether or not to include a passenger list, a waybill, and a list of crew members' personal goods and articles. The contracting parties of the GMS–CBTA must accept domestic driving licenses, based on the Agreement on the Recognition of Domestic Driving Licenses issued by the ASEAN members. If all the contracting parties reciprocally recognise domestic driving licenses, this issue can be dissolved. The BBIN–MVA requests valid certificates for the crew conductor, helper, and cleaner while the GMS–CBTA does not. Negotiations including all the contracting parties are needed for the TLH and the greater harmonised agreement. Certificates seem to be less important than driving licenses.

Repair work. The BBIN–MVA prohibits repair work by transport operators of other contracting parties, except in the case of accidents, whilst the GMS–CBTA does not. If the Government of India allows transport operators of Thailand and Myanmar to repair their vehicles in India, for instance, other BBIN contracting parties might raise claims. Thus,

between Myanmar and India, application of the same rule enables dissolution as far as such application does not extend to relations between Thailand and Myanmar. Removing this rule from the BBIN–MVA could also enable dissolution.

Entry and exit permits. The GMS–CBTA does not stipulate rules giving authorities power to permit entry and exit of transport operators of other contracting parties to land or dry ports. Trucks from Thailand, however, are now allowed to enter Myanmar to Thilawa Dry Port and Myanmar trucks can go directly to Laem Chabang Port (ERIA Study Team, 2020). This rule might be applied to the TLH and is effective for bonded transport. Such bonded transport, however, is possible by stationing customs officers in the land or dry port and might require the amendment of domestic laws and regulations. The application of the rule should be optional for each GMS–CBTA contracting party.

Insurance companies. The BBIN–MVA facilitates other contracting parties' insurance companies to carry out survey, assessment, investigation, and settlement of claims, and remittance, whilst the GMS–CBTA does not prescribe such rules. This issue depends on the laws and regulations of each country, and whether to accept such a rule or not should be optional for each GMS–CBTA contracting party.

Movement of dangerous and perishable goods. The main agreement of the GMS–CBTA and the rules of the BBIN–MVA do not contradict each other on the transport of dangerous goods. The GMS–CBTA main agreement shall not apply to the transport of dangerous goods, whilst Annex 1 of the GMS–CBTA allows their transport under several conditions. Prohibiting the transport of dangerous goods, therefore, is easily acceptable. Detailed rules of transport of perishable goods are recommended for examination by BBIN members because most commodities exchanged over borders are agricultural products.

5.2.3 Other Differences

Rules for motor vehicles and for containers. The GMS–CBTA stipulates separate rules for temporary importation using motor vehicles and containers. However, most of the articles are overlapping. It is not necessary to separate the rules for motor vehicles and for containers in the agreements on the TLH and in the greater harmonised agreement.

Rules on multimodal transport. The GMS–CBTA prescribes rules on multimodal transport whilst the BBIN–MVA does not. In the BBIN–MVA, connectivity of the four countries is especially important for landlocked North-East India, Nepal, and Bhutan to connect to the ports of Bangladesh, so multimodal transport is significant. The GMS–CBTA stipulates the liabilities of multimodal transport operators and consigners for transport contracts (Annex 13a, Annex 10) and the eligibility of multimodal transport operators (Annex 13b, Annex 9). It is not indispensable to stipulate rules on liabilities and eligibility of transport operators through a CBTA.

Border-crossing formalities. The GMS–CBTA has rules on priority for border-crossing because of frequent congestion at borders when vehicles wait for inspection. Such rules are also necessary to handle treatment of passengers infected with contagious disease endangering public health, especially with the outbreak of COVID-19. It is highly recommended that the BBIN–MVA adopt such rules.

6. Concluding Remarks

Two cross-border vehicle agreements apply to the contracting parties of the TLH. India is a contracting party to the BBIN–MVA, and Myanmar and Thailand are contracting parties to the GMS–CBTA. The two agreements must be harmonised. This paper clarifies their similarities and differences. They have more similarities than differences, which is cause for optimism. The success of harmonisation, however, depends on the positive attitudes of the negotiating countries. This paper recommends ways to dissolve the differences, but based mainly on a comparison of the articles and not yet on interviews with stakeholders. Subjective interpretations of the articles cannot be excluded. To meet future challenges, deeper interpretations of the articles based on interviews with stakeholders are required.

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Table: Main Agreement, Annexes, and Protocols of the Greater Mekong Subregion Cross-Border Transport Agreement and Number of Articles

Annexes and Protocols	Date of Signing	Number of Articles
Main Agreement	17 Sep 2003	44
A1. Carriage of Dangerous Goods	16 Dec 2004	12
A2. Registration of Vehicles in International Traffic	30 Apr 2004	18
A3. Carriage of Perishable Goods	5 Jul 2005	34
A4. Facilitation of Frontier Crossing Formalities	30 Apr 2004	21
A5. Cross-border Movement of People	5 Jul 2005	27
A6. Transit and Inland Customs Clearance Regime	20 Mar 2007	22
A7. Road Traffic Regulation and Signage	30 Apr 2004	13
A8. Temporary Importation of Motor Vehicles	20 Mar 2007	21
A9. Criteria for Licensing of Transport Operators for Cross-border Transport Operations	16 Dec 2004	15
A10. Conditions of Transport	5 Jul 2005	20
A11. Road and Bridge Design, Construction, and Specifications	30 Apr 2004	21
A12. Border Crossing and Transit Facilities and Services	30 Apr 2004	16
A13a. Multimodal Carrier Liability Regime	30 Apr 2004	11
A13b. Criteria for the Licensing of Multimodal Transport Operators for Cross-border Transport Operations	16 Dec 2004	15
A14. Container Customs Regime	20 Mar 2007	23
A15. Commodity Classification System	30 Apr 2004	15
A16. Criteria for Driver's Licenses	16 Dec 2004	13
P1. Designation of Corridors, Routes, and Points of Entry and Exit (Border Crossings)	30 Apr 2004	12
P2. Charges Concerning Transit Traffic	5 Jul 2005	17
P3. Frequency and Capacity of Services and the Issuance of Quotas and Permits	20 Mar 2007	17
Total Number of Articles		**407**

Source: Ishida (2013).

The Trilateral Highway (TLH) exemplifies the letter and spirit of India-ASEAN connectivity. It connects India, Myanmar and Thailand, and is linked with ASEAN's connectivity plans. Still a project under construction, its potential contribution to the economic growth and development of the region is indubitable. This study examines the maximizing of these objectives through a proposed extension of TLH to Lao PDR, Cambodia, and Viet Nam.

Based on the mandate from the ASEAN-India Summit Meeting of 2018 and commissioned by the Government of India, the Economic Research Institute for ASEAN and East Asia (ERIA) has studied the feasibility of establishing a seamless, efficient and end to end transportation corridor along the existing Trilateral Highway and its extension towards Cambodia, Lao PDR and Viet Nam. This study offers physical, institutional and economic pathways, along with policy recommendations for the development of TLH and its eastwards extension. The need for seamless physical connectivity has never been felt before like now. The study on the Trilateral Highway and its eastward extension fulfils this current need, and also lays down pathways for medium and longer-term integrated connectivity solutions between India and ASEAN.

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