5. Infrastructure connectivity

This chapter provides an overview of transport connectivity in Myanmar. It takes stock of recent reforms, identifies key remaining hard and soft transport infrastructure connectivity challenges, and proposes recommendations for improving the mobilisation and efficiency of investments in transport infrastructure connectivity.

Myanmar has come a long way in improving the investment climate in recent years, notably by laying down the basic legal foundations for a thriving business environment to emerge with the new Investment and Companies Laws, as well as the Special Economic Zones Law. Unfortunately, however, these reforms alone, although important building blocks, are not sufficient to fully deliver upon expected investment attraction and development objectives. Policy complementarities play a critical role in nurturing an enabling environment for investment and for sharing the benefits with society at large.

A few high-priority issues have already been prominently addressed in other chapters, such as investment promotion and facilitation, special economic and industrial zones, responsible business conduct, green growth and land tenure and administration. Infrastructure connectivity is another equally important area requiring particular attention from the authorities as it plays a critical role in facilitating efficient business operations and any possible linkages between incoming foreign investments and the local economy.

Myanmar's political transition has been accompanied by substantial economic reforms to open the economy and to build a growth trajectory based on export-led development fuelled in part by foreign investment. The Myanmar Sustainable Development Strategy (MSDP) 2018-2030 clearly attests to this objective by embracing a private sector-led growth strategy and recognising its role as a potential engine of environmentally conscious and socially responsible economic growth. Acknowledging Myanmar's current economic structure, the MSDP gives priority to supporting the development of agriculture and Small-Medium Enterprises (SMEs). In conjunction, the government aims to promote manufacturing, industrial and service sectors development to induce faster structural transformation and generation of higher quality jobs, as well as facilitate the transition to a digital economy in the future.

A critical ingredient for attracting export-oriented manufacturing investments and improving agricultural development as sought in the MSDP is access to markets and good international gateway conditions. Better transport infrastructure connectivity can help ensure more efficient and reliable supply chain networks, raising opportunities for firms to integrate global value chains (GVCs) and for countries to reap the benefits of participation.

This calls for integrated strategies that combine investment, trade and infrastructure policies. Investment promotion and facilitation policies, for instance, need to go hand-in-hand with trade and infrastructure policies to be effective. This is equally the case for infrastructure. The quality of hard infrastructure is enhanced when an efficient soft infrastructure system is in place, including in terms of trade facilitation and logistics services. There are often cases where hard infrastructure has been developed without accompanying trade and business regulatory reforms or where it lacked the necessary multi-modal approach to deliver the expected results. Overcoming a fragmented approach is thus critical for strengthening the investment climate and leveraging positive spill-overs and complementary effects. In this respect, it is worth noting that the inter-ministerial Investment Promotion Committee established in 2019 has created a dedicated task force (No. 3) to address infrastructure issues (see Chapter 3 for more information on the IPC).

Since the lifting of economic sanctions, Myanmar has drastically expanded its trade, with exports and imports growing by 82% and 362%, respectively, between 2010 and 2017 (Central Statistics Office Myanmar 2019). The country's large and growing population fuels demand for imports while abundant labour and natural resources provide a fertile supply for its exports. Its geographic position also benefits overall trade, strategically located between some of the world's fastest growing economies: India, China and ASEAN countries. Infrastructure connectivity and expansion of logistics networks are therefore indispensable to Myanmar's sustained economic growth through greater integration into the world economy and to rising living standards of urban and rural populations.

Current infrastructure connectivity in Myanmar is still underdeveloped and fails to keep pace with pressing demands. With just over a third of its roads paved and port capacity limited, quality of hard infrastructure can be considered poor within the region (ADB, 2014). A high concentration of transport on roads and lack of multimodality infrastructure contribute to relatively high transport costs (ADB, 2016b). Overall Myanmar's

logistics performance is said to significantly lag behind the performance of its regional peers, especially with regards to trade-related infrastructure (World Bank, 2014). Limited transparency and predictability in border procedures further add to the cost of doing business in the country by making it more burdensome to move goods across the border (OECD, 2018). Stakeholders consulted during this review also complained about the presence of various formal and informal toll gates across important routes, such as along the major road from Yangon to Hpa-An (part of the East-West Economic Corridor), adding further costs and delays to transport.

There is a dire need for domestic connectivity to be improved through increasing transport investment from the current level of 1%-1.5% GDP. In comparison, China, Thailand and Viet Nam spend over 4% of their respective GDP on transport. The ADB (2016a) advocates that Myanmar should also aim to increase its transport investments to 3–4% of its GDP annually, through increasing user fees in line with operational expenses, nudging SOEs to reach financial sustainability and actively involving private sector participation through concessions and PPPs.

Infrastructure investment planning and delivery would need a real boost to enable more efficient expenditure on infrastructure. Transport infrastructure governance would generally benefit from the consistent use of proper feasibility studies, stakeholder consultation and project appraisal frameworks, taking into account any potentially negative social and environmental externality up-front, as well as from the introduction of long-term transport investment programmes and better monitoring and reporting (ADB, 2016a). More efficient planning and delivery, such as strengthening governance in project selection, delivery and maintenance, can help to significantly save in infrastructure spending (McKinsey, 2016).[1] In doing so, the government should give particular attention to modernising the use of its road assets, by improving efficiency, such as allowing trucks on the Yangon-Mandalay expressway or increasing its legal axle loading, as well as by improving main trade corridors, such as the Greater Mekong Subregion North Road corridor to China and the GMS East-West Road corridor to Thailand (ADB, 2016b).

Trade facilitation also remains weak within the region and will need to be strengthened. Myanmar can better facilitate trade through introducing the possibility to request advance rulings about the customs treatment of goods prior to their importation and reducing formalities at the border, in particular promoting automated processing for customs across all major border points, reducing the number of documents required for trade, and simplifying procedures in terms of associated time (OECD, 2018).

The government is, nonetheless, stepping up efforts to tackle these connectivity deficiencies. It has established overarching goals and strategies in the MSDP and in the new National Logistics Master Plan 2018-2030 (NLMP). In 2019, it passed the regulation which will permit investments in much needed bonded warehouses. The government has also introduced a project bank of prioritised public investments which will facilitate co-ordination of donor support and the participation of the private sector. At the moment, Myanmar is already benefiting from support from the Asian Development Bank and JICA for the improvement of the main corridors. Their support is needed to scale up and upgrade existing transport connectivity infrastructure and, consequently, for attracting export-oriented investments that can better spur linkages with the domestic economy.

Main policy recommendations

- Increase investments in transport and logistics infrastructure: raise additional funding through adjusting user fees in line with operational expenses where affordability assessment allows, addressing the financial health of state-owned infrastructure companies and encouraging private sector participation.
- Further improve infrastructure investment planning and delivery, though strengthened feasibility and appraisal frameworks, taking into account potentially negative social and environmental externalities up-front, stakeholder consultations, long-term infrastructure programmes and appropriate monitoring of projects.
- Modernise the existing infrastructure assets, with particular focus on the main trade corridors, such as the Greater Mekong Sub-region North Road corridor to China and the GMS East-West Road corridor to Thailand.
- Make a more efficient use of existing infrastructure assets, for instance, by allowing trucks on the Yangon-Mandalay expressway or increasing its legal axle loading.
- Strengthen trade facilitation and other soft infrastructure, through reducing formalities and upgrading trade supporting facilities.

Myanmar's trade structure and potential for export-oriented investment development

A strategic position within a buoyant region yet to be exploited more extensively

Myanmar is bordered by China, India, Thailand, Bangladesh and Lao PDR, which together represent a fifth of global GDP and 40% of the world's population (IMF-WEO, 2019). Given its central location, Myanmar can act as a lifeline between South and Southeast Asia and China. Historically, the majority of Myanmar's overall trade has been with these neighbouring countries, with China accounting for the largest share, but in recent years, the European Union has also increased its share to 5% of total trade in 2017, primarily driven by Myanmar's preferential access to the EU market (Table 5.1).

Table 5.1. Myanmar regional trade: Exports and imports (USD millions)

	2012	2013	2014	2015	2016	2017
India	1 320	1 637	1 341	1 712	1 943	1 469
(% Total)	*7%*	*7%*	*5%*	*6%*	*7%*	*4%*
China	4 958	7 016	9 696	10 993	10 805	11 785
(% Total)	*27%*	*28%*	*33%*	*40%*	*37%*	*35%*
ASEAN	8 411	11 055	12 610	10 432	9 618	11 802
(% Total)	*47%*	*44%*	*43%*	*38%*	*33%*	*35%*
Region Total	**14 690**	**19 709**	**23 649**	**23 137**	**22 366**	**25 057**
(% Total)	***81%***	***79%***	***81%***	***83%***	***77%***	***75%***

Source: Central Statistics Office, 2019.

Despite its strategic position and ample endowments, Myanmar's trade with the region still represents a fraction of overall intra-regional trade, with exports as a percentage of GDP at 20% and imports at 28% (WITS, 2019). After years of economic isolation, it is not a surprising that the level of trade integration

remains depressed and by a considerable margin. An early estimation indicated Myanmar's trade level in the 2006-10 period to be about 15% of its innate predicted potential, *i.e.* in terms of the ratio of actual to gravity-predicted exports (ADB 2013), although this may change rather rapidly in the near term. Imports of consumer goods have been rising rapidly and investments into labour-intensive export-oriented industries, such as garments, have also intensified in recent years. The pace of adjustment will, nonetheless, depend also on how some policy factors evolve. Improvements to Myanmar's trade-related infrastructure, especially of road transport and at international gateways, is certainly among those key factors that would allow Myanmar to catch up with its trade potential more rapidly.

Raw materials still dominate exports, but rising potential is observed in labour-intensive manufacturing and agribusiness

Myanmar's current bilateral trade relationships are concentrated in its region, with neighbouring countries accounting for over 60% of its exports and nearly half of its imports (Table 5.2 and Table 5.3). China, in particular, accounts for over a third of total trade. With strong economic growth in the region, Myanmar's trade relationships with its neighbours are deemed to naturally increase, but if accompanied with appropriate policies, they can be further strengthened and more broadly diversified, notably as Myanmar's trade complementarity with key trading partners is increasing (World Bank, 2016).

In addition, with connectivity expected to improve under the Belt and Road Initiative (BRI), trade volume for the China-India or Thailand route will likely continue growing and there is significant space for Myanmar to facilitate the trade flow. Not only may Myanmar benefit from the potential of increasing its own exports to satisfy the growing demand in the region, it may also act as the main corridor between Southeast Asia and South Asia, strengthening its intermediary trading role between India, China and Thailand (Ras, 2016). Under appropriate arrangements with its neighbours, for instance by negotiating their support to key infrastructure projects and projects that would mitigate potential negative externalities, both sides can benefit from transiting trade through Myanmar.

Table 5.2. Myanmar top 5 export partners in 2017 (USD millions)

Market	Exports	*Share (%)*
China	5 699	38%
Thailand	2 846	19%
Japan	956	6%
Singapore	754	5%
India	608	4%

Source*: Central Statistics Office, 2019.*

Table 5.3. Myanmar top 5 import partners in 2017 (USD millions)

Market	Imports	*Share (%)*
China	6 087	*33%*
Singapore	3 085	*17%*
Thailand	2 229	*12%*
Japan	967	*5%*
Malaysia	867	*5%*

Source: Central Statistics Office, 2019

Myanmar's main traded products are fuels, exporting natural gas and importing oil, and a variety of agricultural products, notably rice, beans, maize and fish products (Table 5.4). Myanmar is currently the world second largest exporter of beans and among the top 15 largest exporters of rice. The agricultural sector, which currently employs about 70% of the total labour force and generates about 30% of its GDP, has a strong potential to play a bigger role in exports and in furthering agribusiness downstream potential with an improved infrastructure system for rural-urban transport (ADB, 2018). Rising living standards in neighbouring countries, as well as their upward move on agricultural value chains, could propel further demand for agricultural products from Myanmar.

Table 5.4. Myanmar top 5 trade products in 2017 (USD million)

Gross Exports	*Value*	Gross Imports	*Value*
Natural Gas	2 987	Oil	3 381
Rice	813	Sugar	833
Beans	747	Trucks	729
Copper	490	Vegetable fats/oils	512
Sugar	420	Fabrics	472

Source: World Bank World Integrated Trade Solution, 2019.

While neighbouring China dominates trade with Myanmar, the concentration of export partners varies significantly across commodities: agricultural products, such as beans and seafood products, are exported to a diversified trade partners, while gas goes solely to China and Thailand (Table 5.5).

Table 5.5. Myanmar principal commodity exports by destination in 2017 (mt)

Commodity	Bangladesh	China	India	Japan	Singapore	Thailand
Rice (Incl. Brown Rice)	0.5	94.7			1.0	
Maize		55.6				0.1
Beans and seed	0.8	23.8	65.8	2.3	11.6	0.8
Seafood products	1.2	3.2	0.1	0.6	1.8	4.8
Base metal and ores		14.5			0.5	1.8
Gas (*mil.cu.ft*)		27 679.6				32 568.9

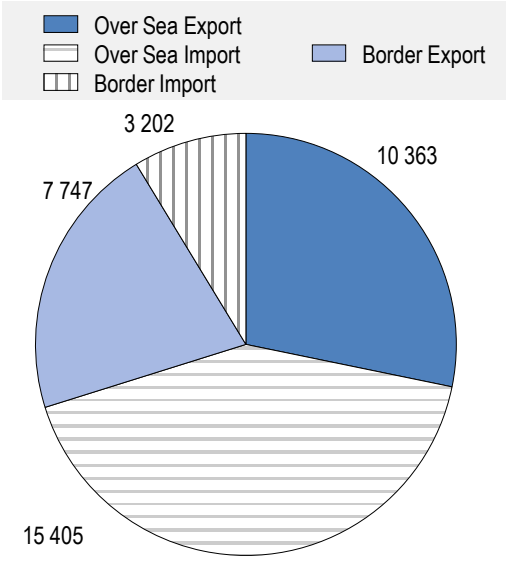
Source: Central Statistics Office Myanmar 2019.

Yangon International Port is the main international gateway, but border checkpoints with Thailand and China channel over half of agricultural exports

Over half of Myanmar's exports and over three-quarters of its imports currently run through its ports according to official statistics, excluding oil and gas transported by pipeline (Figure 5.1). Yangon International Port is the most important of the nine existing ports and almost the only one handling international trade. The port has been holding on to its position as the main international gateway for imports overtime, but the share of exports being channelled through the port has consistently declined since Myanmar's economic and political transition.

Most of the minerals and almost all forest products continued to be exported through its ports, whereas roughly 60% of crops exports and the vast majority of its marine exports take place over land gateways, notably with China and Thailand. For China much of the border trade (over 80%) is concentrated in the town of Muse, in northern Shan State of Myanmar, which borders Yunnan province in China. Border trade with Thailand is typically carried out through Myawaddy and Nabulae border checkpoints (Table 5.6).

Figure 5.1. Myanmar trade over sea vs border, 2019 (USD million)



Note: Excluding pipeline trade.
Source: Ministry of Commerce of Myanmar, Customs Department, 2019.

Table 5.6. Myanmar border trade by border stations (USD million)

Country	Border Station	Opening Year	2018-19		
			Export	Import	Total
China	Muse	1998	3 156	1 762	4 918
	Lwejel	1998	123	22	145
	Chin Shwehaw	2003	460	81	542
	Kanpitetee	2009	264	32	296
	Kyaing Tong	NA	7	2	9
Thailand	Tarchileik	1996	20	78	98
	Myawaddy	1998	211	758	970
	Kawthaung	1996	175	39	214
	Myeik	1999	121	118	240
	Nabulae	2012	2 468	144	2 612
	Mawtaung	NA	12	7	19
	Mese	NA	1	0	1
Bangladesh	Sittwe	1998	13	1	14
	Maung Daw	1995	9	0	9
India	Tamu	2005	95	1	97
	Rhi	2003	82	22	105

Source: Ministry of Commerce of Myanmar, Customs Department, 2019.

Transport connectivity weaknesses in the main economic corridors and international gateways

The National Logistics Master Plan 2018-2030 has identified six main logistics corridors forecasted to handle about 312m tonnes of cargo by 2030 or a 1.8 times increase from the estimated 2015-base year level (169m tonnes) (Table 5.7). This represents an expected annual growth rate of 4.2%. Containerised and international trade cargo are expected to increase even more, about 3.4 times from around 1.5 million twenty-foot equivalent unit (TEUs) to 5.1 TEUs. The bulk of the freight transport demand is expected to remain within the North-South axis which links the two main economic and industrial centres (Yangon – Mandalay). According to data shared by the authorities, the corridor is the main link for ten out of 19 industrial zones currently in operation and representing about three-quarters of the total number of firms located inside industrial zones and about 95% of the labour employed in the zones. The government plan is also to upgrade and develop new links for international trade that will enhance connectivity of Yangon or Bago with cross-border facilities along the Chinese, Indian and Thai borders (JICA *et al.,* 2018).

In support of the plan, the government has identified a total of 189 projects to be implemented up to 2030 (167 hard infrastructure and 22 soft infrastructure projects) on the basis of their capacity to strengthen regional and domestic connectivity (with neighbouring countries and between growth centres and rural areas in Myanmar), their economic benefit in terms of savings on transport costs (e.g. higher speeds and load factor, shortened dwell times and savings by shifting to more efficient transport modes), and lastly their capacity to sustain a more equitable development throughout the territory. The total development cost of these projects is estimated at MMK 41 trillion or USD 30 billion, of which about 30% is expected to be implemented with private support (JICA *et al.*, 2018).

Top priority projects are expected to be implemented in an initial stage by 2020, and the effective execution of these projects will set the tone for Myanmar's ability to implement future infrastructure projects. The upgrade of the USD 3 billion, 620 km Yangon-Mandalay rail line, one of the major links in the logistics plan, for instance, began in late 2018 and is expected to reduce the travel time between the country's two largest commercial cities from 12 to 8 hours (Oxford Business Group 2019).

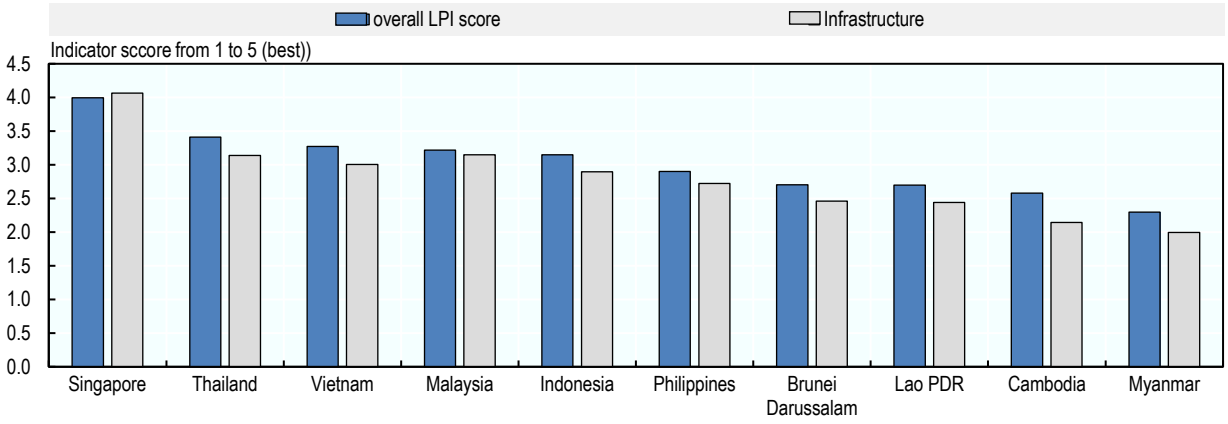
Table 5.7. Myanmar national logistics master plan 2018-2030: Main corridors

Logistic Corridor Name	Main Links / Terminal	Approx. length (km)	Annual Cargo Volume, 2015 ('000 tonnes)	Projected Annual Cargo Transport Volume ('000 Tonnes per Year in 2030)				Population influenced ('000)
				Total	Road	Railway	Waterway	
1) Myanmar-India	Mandalay – Tamu / Monywa	400	3 800	12 400	4 400		8 000	8 300
2) North-South	Yangon – Bago – Mandalay – Muse	990	41 100	172 800	127 200	45 600		11 600
3) South-East	Dawei – Thanbyuzayat – Mawlamyaing – Myawaddy / Bago	290	31 200	143 500	113 100	30 400		4 500
4) Main River	Yangon – Mandalay	1 230	7 700	19 600			19 600	9 000
5) Trans-Myanmar	Kyauphhyu – Magway – Mon Lah	960	9 400	14 900	14 900			3 900
6) Coastal route	Sittwe – Yangon	1 885	4 200	12 000			12 000	5 000

Source: JICA et al. (2018).

Without entering into a discussion of the appropriateness and viability of the plan and selected projects, few would disagree with the NLMP's general diagnostic: Myanmar needs a real boost to its infrastructure connectivity network. Overall, Myanmar's logistic performance remains below that of its regional peers, and notably so in terms of its infrastructure (Figure 5.2).

Figure 5.2. The World Bank's 2018 Logistics Performance Index: ASEAN comparison

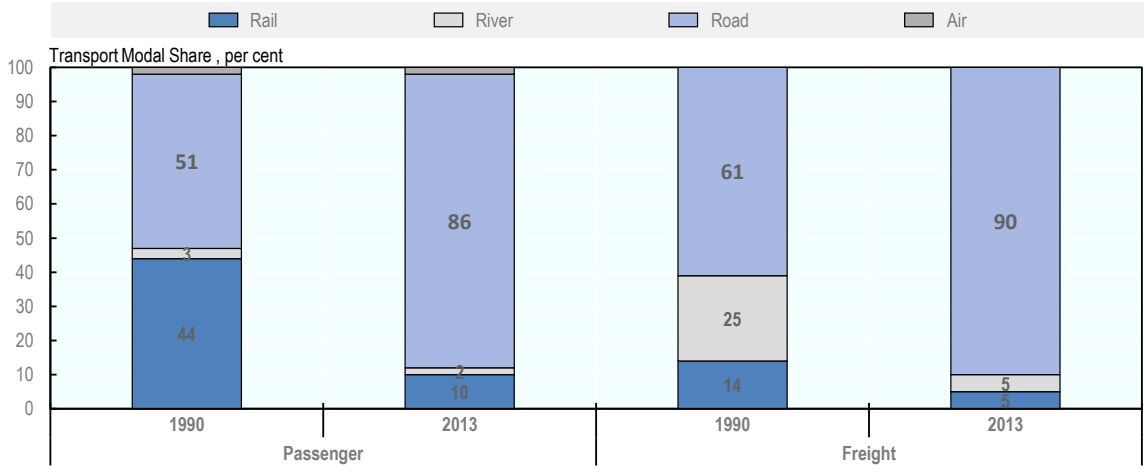


Note: The LPI is based on a worldwide survey of operators on the ground (global freight forwarders and express carriers), providing feedback on the logistics "friendliness" of the countries in which they operate and those with which they trade. It measures performance along six dimensions of the logistics supply chain, including: 1) Efficiency of the clearance process (i.e., speed, simplicity and predictability of formalities) by border control agencies, including customs; 2) Quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology); 3) Ease of arranging competitively priced shipments; 4) Competence and quality of logistics services (e.g., transport operators, customs brokers); 5) Ability to track and trace consignments; 6) Timeliness of shipments in reaching destination within the scheduled or expected delivery time.
Source: World Bank Logistics Performance Index.

Quality of hard infrastructure

Road transport largely dominates passenger and freight movements, with some estimates indicating that cars and buses move about 85% of people over long distances, and that trucks are used in around 90% of Myanmar's inland freight transport needs (Figure 5.3). Such a concentration of movement through the road network is to a great extent explained by the lack of multimodal facilities and the deteriorated conditions of competing infrastructures.

Figure 5.3. Trends in long-distance transport by mode, 1990-2013



Note: Long-distance refers to movements above 100km.
Source: ADB (2016b).

Myanmar has a total road network of about 157 000km, of which only about 20% is paved, despite recent government efforts which increased paved highways by 35% in the last 4 years (ADB, 2016d). The rate rises to 53% when considering only the trunk road network, which spans over 40 000km approximately; but about 42% of the paved trunk road network is in poor to very bad condition and around two-thirds of it is considered too narrow (12ft wide), much below Asian Class III highway standards (22ft in width). Besides safety issues, this typically slows down traffic even on relatively low traffic volume routes. While congestion is not particularly high, such poor conditions lead to slow vehicle speeds, typically 30km per hour (kph) for a truck and 40kph for a bus, and put cargo at greater risks of damage during transport (ADB 2016b). Stakeholders consulted during this review also reported that in some cases the speed problem is compounded by various formal and informal toll gates across important routes, such as along the major road from Yangon to Hpa-An, which is part of the East-West Economic Corridor.

Such difficult road network conditions are an impediment to developing Myanmar's agriculture and export-oriented manufacturing sectors as sought in the MSDP. To date, many farmers still remain deprived of adequate farm-to-market transport infrastructure, contributing to pressures on both cost and revenue sides. ADB (2016c) reports that 70% of all villages in Myanmar do not have all-season road access, which affects a population of around 20 million people. The share of the rural population living within 2km of an all-season road, an international measure of rural accessibility, is estimated at only 36%. Animal power or tractors are still often used for villages with no motor rail, resulting in high freight transport cost of USD 2-10-per ton-km (ADB, 2016c).

These weaknesses are not a peripheral challenge as they also affect the backbone of Myanmar's transport system: the main economic corridor between Yangon–Mandalay and the main trading routes with China and Thailand (Table 5.8). The Yangon–Mandalay corridor, which accounts for about 60% of all transport in Myanmar, is in relatively better shape, particularly for passengers that can use the expressway. But trucks need to travel along the parallel highway, which is in much poorer conditions; average vehicle speed is about 24kph on the highway (ADB, 2016b).

Table 5.8. Conditions in Myanmar's backbone freight transport corridors

	Distance (km)	Average Travel Time (hour)	Average Commercial Speed (kph)	Average Payload (ton)	Share of freight by 4-axle & Trailer Trucks (%)	Average payload of 4-axle & Trailer Trucks (ton)
Yangon-Mandalay	710.0	29.4	24.1	18.2	80.0	22.8
Mandalay-Muse (border with China)	450.0	24.0	19.4	24.2	73.0	27.0
Yangon-Mywaddy (border with Thailand)	450.0	25.6	17.8	13.9	-	-

Source: ADB, 2016b and 2016d; author calculations.

The Northern Road corridor linking Mandalay to Muse (border with China), through which about 17% of all freight in Myanmar is carried and which is the gateway for 70–90% of its official border trade, has various sections in extremely poor condition despite being a paved a road. This heavily constrains vehicle speeds to about 20kph on average. The East–West Road corridor to Thailand, which is the shortest and main trading route from Yangon to Thailand (Myawaddy border) channelling 10–30% of total official border trades, is ill-dimensioned in some sections (single lane with alternate circulation) and in generally poor condition. Likewise, average vehicle speed is low at 20kph.

Efforts are underway to improve the corridor with the support of the government of Thailand and other donors (ADB, 2016b). Freight traffic is expected to continue growing rather rapidly along this route. The alternative sea route from Yangon to Bangkok takes about 21 days (about 67% of imports and 12% exports rely on the sea route), against 3.5 days through the Myawaddy border station (JICA *et al*., 2018b). The time required is expected to be shortened further with the recent completion of the second friendship bridge

in early 2019, which allow trucks with 40-foot containers to go through, once upgrade and rehabilitation projects of the road network between Yangon and Miywaddy are finalised.

Myanmar's port and inland water transport systems also face significant limitations. The most important international gateway, handling the large majority of Myanmar's seaborne trade (above 80%), is the Yangon river port complex, which comprises both Yangon's main port and Thilawa port, located next to the Thilawa Special Economic Zone (SEZ). These are the only container handling ports in Myanmar, which are largely destined to industrial zones in the west bank area of the Yangon River (e.g. Hlaing industrial area) (JICA *et al.,* 2014). The Yangon ports have limited accessibility, being only able to serve vessels up to 15 000–20 000 deadweight and 167-200 meters long, respectively, preventing larger vessels to call at the ports, but dredging works are underway to increase up to 35 000 deadweight vessel capacity. At present, regular dredging is needed to secure access to the port, notably in the dry season (Nederland Maritiem Land 2016).

Partly due to this condition, the Yangon port is mainly served by feeder container transhipment vessels linking it with Singapore or Port Kelang of Malaysia. As container traffic volume continues to increase – between 2010 and 2017, total container handling has tripled to over one million TEUs in the Yangon port (MPA, 2019) – it will put additional strain in the current system. There is little scope to add capacity at the main port given its proximity to the city, limiting possible increases to operational efficiency gains. More sustained capacity increases can only come from the expansion of container terminals at the Thilawa Port area. Efforts are underway in this respect: a new terminal is planned for 2025, but JICA *et al.* (2019) estimates that a capacity shortage is already expected by 2023 based on a middle-case demand forecast scenario. Even after completion of planned container terminal development projects, a new deep-sea port would have to be developed at a brand new location to cover capacity recurring shortages expected in 2030.

The other eight major coastal ports essentially handle general cargo for the domestic market. But despite the theoretical potential of coastal and inland water transport (IWT) for the movement of low-value and bulky cargoes, their use has declined substantially over time. The absence of terminal facilities (most ports are only landing beaches, with loading and discharging being carried by labour) and limited river navigation capacity during the dry season *inter alia* leads to long turnaround times at ports and lower vessel utilisation rates. As such, coastal and river shipping have lost competitiveness even in bulk markets (e.g. construction materials, sand, stone and ore) where they typically hold a comparative advantage (JICA *et al*., 2019). Their share of total long-distance transport fell from 3.5% to 1.5% for passengers and from 22% to 3.5% for freight over 1990-2013 (ADB, 2016d).

Lastly, Myanmar hosts the longest railway network within ASEAN, totalling about 6 000 km, but some missing links with neighbouring countries, the lack of multi-modality infrastructure, and the poor condition of existing tracks and rolling stock preclude almost entirely its use in domestic and international freight transport. At present, the network is mainly used for long-distance passenger transport by the state-owned company Myanma Railways which holds the monopoly over operation and management of the railway network. As of 2015, its market share was only 10% for passengers and 1.5% for commercial freight (ADB, 2016e).

Past investment decisions supported an unstainable spread of the network, including to areas where demand was significantly compressed, to the detriment of needed maintenance expenditures in key network parts. As such, the situation of various lines is untenable without continuous government support (ADB, 2016e). The ADB estimates that about 60% of the network serve fewer than 1 000 passengers/day, which is assessed as too low to justify even maintaining rail services. Maintenance expenditures have also been 2-3 times below needed levels.

The consequence is the deterioration of the service offer, notably against alternative transport modalities. In the Yangon-Mandalay line, for instance, where demand is the largest, average train speed is 40kph, taking about 16 hours to complete the trip against 8-9 hours by buses. Average train speeds on other lines are even lower at 20-30kph. Overall, trains are said to operate at 50% of their potential speed. To

compensate, Myanma Railways offers rates which are 40% cheaper on average than bus rates or about half the cost of truck rates in the case of freight, but revenues cover only about half of operational costs and the company survives on the basis of government subsidies. The situation for freight is less troublesome as related revenues are able to cover service running costs, albeit not all infrastructure depreciation and capital costs (ADB, 2016e).

Quality of trade-supporting infrastructure

While road transport has become the dominant mode of freight traffic in Myanmar, there is potential for alternative modes to gain market share and contribute to more efficient logistics systems across the various production value chains. For this, investments in the rehabilitation and upgrading of existing infrastructure networks need to be coupled with the development of adequate multimodal facilities.

Despite the Multimodal Transport Law issued in 2014, multimodal infrastructure is still in its infancy. The first dry ports opened in Yangon only in late 2018 (Myanmar Times 2018). Nevertheless, multimodal infrastructure is expected to be strengthened over the next decade under the National Logistics Master Plan 2018-2030. The establishment of various multimodal freight logistics hubs is foreseen at strategic nodes along the main logistics corridors. They are expected to provide various logistics services (e.g. warehouses, freight station, cargo terminals, inland container terminals, customs office etc.). The development of these hubs may help to alleviate some of the pressure arising from limited or inadequate logistics facilities, such as warehousing, cold storage facilities and mechanically equipped domestic truck terminals (JICA *et al.*, 2018).

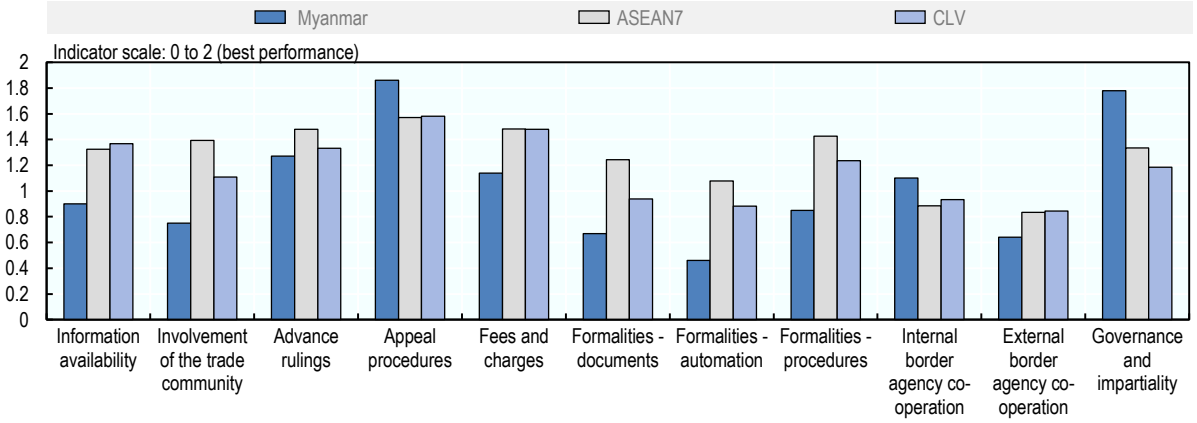
Better support facilities at the borders and port gateways are likewise needed. Bonded container transport and warehousing is yet to be developed, except in the Thilawa SEZ where it exists already, although this may change soon with the passing of the regulation on bonded warehousing in 2019. Hence, cargoes need to go through customs clearance at the port or at the border checkpoints. Cargo trans-loading is necessary but the capacity to handle cargo at border checkpoints is generally insufficient, thereby extending the cargo dwell time and increasing transport costs. Cargo trans-loading is typically carried by manual labour as seamless container transport is limited (JICA *et al.*, 2018).

Quality of soft infrastructure

Seamless trade infrastructure is yet to be fully deployed in Myanmar. The agribusiness sector is particularly affected because it is highly sensitive to delays. Myanmar's attempt to attract investment in light manufacturing activities associated with high-tech global value chains is equally undermined for the same reason.

Some progress has been made with the simplification of needed documents and procedures over the past few years, but still remains weak compared with its ASEAN peers, excluding Singapore and Brunei Darussalam, as well as against the group of less developed ASEAN economies, namely Cambodia, Lao PDR and Viet Nam (Figure 5.4). Evidence suggests that reforms simplifying and streamlining formalities, enhancing information availability and improving the governance of trade-associated institutions and processes typically bear significant fruits for countries at income levels of Myanmar (OECD, 2018). As such, the government may consider stepping up efforts to advance with reforms in these areas, as there is still considerable room for Myanmar to align with better practices observed across its regional and income peers. This will contribute to significantly reducing trade costs, allowing more firms to engage in international trading, particularly small-and-medium sized firms for which costs are generally disproportionate.

Figure 5.4. OECD 2017 Trade facilitation indicators



Note: The eleven TFIs take values from 0 to 2, where 2 designates the best performance that can be achieved. The variables in the TFI dataset are coded with 0, 1, or 2. These seek to reflect not only the regulatory framework in the concerned countries, but delve, to the extent possible, into the state of implementation of various trade facilitation measures. ASEAN7 includes: Cambodia, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Viet Nam. CLV includes Cambodia, Lao PDR and Viet Nam.
Source: OECD Trade Facilitation Indicators, http://www.oecd.org/trade/topics/trade-facilitation/.

The government is pursuing the implementation of a National Single Window system that will link with the ASEAN Single Window, but this is not yet operational. E-clearance systems have been deployed at Yangon's port and airport, as well as at the Thilawa SEZ, but not fully at border checkpoints (only at Myawaddy station). Risk-based inspections and advance ruling systems have been introduced and integrated into the e-system, although there is still room for improving their performance. An Authorised Economic Operator programmes has been established, which will facilitate customs processing for those operators with a good compliance track record. Ports efficiency has been improved with the adoption of an e-system allowing the exchange of key information for port entry declaration and clearance and other documentation related to cargo handling and storage at the port. Nonetheless, customs clearance at ports, airports and cross-border points still takes much time to complete (7 days at the port)(JICA et al., 2018a,b, 2019).

Myanmar is party to the GMS Cross-Border Transport Agreement since it was ratified in 2011. The agreement is designed to support faster border crossing and eliminate costly and time-consuming transhipment requirements but implementation has been limited. Myanmar entered into a MoU with Thailand only in 2019 to operationalise the agreement, allowing 100 vehicles to transport goods across the border on specific routes. Thai operators can only transit to the Thilawa SEZ, where they will be subject to customs procedures (Bangkok Post 2019). All other cross-border transport will continue to be subject to border trans-loading. Single inspection systems are also missing, requiring cargo to go through inspection twice on each side of the border, and customs systems across borders do not communicate with each other to facilitate the sharing of information.

Further streamlining is also needed with regard to import and export licences. Currently, over 4 500 items (by HS code) require import licences by the Ministry of Commerce under Myanmar's Import Negative List (MoC Notification No. 22/2019) and all but 1000 items require export licences. Procedures for obtaining licences remains generally complex, notwithstanding recent improvements such as the possibility of online applications in the case of a few hundred items. For most others, however, applicants need to obtain prior recommendation by the relevant line ministry before applying with the MoC.

Another important issue that merits government-wide attention is quality control and standards. The continued development and integration of Myanmar firms into regional and global value chains can only

be sustained if producers are capable of meeting export market standards and technical specifications. At present, this seems a challenge for most export-oriented production in Myanmar, including in top export product markets (e.g. rice) (World Bank, 2016). Efforts to strengthen the national quality standards and control systems and enhance their alignment with standards and regulations of export markets are complementary and would benefit from an integrated approach with export and investment promotion strategies. The government and industry associations have an important role to play in this respect, since they can actively contribute to reducing information failures and building industry capacity to meet international requirements.

Quality of the logistics industry

The freight transport and logistics services industry in Myanmar also needs to be improved in order to support growing trade demand. The government may consider strengthening the promotion of investments in the sector for the purpose of facilitating capacity expansion and supporting auxiliary logistics services development.

Recent evidence suggests that some modernisation is already taking place. In road freight transport, for instance, the ADB (2016b) reports a significant expansion and renewal of the trucking fleet since the government removed constraints on imports of trucks in 2011. The lower operating costs of the newer larger-sized truck fleets have helped to bring down freight rates in the main corridors. Fleet replacement is not a reality for other transport mode operators however. Myanma Railway's rolling stock is still dominated by relatively old locomotives, which consume around twice as much fuel as more modern ones. Similarly, Myanmar's current vessel fleet is also aging and small: average 28 years and 3 716 gross tonnages in size (Nederland Maritiem Land, 2016).

The use of modern logistics services and managerial practices is also limited in most areas, often resulting in inefficient asset utilisation and lower profitability. Average cargo load factors, for instance, are generally low across transport modes, sometimes even in some key routes, e.g. in the road links with Thailand where levels of trucks running empty backhaul trips reaches 25-50%. Even in routes where average load factors are relatively high (e.g. Yangon-Mandalay), return cargo arrangements are not secured in advance. JICA *et al.* (2018) estimate that only 10% of return cargoes are arranged by agents. Most cargo owners arrange return cargos by themselves after departure. Limited cargo handling capacity at terminals add to this problem. As such, dwell times at truck terminals are generally high at around 37 hours in Yangon-Mandalay, about half of the truck turnaround time, both of which are considerably high for a 650km route. Further market development for freight agents and logistics services providers, as well as the development of cargo-truck matching services, should help to improve the situation (JICA et al, 2018).

Investments into transport infrastructure: more resources and efficiency needed

The MSDP sets the national development vision for 2018-2030. Under the MSDP, the government aims to move from project selection based on budgetary constraints to effective selection, prioritisation and implementation of projects with a focus on development sustainability and harmonious co-ordination. The MSDP is structured around three pillars, peace and stability, prosperity and partnership, and people and planet, under which there are 28 strategies and 251 action plans. Line ministries are required to develop their respective plans and strategies in alignment with the MSDP. The Ministry of Transport and Communications has established the National Logistics Master Plan 2018-2030 to improve long-term logistics capacity and support the achievement of the goals under the MSDP.

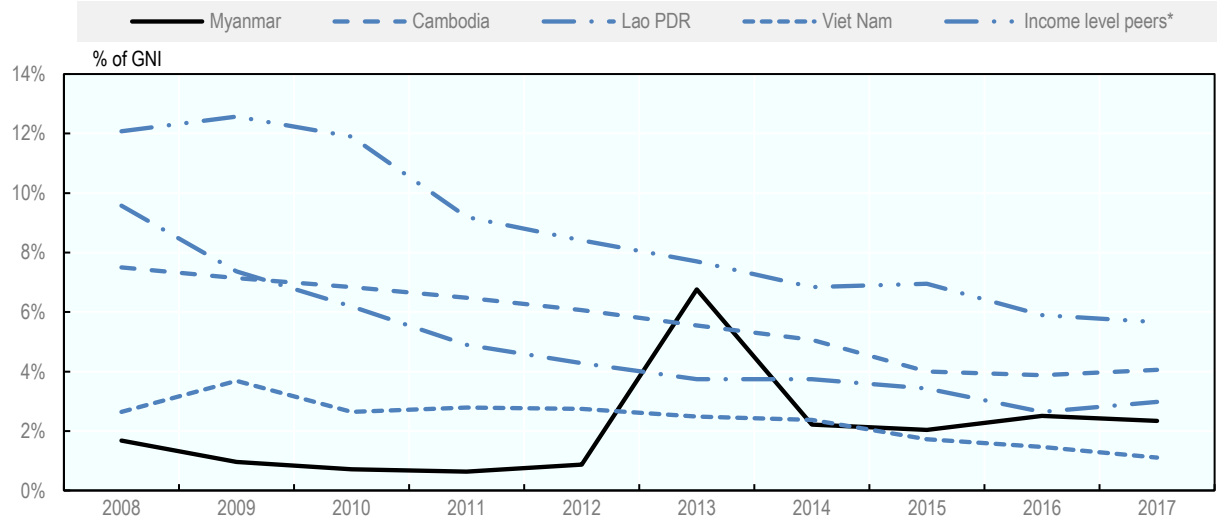
Official development assistance will play an increasing role in infrastructure financing

The large scale investment programme envisaged under the National Logistics Master Plan will require a large mobilisation of resources. A few recent reports suggest that Myanmar has spent and continues to spend much less than needed to improve general public services and transport infrastructure connectivity more specifically. The World Bank (2017) estimates that general government spending at 15% of GDP in 2017 is low given needs, and is well below the rate of 20% of GDP observed in other countries at a similar level of development. In transport infrastructure, estimates suggest a more acute situation. Annual investments needed to scale up and upgrade infrastructure in line with growth prospects are estimated at 3-4% of GDP, but spending over the past decade has amounted to only 1-1.5% of GDP on average. Again, other countries at similar development stage typically invest 3-5% of their GDP in transport infrastructure (ADB, 2016a).

Scaling up investments in transport infrastructure may prove to be a rather long-term endeavour. The fiscal space to raise capital expenditures in a financially sustainable manner is somewhat constrained by structural and capacity limitations: dependency on commodity receipts and exposure to natural disasters, current narrow production base and reliance on hard-to-tax sectors dominated by SMEs, and large public spending inefficiencies (World Bank, 2017). Limited domestic financing options further add to this. Efforts are underway to develop the domestic debt market – the government has expanded Treasury bill and bond auctions since 2016 – but these are still at early stages and are unlikely to become a major source of financing for long-term capital expenditures needed in the near term.

Most of the financing will, therefore, need to come from improved efficiency in public spending and increased donor support, besides any possible increase in revenue collection. Despite a significant increase since 2011, Myanmar still receives relatively little official development assistance (ODA) in comparison to other countries at comparable income levels and relative to some of its regional peers (Figure 5.5).

Figure 5.5. Net ODA (% of GNI): Myanmar and selected peers, 2008-2017



Note: Net official development assistance (ODA) consists of disbursements of grants or loans at concessional terns (net of principal repayments) by official donor country agencies and multilateral institutions for the promotion of economic development and welfare in the recipient economy.
(*) Income level peers refers to a group of up to 37 countries whose GNI per capita was between half and 1.5 times the Myanmar's level.
Source: OECD Development Finance Statistics.

A Project Bank to facilitate the co-ordination and transparent implementation of prioritised projects

An important step to further tap into development finance resources will be the implementation of the online Project Bank announced in early 2019. If properly developed, this can be a valuable tool to further the mobilisation and efficient channelling of additional resources into priority projects. This would complement the earlier efforts to strengthen co-ordination in the country through the Development Assistance Coordination Unit.

The Project Bank brings an element of consistency and planning to projects. It will facilitate the co-ordination between ministries and the prioritisation of project proposals in line with the MSDP. Projects will be appraised, selected and prioritised before entering the bank, and their financing strategies will likewise be assessed beforehand. The centralised database will further include technical specifications, contract type and other information necessary for transactions with potential investors. Projects identified to be developed under public-private partnerships (PPP)-like schemes will be subject to competitive tendering (including unsolicited proposals) and any government support (e.g. viability gap funds and guarantees) and their modalities would be registered. It is also expected to be used for the monitoring of projects throughout their lifecycle (VDB-Loi, 2019).

Project selection and prioritisation needs to improve to achieve better value-for-money in public infrastructure spending

On the public spending side, there is plenty of room to improve efficiency going forward, including by enhancing value-for-money appraisal frameworks and reallocating expenditures to priority areas across and within sectors and improving the governance of state economic enterprises (SEEs) and (World Bank, 2017; ADB, 2016b). Budget reallocations across sectors, which is typically a politically-charged and long-term enterprise requiring the involvement of various parts of the government and society, may be challenging in the near term. In the meantime, there is significant room to achieve greater value-for-money within-sectors.

A few of the challenges discussed in the section above are representative of the types of efficiency gains possible. Investments into the expansion of the railway network, for instance, were substantial from 2000 to 2017, allowing the network to increase by almost 30% according to the Myanmar's online Statistical Information Services. But as already mentioned above, about 60% of the network currently serves fewer than 1000 passengers per day, a level assessed to be too low to justify maintaining rail services (ADB (2016a). At the same time, average speeds are very low even on the high-demand routes. A similar situation is observed in the road network. The ADB (2016d) reports that only 5 000km of roads have traffic above 1 000 vehicles per day, and almost 74% of the trunk network – including 50% of the paved roads – have traffic below 200 vehicles per day, which is often seen by practitioners as the minimum threshold for justifying paving a road.

There may have been cases where such investments were appropriate, but such orders of magnitude point to potential weaknesses in past decision-making frameworks. Some investments seem not commensurate with their financial and economic viability, having likely occurred at the cost of other needed investments, such as for the maintenance of the existing network and fleet renewal for instance. All of this may also have contributed to put the related institutions and SOEs at greater financial strain.

The current and future governments will have to address these legacies. To date, project selection has been largely based on simple budget considerations as stated in the MSDP 2018-2030. The World Bank (2017) reports that projects are typically selected in an *ad hoc* manner by ministerial committees with insufficient technical appraisal and prioritisation. Some scrutiny takes place at a later stage in parliament, but these are equally not supported by thorough analysis.

The current legal setting does not require proposed projects to be formally appraised before being considered for budget; and poor institutional capacity also prevents more thorough assessments (e.g. externalities are not typically accounted for and consultation with users and affected communities are rare). To some extent, the expectation is that this will improve as the government accumulates experience in implementing the Environmental and Social Impact Assessments procedures issued back in 2016. Poor project selection and development at initial stages makes their subsequent execution more difficult, often leading to delays. This is further compounded by the lack of multi-year capital allocation, which coupled with procurement delays, gives rise to stop-and-go funding situations leading to increased costs and delays in project implementation (World Bank, 2017).

Again, the Project Bank initiative is a positive step in the direction of improving spending efficiency as it allows for greater scrutiny of projects by stakeholders and enhances transparency in decision-making. In conjunction, it is important for the government to step up efforts to improve the process of project selection, prioritisation and assessment. This is ever more important now that the government is looking to enhance private sector participation in infrastructure through Public-Private Partnerships as per the MSDP 2018-30. A sound legal and institutional framework is needed to both to effectively attract private sector interest and ensure that PPPs can deliver on value-for-money expectations. Myanmar's current PPP framework is largely incomplete (World Bank, 2018). Decision-making should fully take into account all fiscal implications of PPPs, including any possible contingent liability. The use of PPPs as a vehicle for escaping budgetary discipline by hiving financial commitments off public sector balance sheets often leads to problems.

Rehabilitating and modernising state-owned economic enterprises

The modernisation and rehabilitation of transport SEEs, such as Myanma Railways and Inland Waterway Transport, is another important point in the agenda. At present, these companies function as departments in their respective line ministries, relying on annual budget allocations for their operations, rather than as publicly-owned autonomous entities. Their corporatisation coupled with greater managerial autonomy to allow them to better focus on commercial activities would likely be beneficial to restoring their financial sustainability and diminishing their reliance on public subsidies. Their improved governance should also facilitate channelling resources in public services obligations more efficiently.

Official development aid from advanced economies that see the positive externalities for their trade and investment with Myanmar is supporting part of the gap, but to sustain the funding gap, especially for smaller, domestic infrastructure projects, private participation will be needed in the long run. According to the World Development Indicators database, private participation has been the lowest in the region and purely in the energy sector for 2000-14. Increase in the future financing for the main projects should be leveraged from private capital, in particular from Myanmar's trading partners, as the private sector may deliver projects more efficiently and in a more user-friendly manner, while allowing for technology and knowledge spillover. Indeed, Japanese firms have invested in Thilawa, while Chinese firms are offering investments for infrastructure around the China-Myanmar border.

The BRI infrastructure projects may play an important role in attracting Chinese investments to improve Myanmar's connectivity along the India-Bangladesh-Myanmar-China corridor. A steering committee for implementation of works related to BRI was established in September 2018. The committee, chaired by the State Counsellor and comprised of other ministers, is tasked with establishing the China-Myanmar economic corridor and the border economic cooperation zone. It has been recently announced that three locations were identified under an MoU for the border economic cooperation core zones (BECZ), which would, under the Investment Law and Special Economic Zone Law, have duty-free concessions and trade supporting facilities such as an export product manufacturing and import processing and warehouse, hotels and banks, although bonded warehouses and access to dry port are yet to be seen. In the BECZ, foreign investors may participate up to 35% equity (Myanmar Times 2019d).

References

ADB (2018), *Asian Development Outlook 2018 How Technology Affects Jobs*, ADB Publication, April 2018.

ADB (2017), *Myanmar, 2017-2021 Building the Foundations for Inclusive Growth,* ADB Country Partnership Strategy 2017.

ADB (2016a), *Myanmar Transport Sector Policy Note How to Reform Transport Institutions*¸ ADB Publication, 2016.

ADB (2016b), *Myanmar Transport Sector Policy Note How to Reduce Transport Cost*¸ ADB Publication, 2016.

ADB (2016c), *Myanmar Transport Sector Policy Note Rural Roads and Access*¸ ADB Publication, 2016.

ADB (2016d), *Myanmar Transport Sector Policy Note Trunk Roads*¸ ADB Publication, 2016.

ADB (2016e), *Myanmar Transport Sector Policy Note: Railways*¸ ADB Publication, 2016.

ADB (2014), *Myanmar Unlocking the Potential Country Diagnostic Study*, ADB Publication, August 2014.

ADB (2013), "Myanmar's Trade and its Potential", *ADB Economics Working Paper Series*, No. 325, January 2013.

Bana, Naresh and Yhome, K. (2017), "The Road to Mekong: the India-Myanmar-Thailand Trilateral Highway Project", *ORF Issue Brief Issue No. 171*, February 2017.

Bangkok Post (2019), "Thai-Myanmar pact to boost cross-border transport", website section, 1 June 2019, https://www.bangkokpost.com/business/1687344/thai-myanmar-pact-to-boost-cross-border-transport (accessed 24 September 2019).

Das, Ram Upendra (2016), *Enhancing India-Myanmar Border Trade Policy and Implementation Measures*, Department of Commerce Ministry of Commerce and Industry Government of India.

Htun, K. W., N. N. Lwin, T. H. Naing and K. Tun (2011), "ASEAN-India Connectivity: A Myanmar Perspective", in Kimura, F. and S. Umezaki (eds.), *ASEAN-India Connectivity: The Comprehensive Asia Development Plan*, Phase II, ERIA Research Project Report 2010-7, Jakarta: ERIA, pp.151-203.

JICA et al. (2019), *The Data Collection Survey for the Development of Yangon Port in Republic of the Union of Myanmar: Final Report*, February.

JICA et al. (2018), *Data collection survey on national logistics in the republic of the union of Myanmar: final report*, volume 1: main text, March.

JICA et al. (2014), *The Survey Program for the National Transport Development Plan in the Republic of the Union of Myanmar: Final Report*, September.

Ling, Yaw Zar (2017), *An Analysis of the Effect of Border Trade Value on Myanmar Economic Growth*, 11th Asia-Pacific Conference on Global Business, Economics, Finance and Business Management (AP17Thai Conference), Thailand: Bangkok, February 16-18.

McKinsey Global Insitute (2016), *Bridging Global Infrastructure Gaps,* Technical Report, September 2016.

Ministry of Transport and Communications (2017), *Status and Future Plan for National Logistics Master Plan*, Ministry of Transport and Communications, 30 November, 2017.

Myanmar Times (2019a), "Chinese courier takes stake in Yoma's logistics arm", website section, March 13, https://www.mmtimes.com/news/chinese-courier-takes-stake-yomas-logistics-arm.html (accessed 24 September 2019).

Myanmar Times (2019b), "Govt announces 'project bank' to get Myanmar building", website section, January 31, https://www.mmtimes.com/news/govt-announces-project-bank-get-myanmar-building.html (accessed 24 September 2019).

Myanmar Times (2019c) "Bonded warehouse programme set to provide boost to Myanmar industries", website section, May 1, https://www.mmtimes.com/news/bonded-warehouse-programme-set-provide-boost-myanmar-industries.html (accessed 24 September 2019).

Myanmar Times (2019d), Three locations identified for China-Myanmar Economic Corridor, website section, June 7, https://www.mmtimes.com/news/three-locations-identified-china-myanmar-economic-corridor.html (accessed 24 September 2019).

Myanmar Times (2018), Myanmar's first dry port opens for business, website section, November 12, https://www.mmtimes.com/news/myanmars-first-dry-port-opens-business.html (accessed 24 September 2019).

Nederland Maritiem Land (2016), *Myanmar Maritime Quickscan*, Nederland Maritiem Land.

OECD (2018), *Trade Facilitation and the Global Economy*, OECD Publishing, Paris, https://doi.org/10.1787/9789264277571-en

Oxford Business Group (2019), "How Myanmar is improving its transportation", website section, April 30, https://oxfordbusinessgroup.com/news/how-myanmar-improving-its-transportation (accessed 24 September 2019).

UNCTAD (2017), *Review of Maritime Transport 201*", United Nations Publication UNCTAD/RMT/2017.

VDB-Loi (2019), "Project Bank Notification for PPP Projects", website section, February 21, http://www.vdb-loi.com/mm_publications/project-bank-notification-for-ppp-projects/ (accessed 24 September 2019).

World Bank (2018), *Procuring Infrastructure Public-Private Partnerships Report 2018: Assessing Government Capability to Prepare, Procure, and Manage PPP*", World Bank: Washington D.C.

World Bank (2016), "Myanmar: an analysis of farm production economies", *Economic and Sector Work Report No. 100066-M*, World Bank: Washington D.C., February 26.

World Bank (2014), "Myanmar: capitalizing on rice export opportunities", *Economic and Sector Work Report No. 85804*, World Bank: Washington D.C., February 28.

Notes

[1] McKinsey Global Institute examined more than 100 case studies (of the 400 cases carried out overall) that quantify the impact of a range of improvement levers from across three broad categories of opportunity: improving project selection and optimizing infrastructure portfolios; streamlining delivery; and making the most of existing infrastructure assets. The case studies come from a range of countries covering different geographies and development profiles. Some of these cases were drawn from McKinsey's work, and some from external literature and interviews. They mostly come from 2008 to 2013, with a few going back as long as 2003.