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Construction in the CLMV region: Opportunities for Thai contractors

The CLMV countries have attracted increasing attention from foreign investors following the formal establishment of the Asean Economics Community (AEC) in 2015. Economic expansion and increasing levels of urbanization have also spurred the development of infrastructure to support further growth within these countries, and this represents opportunities for Thai construction companies to expand into countries that are seeing ongoing growth.

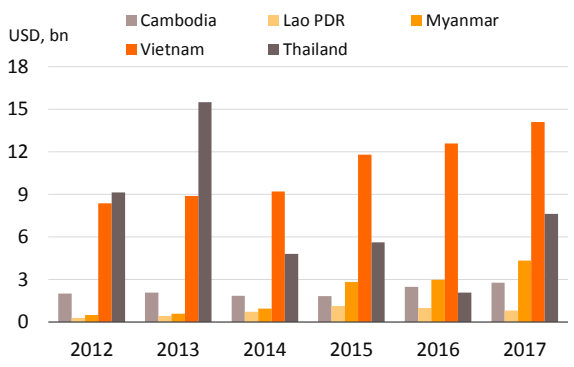
This analysis thus evaluates the construction sector across the CLMV countries in terms of the opportunities and limitations. The research is based on a country by country macro-level consideration of sectoral readiness, together with the sectors' structural features, and the result of this analysis is that because of the volume of large-scale construction projects being undertaken and the rate of growth in the sector. **Vietnam** is at present the most promising market for construction business, followed by **Cambodia**, which is seeing strong growth in construction, as well as benefitting from a lengthy shared border with Thailand. **Myanmar**, although outside investors in the country face a greater number of obstacles than they do when investing in the other CLMV nations, the government is attempting to ease regulation for attracting higher levels of investment. For its part, **Lao PDR** is seeing only a relatively low level of construction value, however opportunities still exist in mid- to small-sized developments. Overall, those entering the construction market in the CLMV zone will encounter high competition from overseas players and so to ensure a continuing stream of work, Thai operators should look for domestic companies within the business supply chain to partner with. These could include local property developers or construction contractors, or agencies providing employment for local workers.

Growth potential in the CLMV region…supporting players in the construction market

In the recent past, the CLMV countries of Cambodia, Lao PDR, Myanmar and Vietnam have been able to attract a steady stream of foreign direct investment (FDI) (Figure 1). During 2012-2017, FDI inflows to these countries increased by 18% per year. This state of affairs was supported by: (i) strong economic growth in the region, which averaged 6.5% per year in the period; (ii) the abundance of natural resources in these countries, which serve as important sources of raw materials for the manufacturing sector; and (iii) the large supply of low-cost labor in the region.

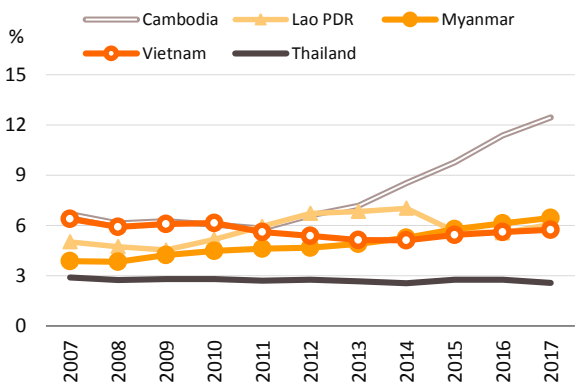
In addition**, the profile of these countries has risen following the establishment of the ASEAN Economic Community (AEC) in 2015**, which has led to an increase in economic activity and with this a rush to develop the infrastructure required to support growing rates of urbanization. These changes can be seen in the steadily growing proportion of national GDP taken by construction within the CLMV countries during 2012 and 2017 (Figure 2). Growth has been most pronounced in Cambodia, where the construction sector has expanded by an average of 25% per year. In the other three countries of Myanmar, Lao PDR and Vietnam, their respective construction sectors have grown at annual rates of 19%, 12% and 10%. However, in terms of overall size of the construction market, Vietnam is the most important of the CLMV nations, followed by Myanmar, Cambodia and Lao PDR (figures 3-4). This difference has arisen because Vietnam receives the most FDI in the group and this has fed a greater level of investment in infrastructure and real estate projects.

Figure 1: Value of FDI Inflows



Source: CEIC data

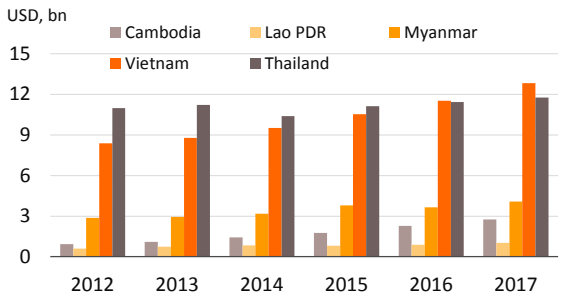
Figure 2: Contribution of the Construction Sector to GDP



Source: CEIC data

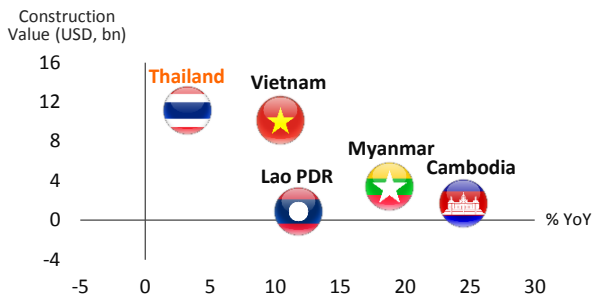
These trends thus present Thai construction companies with an opportunity to expand their operations into the growing markets in these countries, whether that be for infrastructure work, industrial, commercial or residential buildings. Currently, with the exception of Myanmar, the authorities in these nations permit foreign investors to hold 100% of the shares of local construction companies. This helps to reduce the difficulties companies might have with bringing in specialist labor, such as engineers and architects, and Thai construction companies that use specialist techniques and that have particular engineering expertise will therefore benefit from this fact. From a geographical perspective, Thailand's shared border with three of the four CLMV countries also helps to reduce the costs of doing business by making it cheaper to move labor, and machinery to sites overseas.

Figure 3: Value of the Construction Sector



Source: CEIC data

Figure 4: Value and Growth of the Construction Sector during 2012-2017



Source: CEIC data

Factors indicating attractiveness of doing business in construction sector in the CLMV

I. An evaluation of the factors that have an influence on decisions to move into the CLMV market is based on (i) the readiness of macro-level factors and (ii) structural factors relating to the construction sector. An exploration of these is given below.

i. The readiness of macro-level factors in the construction sector is analyzed through an application of "the Five Force Model" to the indicators that point to both the opportunities and limitations confronting investors.

- **indicators of opportunities** are assessed through 7 factors: 1) construction value (measured by its contribution to GDP); 2) construction per GDP; (3) macroeconomic environments (evaluated from an economy's score on the Global Competitiveness Index, or GCI); (4) the readiness of logistics networks (evaluated from Logistic Performance Index, or LPI); (5) the level of foreign direct investment (FDI) in the country; (6) national policy related to investment (evaluated from the 'institution' component of the GCI); and (7) advantages of labor cost. **These indicators are ranked and a higher score indicates greater opportunities with regard to that factor (figure 5), while overall, the country with the greatest score will have the most positive environment for investors, relative to the other countries that have been scored** (figure 6).

Opportunity Factors	Weight %
Construction Value	23
Construction per GDP	23
Macroeconomic Environment	17
LPI	14
FDI	9
Policy for Investment	9
Advantages of Labor Cost	4

- **Indicators of limitations** are assessed through 5 factors: 1) inadequate Infrastructure for construction projects (converted score of the 'infrastructure' component of the GCI); 2) financial market underdevelopment (converted score of the 'financial market development' component of the GCI); 3) political instability (evaluated from the Political Stability Index); 4) labour market inefficiency (converted score of the 'labor market efficiency' component of the GCI); and 5) construction material cost (for which cement prices stand as a proxy). **As above, these factors are divided out and a higher score indicates that in that country, that factor is more limiting on investment** (figure 7), **while a country that has a higher total score from the summing of all these factors will have a market that investors will find to be more restrictive** (figure 8).

Risk Factors	Weight %
Inadequate Infrastructure	37
Financial Market Underdevelopment	29
Political Instability	22
Labor Market Inefficiency	9
Construction Material Cost	3

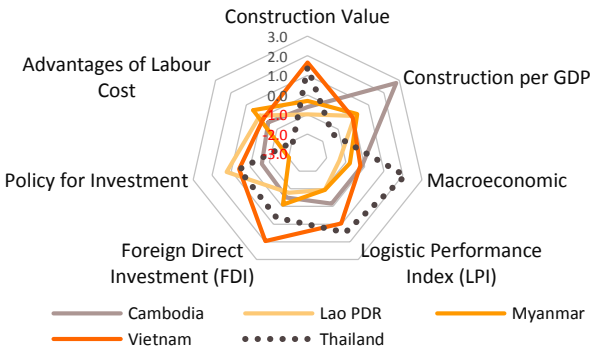
Note: calculated by Principle Component Analysis (PCA)

ii. **Structural factors of construction contractor businesses** are assessed from basic information on the structure of the market that can be expected to have an impact on construction contractors operating in the CLMV countries. These are: 1) limitations on share-holding in construction companies by non-nationals; 2) type of work undertaken by foreign-owned construction companies; 3) the types of construction work being undertaken; 4) the level of competition in the market; 5) the characteristics of the players in the construction sector; 6) sources of financing; and 7) regulations governing investment, in particular with regard to tax and non-tax incentives (table 1).

II. The evaluation of macro-level factors in the CLMV's construction sector:

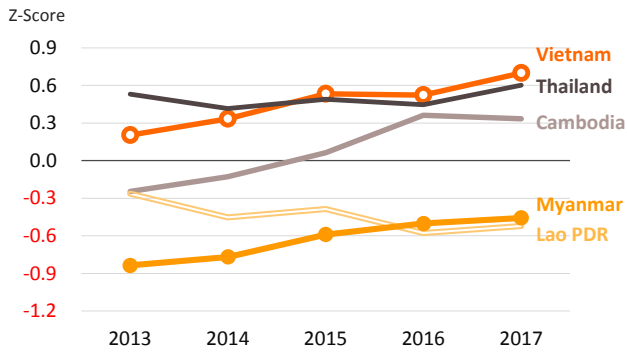
i. **Krungsri Research evaluation of the macro-level factors determining the attractiveness of the construction sectors of the CLMV nations** is based on principle component analysis (PCA). This shows that the indicators for opportunities are weighted 23% the construction value, 23% the construction per GDP and 17% the macro-economics environment. For the limitations, the factors are: inadequate infrastructure (37%), financial market underdevelopment (29%) and political instability (22%) (further details are given in the appendix.) Between 2013 and 2017, **under this analysis, Vietnam had the greatest level of positive factors supporting the construction sector and the lowest level of limitations on it. Myanmar was in the opposite position to Vietnam, having the fewest positive factors and the greatest limitations** (figures 6 and 8), though this said, the situation in Myanmar is evolving and opportunities in construction are steadily improving. Details of the situation for individual countries in the period 2013-2017 are given below.

Figure 5: Indicators of Opportunities for Investment in Construction, 2017 (by Factor)



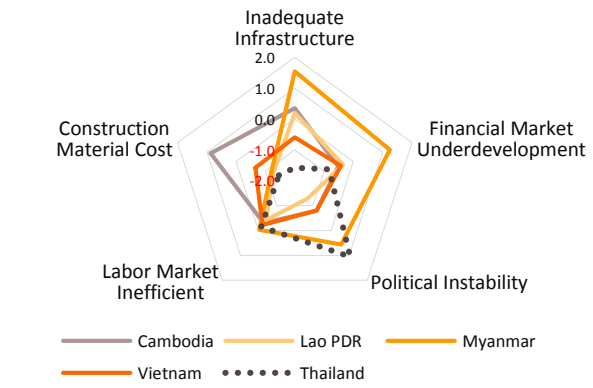
Source: compiled by Krungsri Research, as of 2017
Note: Calculation for Z-score of opportunity factors are in appendix. Higher level of indicator represents higher opportunities.

Figure 6: Combined Indicators of Opportunities for Investment in Construction



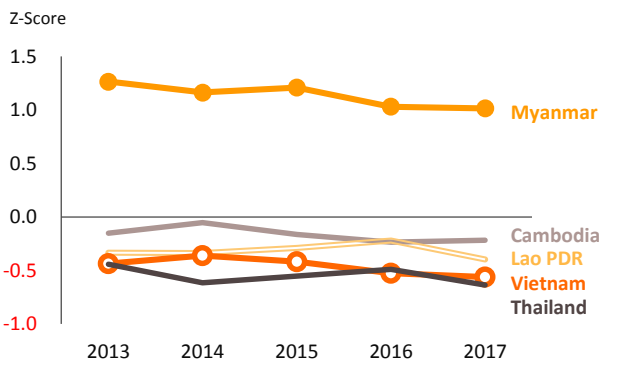
Source: compiled by Krungsri Research
Note: Z-Score are levels of opportunity indicators that calculated from 7 factors (description of calculation is in appendix)

Figure 7: Indicators of Limitations for Investment in Construction, 2017 (by Factor)



Source: compiled by Krungsri Research, as of 2017
Note: Calculation for Z-score of risk factors (in 2017) are in appendix. Higher level of indicator represents higher risks.

Figure 8: Combined Indicators of Limitations on Investment in Construction



Source: compiled by Krungsri Research
Note: Z-Score are levels of risk indicators that calculated from 5 factors (description of calculation is in appendix)

- **Vietnam** enjoys advantages arising from the size of its construction sector and the number of construction projects underway, which is the highest in the CLMV region. Although the rate of growth of the Vietnamese construction sector is lower than that in Cambodia and Myanmar, **it is still on an upward trend and the country also benefits from a number of other positive factors relative to the other CLMV countries**, including the size of its FDI inflows, the development of its logistics sector, and **the low level of limitations on construction contractors**, particularly in terms of the development of national infrastructure and financial markets.
- **Cambodia, in terms of the opportunities it presents to operators in construction**, is the second-most attractive of the countries that are considered here thanks to the rapid rate of expansion of its construction sector, which contributes a larger share to GDP than in the other CLMV countries. However, the nation still needs to develop its logistics sector and to put in place better policies to attract FDI. **In terms of limitations**, construction materials are more expensive than elsewhere and there is a lack of access to public utilities.
- **Myanma**r benefits from large number of infrastructure project and this has helped to lift growth in construction sector to the second-highest in the CLMV group. However, on the flip side of the coin, looked at **in terms of opportunities for construction companies**, between 2013 and 2015, the country was the lowest performing in the group and in 2016 and 2017, Myanmar performed better than only Lao PDR in this regard. Positive factors for Myanmar are the acceleration of its logistics system development and the increasing levels of FDI, while **in terms of limitations**, **these were the highest of the group**, with political instability, insufficient infrastructure support and the weak development of financial markets being a particular concern.
- **For Lao PDR**, between 2013 and 2017, **its advantages** included low labor costs and government policy which aimed at making investment easier but the country still needs to develop its transport system to attract greater levels of FDI. **In terms of limitations**, **these were at a relatively low level** by 2017, having fallen from higher levels four years earlier on (i) a decline in the price of construction materials, due to manufacturers opening production facilities within the country itself, and (ii) the improving situation with access to public utilities, especially electricity.

ii. The evaluation of structural factors in the CLMV's construction sector:

Apart from the assessment of macro-level factors that indicated the opportunities and limitations of doing business in the CLMV countries, the evaluation of structural factors on construction sector in each countries should be considered together. **Krungsri Research's** study is showed the details on table 1

Table 1: Major Structural Factors that have an Influence on the Construction Sectors in the CLMV Countries

	Cambodia	Lao PDR	Myanmar	Vietnam
1) Regulations on foreign share-holding in the construction sector	100% share-holding by foreigners.	100% foreign share-holding for investments with a value of over USD 30 m. For investments of up to USD 30 m, foreign share-holding must not exceed 49%.	Foreign share-holding of 35%, but less than 100%.	Foreign share-holding of up to 100% is possible by either establishing a new company or buying an existing, locally-owned one.
2) Types of work undertaken by foreign-owned construction companies	– May be contracted directly by the private-sector or enter into partnership with local operators. – Many types of PPP possible, such as BOT and BTO. – G to G	– May be contracted directly by the private-sector or enter into partnership with local operators. – Many types of PPP possible, such as BOT and BOO. – G to G	– May be contracted directly by the private-sector or enter into partnership with local operators. – Most PPP projects are BOT – G to G	– May be contracted directly by the private-sector or enter into partnership with local operators. – PPP, for example, BOT and BTO. – G to G
3) Types of projects	The majority of work is on the construction of transport infrastructure, such as roads, railways, and airports. Work on industrial projects, especially in special economic zones, is also undertaken.	Most work is on infrastructure, especially hydroelectric projects, roads and railways. Real estate developments are also undertaken around urban areas and in tourist areas.	The most important segments of the construction sector are residential (51%), infrastructure (26%), industrial (14%), commercial (6%) and general (3%).	Most construction projects are for commercial and 'other' uses (70%). This is followed in importance by infrastructure (27%) and residential (3%).
4) Contractors				
4.1 Sectoral structure	There are approximately 1,000 registered construction companies, of which some 300 are foreign-owned. The majority of the latter are Chinese-owned.	There are 1,300 registered construction companies. 80% of these are small operations.	80-90% of operations are SMEs and these are contracted for road repairs and small projects. Large players focus on real estate developments and large joint infrastructure projects with foreign companies.	There is a total of some 20,000 registered construction companies. Vietnam has seen a greater number of mid-sized foreign players enter the domestic market because of the large number of building projects being undertaken.
4.2 Major local construction companies	– Royal Group – Muhibbah Engineering – Sea-Union Construction	– Champa Lao – Gaupa Lao Construction	– Max Myanmar Group – Htoo Construction – A1 Construction – Shwe Taung Development – Asia World	– Cotec Construction – Hoa Binh Construction & Real Estate – Vinaconex – Viet Nam Industrial Construction – Petrovietnam Construction
4.3 Major foreign construction companies	– Henan Transport Investment (China) – Greenland Group (China) – China State Construction Overseas Development – Yunnan Construction Investment (China) – Sino Great Wall International Engineering (China)	– China Railway Engineering Group – POWERCHINA – Vietnamese Hoang Anh Gia Lai – EGCO Group (Thailand) – Ratchburi Holding (Thailand)	– China Harbour Engineering – Yunnan Construction Engineering (China) – Korean Land and Housing Cooperation – JFE Engineering Corporation (Japan) – Posco Daewoo Corporation (Korea)	– Obayashi Corporation – China Railways Sixth Group – China Construction State Engineering – Posco E&C (Korea) – Nawarat (Thailand)
5) Level of competition	The large number of players in the sector leads to high levels of competition. However, an increasing number of Chinese players are working on infrastructure development because of the financial support coming from the Chinese government.	Much of the work is on capital-intensive hydroelectric projects and only a small number of companies compete for this work, most of whom are foreign-owned, coming especially from China and Vietnam.	Higher competition results from eased policy to encourage more foreign companies to compete for work. Most of the latter are Chinese, Taiwanese, Vietnamese and Singaporean.	A large number of construction projects are underway in Vietnam and these are of a wide range of types. This has attracted many players to the sector and competition is therefore high but partnering with local operators will help to significantly increase competitiveness for foreign players.

Note: PPP = Public and Private Partnership, BOT = Build operate and transfer, BTO = Build transfer and operate, BOO = Build-own operate, G to G = Government to Government

Table 1: Major Structural Factors that have an Influence on the Construction Sectors in the CLMV Countries (cont.)

	Cambodia	Lao PDR	Myanmar	Vietnam
6) Sources of financing				
6.1 Private	Income from operations or domestic or foreign loans.	Income from operations or domestic or foreign loans.	Income from operations or domestic or foreign loans.	Income from operations or domestic or foreign loans.
6.2 Public	– Grants and loans available from international bodies such as the ADB, the World Bank, the JICA and from foreign governments, such as China. – Domestic loans – Government budgetary disbursements	– Grants and loans available from international bodies such as the ADB, the World Bank, the JICA and from foreign governments, such as China. – Domestic loans – Government budgetary disbursements	– Grants and loans available from international bodies such as the ADB, the World Bank, the JICA and from foreign governments, such as China. – Domestic loans – Government budgetary disbursements	– Grants and loans available from international bodies such as the ADB, the World Bank, the JICA and from foreign governments, such as China. – Domestic loans – Government budgetary disbursements – Income from state enterprises
7) Investment regulations				
7.1 Corporate tax	20%	19% for companies registered on the stock exchange and 24% for all others.	20% for companies registered on the stock exchange and 25% for all others.	20%
7.2 Tax incentives for investors	6-year tax-exempt period, and import duties are waived on construction materials and machinery.	2- to 4-year tax-exempt period.	Imports of construction machinery are exempt from customs. Investments in special economic zones enjoy a 5- to 7-year tax-exempt period and a further 5-year period during which tax is reduced by 50%.	Tax is reduced to 10% for large-scale and infrastructure construction projects. Investors in special economic zones are additionally tax-exempt for a further 2 years and/or have their tax cut for another 4 years.
7.3 Transferring foreign currency	Foreign currency can be freely transferred when it is used to (i) repay interest and capital on foreign loans, (ii) pay for royalties and management fees, (iii) repatriate profits, and (iv) return investments to a parent country in case of business operations being terminated.	Exchanging foreign currency is tightly controlled and activities that involve transferring currencies are limited.	Foreign currency may be freely traded to (i) repatriate profits, dividends, interest payments and other such cases, (ii) return money arising from the sale of businesses or property, (iii) make payments or pay off debts, (iv) pay for losses, or (v) transfer money arising from compensation payments or expropriations.	Foreign currency can be freely traded.
7.4 Labor laws	Foreign workers, both skilled and unskilled, cannot comprise more than 10% of the workforce.	Unskilled workers may not form more than 15% of the workforce and skilled workers not more than 25%.	Regulations exist to hire only local unskilled workers but the exact nature of these varies according to the project.	There are no regulations governing the hiring of foreign versus local workers.
7.5 Land ownership	Leases may run for 50-99 years.	Leases of 20, 30 and 50 years are possible. These can be extended for up to 99 years, though the details will depend on the project.	50-year leases are possible and these may be extended up to 2 times, each time for not more than 10 years.	Leases may be made for up to 50 years, except in cases of national importance, when they may be up to 70 years long.

Source: compiled by Krungsri Research, (as of 2018)

The assessment of the structural factors affecting construction operators in the CLMV region (given in the table above) shows that in all countries, governments have tried to ease regulations and to make it easier for foreign players to invest in construction in the domestic market, for example by (with the exception of Myanmar) allowing 100% foreign ownership of construction companies and by offering higher levels of tax and non-tax incentives to investors. With regard to public investment, the governments of all countries have put in place policies to push forward the rollout of improvements to national infrastructure and public utilities and this will help to stimulate increased private construction by spurring on increased levels of commercial, industrial and residential building work. However, each of the four countries has its own particular features that make it attractive to players in construction, and these are detailed below.

- **Vietnam:** Here, relaxation of regulations in favor of foreign operators has been fairly extensive and has included: allowing the purchase of local companies by foreign players, who may then hold 100% of shares in these companies; increasing tax incentives to companies investing in large-scale projects; allowing leases of up to 70 years for developments of national important projects; and permitting foreign exchange transfer to be carried out without hindrance.
- **Cambodia:** The Cambodian government now offers tax and non-tax incentives to attract foreign investors to the country. These include allowing operators to return their investments to their home country should they need to suspend operations, and to lease sites for up to 99 years, which will help to appeal to concession holders of, for example, motorways. Although restrictions on foreign currency transfers are tighter than in Vietnam.
- **Myanmar:** Moves are underway in Myanmar by the government to increase opportunities for foreign players to participate in the local construction market, including for example allowing foreign companies to invest in infrastructure under the public private infrastructure partnerships (PPPs) but restrictions on the market remain tighter and less inviting to overseas operations than elsewhere. Thus, foreign players may not fully own local operations and the government maintains restrictions on hiring foreign workers and on making transfers of foreign currency.
- **Lao PDR**: The most attractive feature of the market in Laos is the offering of concessions of up to 99 years for some projects, although the details of this vary with the type of development. However, the country is relatively sparsely populated and is largely composed of mountains or highlands, so work in construction and transportation faces a number of obstacles, while restriction on exchanging the local currency tends to weaken investor confidence.

In conclusion, the macro-evaluation of each country's sectoral readiness, taken together with the assessment of the impact of the structural factors on players in construction in the CLMV region, shows that Vietnam is the country which is most favorable towards investment in construction. Construction in **Vietnam** is worth more than in the other countries, encompasses a greater number of projects, and continues to exhibit steady growth. With regard to the provision of utilities, the cost of construction supplies, political stability, and the development of financial services to support that they offer business investment, the market is also less restrictive and more supportive of business than in the other countries surveyed. Following Vietnam comes **Cambodia**, where the construction sector is growing at a high rate and which benefits, with regard to Thai operators, from its shared border with Thailand, which makes transporting labor and machinery easier and more convenient. By comparison, the provision of utilities and infrastructure in **Myanmar** is somewhat lacking, while financial institutions are relatively immature and the direction of change in the country's politics remains at risk, though at the same time, the government is attempting to relax the regulations governing investment and to speed up work on the build-out of basic utilities, including the expansion of the national power grid. It is expected that this will pull in greater levels of private investment in its wake, for example, the real estate development projects. As for **Lao PDR**, investment by foreign players is lower than in the other three countries due to the country's relatively small number of construction projects and the fact that the projects that are undertaken tend mostly to be for hydroelectric power generation. Moves to develop the national transportation network are still mostly only small-scale and dependent on funding by international organizations or foreign governments. Despite this, some building projects in Laos may be suitable for operators that take on small and mid-sized projects, such as the construction of roads and small power stations.

Looking at the major projects that are likely to get underway in the CLMV countries over the next three years, it is clear that the value of construction work in the region will see double-digit growth in the coming period and as such, significant opportunities will exist for Thai contractors to expand their markets. The situation is, though, complicated by the fact that within the CLMV group, major foreign contractors already have a presence in the market through participating in, for example, government-to-government projects with other influential countries in the region, such as China, Japan and South Korea, or in projects that are funded by global organizations such as the ADB and the IMF, which may then push contracts to companies from their home countries. Thus, Thai contractors would be advised to partner with local operators when attempting to move into these markets. These partners should be positioned within the local construction supply chain, and might include real estate developers, local building contractors, manufacturers or distributors of construction materials, and agencies sourcing manual labor. Doing so will help to open a channel through which to secure contracts on an ongoing basis, especially for projects that secure a steady stream of income, such as concessions to operate road tolls, as well as creating continuing opportunities for subcontracting.

The types of projects with which Thai contractors have experience and that are expected to become more numerous in the coming period (according to plans produced by the public and private sector) are summarized in the following table.

Table 2: Projects that Thai contractors will be able to invest in over the next 3-5 years in the CLMV zone

Country	Type of projects
Vietnam	**It should be possible to contract for work in infrastructure, such as for motorways, twin-track railway, and rapid mass transit networks, and real estate development**, **especially in the increasing number of mixed-use projects** because Thai companies have extensive experience in these areas. Mid-sized operators will have the opportunity of sub-contracting on large projects for tunneling, and pile-driving and foundations work.
Cambodia	**Thai small- and mid-sized contractors have expertise in larger projects such as airport and port construction**, and in laying and expanding major and secondary roads and so they will be able to undertake this type of work in Cambodia. In addition, **Thai construction companies will also be able to work on real estate developments**, including residential projects, hotels, and department stores, segments that are seeing growth as urbanization increases, and on the rising number of industrial projects in special economic zones.
Myanmar	**Work will be available for the development of power stations and road expansion in and between urban centers such as Yangon and Mandalay, and on real estate projects, especially residential and hotel developments** that are being driven by higher levels of urbanization.
Lao PDR	**Work on hydroelectric projects will tend to grow, while the number of smaller power stations will increase by another 60**, from the current 22 that are being built and this will open possibilities to Thai SME construction contractors. Thai contractors are also favored in Laos for work on residential projects.

Note: Compiled from planned major public and private projects in the CLMV region (Table 3).
Source: Krungsri Research, as of 2018

Table 3: Planned Projects in the CLMV Countries

Cambodia

Investment Projects	Investment Value (USD, m)	Status	Time Period
• Phnom Penh - Bavet expressway development, Svay Rieng province	3,800	Planning	end 2022
• Expressway link between the capital Phnom Penh and the port of Sihanoukville in Preah Sihanouk	1,900	Awaiting construction	2019-2020
• Rovieng District Steel Plant, Preah Vihear	1,600	Planning	
• Phnom Penh - Preah Sihanouk expressway	1,600	Planning	end 2020
• Phnom Penh International Airport renovation	1,500	Awaiting construction	2020-2040
• Wisney World, commercial complex building in Phnom Penh	1,000	Awaiting construction	2019-2021
• A two-unit coal-fired power plant in Sihanoukville Province	1,000	Feasibility study	
• National Road No 3, Phnom Penh to Sihanoukville	536	Planning	end 2023
• Sihanoukville Autonomous Port (SAP) Container Terminal, Preah Sihanouk	200	Planning	end 2022

Myanmar

Investment Projects	Investment Value (USD, m)	Status	Time Period
• Arterial Road Networks Master Plan 2030 Phase I	9,195	Planning	2016-2020
• Arterial Road Networks Master Plan 2030 Phase II	10,268	Planning	2021-2025
• Arterial Road Networks Master Plan 2030 Phase III	22,067	Planning	2026-2030
• New township of Kyee Myin Daing at the west of Yangon River	2,200	Planning	
• Hanthawaddy International Airport, Bago region	2,000	Planning	end 2020
• Ayeyawady Combine Cycle Power Plant	1,250	Planning	
• Thanlyin Gas-Fired Power Generation Facility, Yangon	1,000	Feasibility study/EIA	end 2020
• Liquefied natural gas (LNG) power plant of Toyo Thai Power Myanmar	350-500	Planning	2019-2021
• Kyaukphyu SEZ by Singapore's CPG Corporation (include a port, an industrial zone and a residential area)	227	Awaiting construction	

Lao PDR

Investment Projects	Investment Value (USD, m)	Status	Time Period
• Khonephapheng Special Economic Zone	10,000	Planning	2018-2025
• Ban Khoum hydropower plant, Champassak	4,400	Planning	
• Pak Beng hydropower plant, Oudomxay	2,400	Planning	
• Pak Lay hydropower plant, Xaignabouli	2,400	Planning	end 2023
• The Vientiane to Vang Vieng expressway	1,200	Planning	end 2020
• The expansion of 3 hotels by Centara group	none	Planning	end 2020
• The luxury hospital in Vientiane by BCH group	40	Planning	

Vietnam

Investment Projects	Investment Value (USD, m)	Status	Time Period
• Expansion for 5 airports (included Van Don, Cam Ranh Airport, Phan Thiet, Cat Bi and Chu Lai Airports	10,500	Planning	end 2020
• Long Thanh International Airport Phase 1, Dong Nai Province	5,200	Planning	end 2025
• Expressway in 13 provinces (Nam Dinh, northern province to Vinh Long, southern province)	5,100	Selection of the investors	2019-2021
• Long Son island Petrochemical complex, Ba Ria-Vung Tau	4,500	Planning	end 2021
• Metro rail system in Thanh pho Ho Chi Minh (Saigon bridge to Can Gluoc)	4,470	Planning	
• Belt road in Thanh pho Ho Chi Minh	4,458	Planning	
• Lao Cai - Ha Noi - Hai Phong railway	4,152	Feasibility study/EIA	
• Coal-fired power plant in Song Hau, Hau Glang	3,500	Planning	end 2022
• Long An No.2 thermal power plant, Can Gluoc, Mekong Delta, Long An	3,170	Planning	end 2027
• Da Nang complex (facilities for logistics center)	620	Planning	end 2030
• Road development in 14 underdeveloped provinces	409	Planning	2019-2021

Source: EMIS and BMI, compiled by Krungsri Research, as of 2018

Appendix

1) Indicators of opportunities

The index of business opportunities for construction companies in each of the CLMVT nations between 2013 and 2016 is calculated from 7 variables: (i) the value of the construction sector (from the contribution of construction to GDP); (ii) the proportion of GDP attributable to construction; (iii) the state of the national logistics sector (calculated from the Logistic Performance Index, or LPI); (iv) the level of foreign direct investment (FDI); (v) the state of macroeconomic factors (assessed from the macroeconomic aspect of the country's Global Competitiveness Index, GCI); (vi) labor costs; and (vii) government policy as it relates to investment (assessed from the 'Institutional' score of the GCI). Each factor is standardized according to its z-score, with the score for each factor reflecting the extent of the business opportunities that it reflects, and the higher the score, the greater the opportunities. Following this, average scores for the period 2013-2016 were calculated for each of the 7 variables and, by using principle component analysis (PCA), the most significant factors were isolated. This then allowed the indices for the different countries to be compared and ranked. Details of the 7 variables are as follows.

- **Construction Value:** This factor reflects the level of investment in construction in each of the countries. The value draws on information from the value of construction in each country's annual GDP.
- **Construction per GDP:** This shows the importance of construction to each country's economy, and it is calculated from the proportion of construction in the total national GDP.
- **Macroeconomic Environment:** This shows the overall state of each country's economy and is based on the 'Macroeconomic Environment' factor of the World Bank's GCI.
- **Logistic Performance Index (LPI):** This indicates the state of national logistics and transportation infrastructure. The value is based on the World Bank's Logistic Performance Index (LPI).
- **Foreign Direct Investment (FDI):** This factor reflects the direction of growth in investment inflows from overseas and is based on the value of FDI.
- **Policy for Investment:** The last factor is based on government policies and regulations that support investment in each country. This is based on the 'Institution' aspect of the World Economic Forum's GCI.
- **Advantages of Labor Cost (minimum wage):** This factor reflects the advantages a country may have with regard to its labor costs, and is calculated from the country's minimum wage.

2) Indicators of limitations

The index of limitations facing construction contractors in the CLMVT countries in 2013-2016 is calculated from 5 variables: (i) the cost of construction materials; (ii) the level of political stability; (iii) the level of development of the country's financial markets; (iv) the provision of public utilities; and (v) the level of development of the workforce. As before, the variables are standardized using z-scores, and the higher the score for each variable, the greater the obstacle or risk it is to carrying out business. Average scores for the years 2013 to 2016 were calculated for each of the 5 variables and principle component analysis was used to determine which variables have the greatest impact on risk overall. The countries' scores were then ranked and compared. The five variables were as follows.

- **Inadequate Infrastructure:** This measures the provision of national infrastructure and utilities and draws on the 'Infrastructure' score of the GCI.
- **Financial Market Underdevelopment:** This is based on the 'Financial Market Development' score of the World Economic Forum's GCI.
- **Political Instability:** This is based on the Political Stability Index provided by the website www.theglobaleconomy.com.
- **Labor Market Inefficiency:** This is based on the GCI 'Labor Market Efficiency' score.
- **Construction Material Cost:** This reflects the cost of construction materials in each country, using the cost of cement as a proxy.

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