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### **Infrastructure Financing**

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For most countries in Asia, building infrastructure has been one of the most important issues to maintain their economic growth. Infrastructure facilities such as power, transportation and telecommunications systems can increase economic efficiency and vitality as well as improving living standards. The needs for infrastructure in developing Asia are huge. According to the recent estimates by the Asian Development Bank (ADB), ADB's 45 developing member countries will need to invest USD 26 trillion over the 15 years from 2016 to 2030 or USD 1.7 trillion per year. Compared to the 2009 estimates in which ADB projected USD 750 billion per year of infrastructure investment needs during 2010-2020, the annual amount roughly doubled. At the same time, as a result of the initiative led by China, the Asian Infrastructure Investment Bank (AIIB) was established in December 2015. How this new institution will cooperate with the ADB and the World Bank that have had a significant presence in providing infrastructure funds in the region is attracting a great deal of attention.

Many Asian nations set goals of building infrastructure in their national development strategies. Traditionally, fiscal expenditures are the main sources for funding infrastructure. However, each developing country tends to have budget constraints and an upper limit for public debt. For this reason the utilization of private funds has been suggested since around 1990. Furthermore, in order to attract more participation from the private sector, some countries try to establish policies and regulations to encourage public-private partnerships (PPPs) – a cooperative framework between public and private sectors sharing risks with regards to infrastructure projects. Despite such efforts, the growth of private infrastructure investments is not sufficient and there still is a lot of room for improvement.

Bank loans also play a big role in providing private funding for infrastructure projects. But as the financial regulations including capital requirements for large financial institutions are tightened globally, Asian countries might not be able to depend on loans in the future. Given these circumstances, the importance of capital markets is growing. Specifically, bond markets and listed infrastructure funds are gaining attention. Most developing countries in Asia, however, do not yet have well-developed capital markets and they need to commit to mid- or long-term efforts to promote capital markets and to broaden their investor base.

This issue of *Nomura Journal of Asian Capital Markets* features research articles on infrastructure finance, discussing the current situation, challenges, and future outlook in the region, especially policy issues regarding PPP and the utilization of capital markets.



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# Attract Private Financing to Infrastructure Investment by Injecting Spillover Tax Revenues

### Need for Infrastructure Investment

n Southeast Asia, USD 8 billion in infrastructure investments are implemented every year. However, it is expected that USD 210 billion infrastructure investment is needed every year. Public money is insufficient to satisfy Asia's infrastructure needs. In many developing countries in Asia, we observe heavy traffic congestion in cities; highways, trains and various modes of public transport are lacking. Public-Private Partnerships (PPPs) have been promoted for infrastructure development in India, Thailand and other places in Asia. However, most PPP projects were disappointing since the rate of return on infrastructure depends mainly on user charges, such as train fares and highway tolls. When the region was hit by economic crisis after the Lehman shock, the private sector withdrew from infrastructure investment. Risks associated with infrastructure were so large that private investors were hesitant to put their money in infrastructure.

It is well known that good infrastructure creates huge spillover effects in the region around a project (Figure 1). Railways will bring manufacturing factories into the region by making the shipping of products faster and safer. Railways can connect manufacturers to markets and to ports. New industry creates jobs in the region. Eventually, service sector businesses such as restaurants and hotels will be constructed to meet the increased demand in the region. Farmers and small businesses can sell their products at the train stations.

The spillover effects of infrastructure investment will increase revenues from corporate, income, and property taxes. The difference-in-difference method (Yoshino and Abidhadjaev (2017), Yoshino and Pontines (2015a, 2015b)) can be used to compute the effect of spillovers on tax revenues in places where infrastructure investment occurred compared to ones where no infrastructure investment took place. A study by Yoshino and Abidhadjaev (2016) shows that good educational opportunities together with infrastructure investment create qualified workers who enhance regional productivity. In the past, all these tax revenues were collected by the government



Figure 1: Schemes of Spillover Effects of Infrastructure Investment

and not returned to the investors in infrastructure. It has been estimated that returning the additional tax revenues from spillovers to construction companies and investors would raise the rate of return on infrastructure investments by 39 to 43% in the case of Japan and by 14 to 16% in the case of Uzbekistan.

Many developing countries face a shortage of public funds to meet their huge infrastructure needs. In order to narrow the gap between investment needs and actual government disbursements, the rate of return on infrastructure investment has to be increased by bringing the spillover tax revenues generated by infrastructure development to the construction companies and investors. This paper will address the importance of spillover effects from infrastructure investment and how to utilize additional tax revenues created by the externality effects of infrastructure to attract private sector finance.

### Economic Effects of Infrastructure Investment

The increase in productivity is one of economic effects of infrastructure investment. If infrastructure has a positive effect on productivity, private firms can increase output without changing inputs, and further can increase output by changing the amount of inputs to maximize profit. The former effect is called direct effect and the latter is said to be indirect effect (Nakahigashi and Yoshino (2016), Yoshino and Nakahigashi (2004)). In particular, the indirect effect reflects the benefits from infrastructure investment in the economic activities of private firms and can be said to be spillover effect of infrastructure.

Table 1 shows the productivity effect of infrastructure based on Japanese macroeconomic data and assuming translog production function (Nakahigashi (2015)). The direct effect of infrastructure investment is shown in the first row of Table 1. The second and third rows show the spillover effects on private capital and labor. In the 1950s and 1960s, both the direct effect and the indirect effects were very large. The estimated tax revenues generated by these spillovers are computed by setting the tax rate at 20%. Since the economic impact decreases as time goes on, the estimated amount of tax revenues diminishes, as shown in row 4. In the 1950s, it was 0.305, however it was only 0.042 in the period 2006-2010. Suppose 20% of these tax revenues were returned to investors, then how much would the rate of return increase? The last row presents the incremental rate of return achieved by injecting 20% of spillover tax revenues. In the 1950s, the incremental rate of return was about 43.8% while it was about 39.1% in recent years. Thus, based on Japanese macroeconomic data and assuming a translog production function, injecting 20% of the additional

tax revenues generated by project spillovers would increase the total return on infrastructure investment by roughly 39 to 43%.

### Infrastructure Financing through Private Funds

In recent years, PPPs including the use of private funds, are being emphasized. Utilizing private funds to develop infrastructure has the advantage of increasing pressure to (1) shorten the period of construction and complete the project as quickly as possible, (2) complete the project at minimal construction cost, and (3) operate the project profitably at low cost after completion. Despite these advantages, there have not been many PPP projects in Japan. The so-called third sector projects (a kind of PPP) that took place in Japan in the 1980s and 1990s accumulated debts for local governments. These third sector projects were jointly funded by the public and private sector. Many of them failed due to irresponsibility by both public and private sector operators. Weak governance and lack of profit incentives were another reason for the failures. Bad memories of these third sector projects has made regional governments reluctant to pursue PPP proj-

	1956-60	1961-65	1966-70	1971-75	1976-80	1981-85
Direct effect	0.696	0.737	0.638	0.508	0.359	0.275
Indirect effect(Kp)	0.452	0.557	0.493	0.389	0.270	0.203
Indirect effect(L)	1.071	0.973	0.814	0.639	0.448	0.350
20% returned	0.305	0.306	0.261	0.206	0.144	0.111
increment	0.438	0.415	0.410	0.404	0.400	0.402
	1986-90	1991-95	1996-00	2001-05	2006-10	
Direct effect	0.215	0.181	0.135	0.114	0.108	
Indirect effect(Kp)	0.174	0.146	0.110	0.091	0.085	
Indirect effect(L)	0.247	0.208	0.154	0.132	0.125	
20% returned	0.084	0.071	0.053	0.045	0.042	
increment	0.392	0.392	0.390	0.390	0.391	

#### Table 1: Spillover Effects Estimated from a Macroeconomic Translog Production Function

Source: Authors' estimation based on Nakahigashi (2015)

ects. Private sector actors are also reluctant since risks associated with infrastructure projects are large and the expected rate of return is typically low. Various third party projects which combined public sector and private sector funds were created. However the rates of return were so low. Many third party projects failed and created big losses for local governments. For these reasons, injection of spillover tax revenues is an important means to make infrastructure projects viable.

### Public-Private Cooperation in High-Risk Projects: Viability Gap Funding

Infrastructure projects pose a variety of risks arising from: (1) regime change, for example when a change in local administration causes stoppages before project completion; (2) cost increases, for example when extensions in construction period or delays in land acquisition create additional interest expense; (3) unexpected decreases in revenue due to fee setting and decreased traffic; (4) unanticipated expenses, for example when compensation is required for noise occurring after the completion of an infrastructure project; and (5) delays in land acquisition due to complicated ownership structure.

Private investors apply various ideas in order to avoid possible risks and earn benefits. Some investors, however, may force the transfer of risks onto the public sector. In these cases, it will be essential to clarify the risk-sharing between public and private sectors in advance. In particular, Viability Gap Funding (VGF), which is the capital grant that the public sector guarantees private investors a certain rate of return to attract private finance, would be appropriate for infrastructure projects that are indispensable for the public, but are high-risk and low-earning. For example, government supplies 30% of the initial funding for a highway project, raising the rate of return to private investors. Through the injection of funds from the public sector, the rate of return realized in the private investors would increase by 10/7 or about 1.428 times the actual return. Even in projects in which private funds are not involved because of low expected revenue, it will be possible to introduce private

funds. However, in this case, if the ratio of the injection by the public sector is too high, it creates a moral hazard problem. The public sector secures a rate of return for private investors which exceeds the revenues from the infrastructure project, which leads to the accumulation of debt by the public sector. On the other hand, when this ratio is too low, there is a possibility that the private sector would not invest in the project at all.

However, it does not follow that the injection of VGF can improve the efficiency of the infrastructure project. For projects whose only return comes from user charges (Figure 2), the gap between the government guaranteed return and the actual return would be very wide. Private investors can secure a high rate of return, but the government sector will accumulate debt every year for the life of the project.

### Increased Rate of Return through Internalization of Spillover Effects

Infrastructure projects generate benefits in addition to operating revenues such as tolls. For example, a highway may benefit a company through cost savings and increased sales from faster transport of raw materials and final products as well as generate usage fees. Yoshino and Pontines (2015a, 2015b) analyzed the effect of injecting public funds in the development of the Southern Tagalog Arterial Road (STAR) highway project in Batangas Province

Figure 2: Viability Gap Funding



in the Philippines. In particular, Yoshino and Pontines (2015b) evaluated how the opening of the STAR highway contributed to revenues from business and property taxes, using the difference-in-difference method to compare tax revenues in areas affected by the project with unaffected areas along the route shown in Figure 3.

Table 2 shows the change in tax revenues in three cities in Batangas Province before, during and after construction of the highway. Construction took place during periods t-1 and to. For Batangas City, the table shows that tax revenues increased from PHP 490.90 million before the project (t-2) to PHP 622.65 million in t-1. Immediately after completion of the highway (t+2), tax revenues declined to PHP 599.49 million as businesses established their presence and adjusted to utilizing the highway. However, by period t+4, tax revenues had increased to PHP 1,208.61 million. The spillover effects of the highway became very large after the completion of highway. Similar increases in tax revenues can be observed for Ibaan City and Lipa City as greater economic activity in those cities added to tax revenues.

While construction companies may be mainly interested in making railways and highways, this study shows that the spillover effects from the development of such infrastructure are also very significant for the local economy. Infrastructure development can stimulate business activity in an area and create employment. Additionally, small and middle-sized enterprises (SMEs) in the area can open stores along new roadways and at new railway stations, increasing sales. If it is possible to confirm that the increase in tax revenue is due to the spillover effects of infrastructure, it might be possible to return the increase in tax revenue to private investors and the public sector (Figure 4). By doing

so, the rate of return to private investors is increased, and as a result, it will become possible to lead private funds in various infrastructure projects.

### Incentive Mechanism for Infrastructure Operating Entities

In order to enhance efficiency and increase the rate of return on infrastructure development, it is necessary to vary the dividend payment for private investors based on the project's revenues, including both user fees and spillover tax revenues. It is also necessary that infrastructure operating entities make efforts to increase income. Table 3 shows the payoff matrix depending on the presence or absence of effort by investors and the infrastructure-operating entity. If neither the operating entity nor investors make any effort, the operator gains 50 in revenue and investors receive dividend income r. It is assumed that the operator could increase operating income to 100 by improving the salary system, such as by paying staff bonuses based on the entity's revenue. Furthermore, investors could raise their dividend income to ar (a>1) by

efforts to reduce costs and increase infrastructure revenues, such as by increasing the number of highway turnoffs or the number of available cars. The lower right cell of the payoff table represents the revenue when both the operating entity and infrastructure investors make maximum effort to increase revenue and improve service. In this case income of both the entity and the investors is higher than in the normal case. (The income of the entity increases from 50 to 100 and the income of investors from r to ar.) This illustrates the importance of designing the dividend policy for investors and the salary system of the infrastructure-operating entity to incentivize the entity and investors to improve revenues. To reiterate, in the PPPs, as described above, it is necessary to improve the efficiency of infrastructure projects through private funds and to introduce mechanisms to benefit the staff of an infrastructure-operating entity, for example by paying staff bonuses tied to the increase in profit.



### Conclusion

Infrastructure investments are being promoted not only in Asia but also in the United States under President Trump. However, the U.S. government does not want to increase government debt. Private funds have to be injected to cover huge need for infrastructure investment. Bringing increased tax revenues from the spillover effects of infrastructure development, such as increased revenues from corporate, income, sales, and property taxes, will raise the rate of return above what can be gained

#### Table 2: Calculated Increase in Business Tax Revenues for Tollway Beneficiaries Relative to Non-Beneficiaries

							PHP Million
	<b>t</b> 2	t. <sub>1</sub>	to	t+1	t+2	t+3	t <sub>+4,</sub> forward
Lipa City	134.36	173.50	249.70	184.47	191.81	257.35	371.93
Ibaan City	5.84	7.04	7.97	6.80	5.46	10.05	12.94
Batangas City	490.90	622.65	652.83	637.89	599.49	742.28	1,208.61

Note: For the period t+4, forward in the case of Lipa City and Batangas City is the average increase in business tax revenues in each province. Source: Yoshino and Pontines (2015a, 2015b)

### Figure 3: Batangas Province and STAR Highway

from user charges alone. Long-term investors such as pension funds and insurance companies are growing in Asian countries. Infrastructure investment projects require long-term and patient investors. If the rate of return on infrastructure were increased by injecting spillover tax revenues generated in areas surrounding infrastructure investments, much more long-term private capital could be forthcoming for infrastructure investment. Incentives to improve infrastructure which will increase regional economic activity will be created. Greater spillover effects will raise the rate of return for private investors. The higher the expected rate of return, the more private funds would be attracted.

Furthermore, fewer public sector funds would be needed for infrastructure investment which means the government could increase the total amount of infrastructure investment by attracting private finance when incremental tax revenues from spillover effects are used to raise their rate of return.

The method of paying back increased tax revenues obtained from infrastructure investment will attract private long-term investors and require less government funds. And it will enhance the efficiency and the governance of infrastructure investment.





#### **Table 3: Payoff Table for Infrastructure Operating Entity and Investors**

	Normal Case	Effort Case
Normal Case	( 50 , <i>r</i> ) Operating Investors Entity	( 50 , <i>a r</i> ) Operating Investors Entity
Effort Case	( 100 , r ) Operating Investors Entity	( 100 , <i>a r</i> ) Operating Investors Entity



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# Diversified Instruments for Infrastructure Investment in Asian Capital Markets

### Introduction

Infrastructure development is crucial to economic growth in Asia. At the same time, the amount of money needed to develop infrastructure in the region is huge, most likely beyond the financial wherewithal of each nation's government and banking sectors. Given this situation, Asian nations' expectations for multilateral development banks (MDBs) is rising. In addition, each nation is working independently to establish frameworks that promote the use of private-sector funds, including the creation of public-private partnerships (PPPs).

Meanwhile, in recent years some pension funds in advanced nations and sovereign wealth funds have recognized infrastructure as a new asset class and begun creating investment portfolios focused on such assets. Canada's public pension fund, for example, is investing in infrastructure projects around the world. Amid the rise in investor interest in alternative investments that offer risk-return characteristics different from those of stocks and bonds, an increasing number of listed and unlisted infrastructure funds are being formed. Some of these funds are advocating investment in infrastructure in India and in ASEAN nations.

We therefore are seeing an increasingly diverse range of investors supplying funds for infrastructure investment around the world, as well as a more diverse portfolio of financial instruments that can be used to procure funds for infrastructure development. Nevertheless, it is still not easy for Asian countries to raise the funds they need to finance infrastructure development.

In this report, we first examine the relationship between global infrastructure investment trends and infrastructure development in Asia. Thereafter, we discuss the importance of mobilizing public- and private-sector funds while also aggressively using the capital markets to fill the supply-demand gap for funds in Asian countries and to create a desirable fund allocation mechanism.

### Characteristics of Infrastructure Investment and Challenges Facing Asia

Infrastructure can be defined as "basic public facilities necessary for improve-

ment of public welfare and development of the national economy." Depending on the types of services offered through such facilities, infrastructure is often classified into two types, economic infrastructure and social infrastructure. Economic infrastructure refers to facilities related to transportation (toll roads, railroads, etc.), energy (power plants, pipelines, etc.), water supply, communications, etc. While economic infrastructure benefits many people through the promotion of industry and urbanization, it is a public asset that generally is built, owned and operated by the government and/or local authorities for the benefit of a wide range of users. The involvement of private enterprises is primarily related to construction contracts and the supply of materials, with ownership usually transferred to the government once the project enters the operating stage.

However, when a nation's economy begins to mature, ownership and management of infrastructure by private-sector entities is sometimes considered as a means for increasing management efficiency, reducing government-sector assets, and lowering maintenance costs. Economic infrastructure, which usually generates cash flow from usage fees, has begun to attract the attention of institutional investors who see an opportunity for dividend income and capital gain from the infrastructure's asset value. Through the creation of investment funds, such investors are able to join with business companies possessing the related operational know-how to invest in infrastructure. The long-term, stable, and in-

flation-linked characteristics of cash flows generated by economic infrastructure are highly attractive to pension funds, in particular. This attraction has led pension funds in Australia and Canada to gradually expand their investment in infrastructure since the 1990s. Meanwhile, in the United Kingdom and some other nations, the privatization of infrastructure and the use of PPPs or private finance initiatives (PFIs) has become common owing to the need to bring private-sector management skills into the operation of infrastructure. This has led to the creation of infrastructure funds that enable infrastructure projects to access funds from investors.

One important point that should be kept in mind when considering infrastructure investment in Asia is the great difference in risk and expected returns associated with infrastructure in the "greenfield" and "brownfield" stages of development. Infrastructure projects still in the design, development and construction stages are referred to as greenfield investments while infrastructure projects already in operation are considered to be brownfield investments. In general, greenfield infrastructure investments face higher risks, including those related to government approval of the business, demand forecasts, funding, and project completion. Projects in emerging countries also face higher uncertainties related to demand and the surrounding environment.

With infrastructure projects around the world attracting investor attention, funds are not necessarily flowing to Asian countries with high growth potential because the projects in Asia are overwhelmingly still in the greenfield stage and thus are considered by institutional investors to be highly risky. It is therefore important to either consider separate financing methods and ways to reduce the risks associated with greenfield projects or to recycle capital by bringing private-sector and foreign investors into projects in the brownfield stage.

### Sources of Infrastructure Financing in Asia

The sources of funding for infrastructure development in Asian countries include government finances, official development assistance (ODA) programs of advanced nations, support from such international development financial institutions as the Asian Development Bank (ADB) and the World Bank Group, and loans from domestic and overseas public and private-sector financial institutions (Figure 1).

At present, infrastructure development in Asian countries is heavily dependent on funding from the public sector. For example, the Indonesian government's plans for infrastructure development during 2014–2019 call for total investment of IDR 5,519 trillion (about USD 414 billion), with 50% of those funds expected to come from the government budget, 19% from government-related enterprises, and the remaining 31% from the private sector. Similarly, the Thai government's plans for infrastructure development from 2015 to 2022 will require a total investment of THB 2.4 trillion (about USD 69 billion), equivalent to 20% of GDP during that period. The Thai government expects to fund 20% from its budget, with 45% financed by government-related enterprises, 20% from PPP, 10% from revenue generated by government-related enterprises, and 5% from infrastructure funds.

On the other hand, the national government's fiscal condition, which is the basis for public investment, can hardly be described as solid in many Asian nations. India, for example, is running a fiscal deficit equivalent to 7–8% of its GDP. Malaysia and Indonesia have deficits of about 2% of their GDP. Many countries simply do not have sufficient amounts of public investment funds in their national budgets. Consequently, the ability to overcome these fiscal constraints by securing infrastructure investment funds will be a key to realizing sustainable growth in Asia.

Accordingly, trends at international development financial institutions are increasingly important to infrastructure financing in Asia. In particular, the Asian Infrastructure Investment Bank (AIIB), which was established in December 2015 by 57 countries as founding members led by China, has begun operations under Articles of Agreement that set forth "infrastructure and other productive sectors" as the main focus of lending by the bank. The AIIB approved nine loans totaling investments of about USD 1.73 billion in 2016 and is already participating in co-fi-

	Domestic Funds	Overseas Funds				
	Domestic Commercial Banks	International Commercial Banks				
Daha	Long-term Credit Institutions	Export Credit Agency				
Debt	Domestic Bond Markets	International Bond Markets				
	Infrastructure Debt Funds	Multilateral Development Banks				
	Domestic Investors (Institutional, Individual)	Foreign Investors (Institutional, Individual)				
	Utility Companies	Facility Suppliers				
Equity	Sovereign W	ealth Funds				
	Unlisted Infrastructure Funds					
	Listed Infrastructure Funds					
Source: NICM	R, based on <i>Connecting South Asia and Southeast Asia</i> , a joint study by Asian Develo	pment Bank and Asian Development Bank Institute (2015)				

#### Figure 1: Sources of Funding for Infrastructure Investment

nancings with the World Bank, the ADB, and the European Bank for Reconstruction and Development (EBRD). For the AIIB, which has pointed out its struggles to hire qualified staff, co-financings with the ADB, which has experienced staff and a long track record, have many merits, and the two institutions are likely to co-exist and collaborate to meet Asia's international development financing needs over the foreseeable future. In addition to the AIIB, China is one of the five BRICS countries that established the New Development Bank (NDB), which also came into existence in 2015. China also has a number of its own government-related financial institutions, such as the Silk Road Fund and the China Development Bank (CDB), which are promoting its "One Belt, One Road" initiative targeting infrastructure development that will improve the trade connections between China and other countries in the region. Through such actions, China is likely to raise its presence as a provider of infrastructure development funds in Asia.

### Trends in Private-Sector Funding of Infrastructure Projects

This section provides an overview of recent trends in infrastructure financing in Asia using private-sector funds. Infrastructure projects that utilize private-sector funds raised through a PPP or other structures generally entail the establishment of a special-purpose vehicle (SPV) for each individual project. As with regular operating companies, SPVs raise funds through equity and debt issuance. Although the debt-equity ratio varies from project to project, equity is often 20–30% of project capital with debt accounting for the remaining 70–80%. In ASEAN nations, many infrastructure projects are greenfield projects, which makes it more difficult to secure equity investors and the desired amount of equity funding.

A relatively large number of infrastructure projects initiated around 1990 in the ASEAN region took advantage of private-sector funding and technological expertise. In addition to the earlier noted inability of governments to meet the demand for infrastructure using government funds alone, this trend is thought to have been driven by the view that the use of private-sector technology and know-how would make project operation and management more efficient. Realizing greater efficiencies was probably a major reason why international development financial institutions required governments to bring the private sector on board as one condition for financing projects.

According to the World Bank's Private Participation in Infrastructure (PPI) Project Database, the private sector's par-



#### Figure 2: ASEAN Infrastructure Projects with Private-Sector Participation

ticipation as sponsors (equity investors) of infrastructure projects within the ASEAN region generally remained on an upward trend in terms of both project numbers and the total amount invested through 2012. However, it has reversed to a downward trend since 2013 (Figure 2). Examination of the data for specific countries reveals different trends in individual ASEAN nations. For example, while private-sector infrastructure investment in Indonesia has been falling from the 2012 peak, projects involving private-sector participation have been increasing in Thailand and the Philippines.

PPPs have played an important role in Asian infrastructure investment from a relatively early stage. For example, the Philippines enacted build-operate-transfer (BOT) legislation in 1990 and established a legal framework for PPPs in 1994. In recent years, many ASEAN countries, including Indonesia, Thailand, and Vietnam, have loosened regulatory controls to facilitate formation of PPPs and established administrative units specifically for the purpose of negotiating with the private sector and then coordinating efforts on joint infrastructure projects. These efforts have promoted competition in the market for participation in PPPs. These efforts alone, however, have proven insufficient for attracting the large amounts of private-sector funds needed to finance greenfield projects. Governments also need to create effective mechanisms, including government guarantees, that will ensure appropriate risk-sharing on greenfield projects.

### **Use of Capital Markets**

In recent years, we have seen the creation of unique infrastructure financing structures in ASEAN nations that facilitate financing via the capital markets. These structures include project bonds, public-private investment funds, listed infrastructure funds, etc.

To avoid credit concentration risk at domestic banks, ASEAN countries have instituted regulations that set an upper limit on the total amount of loans that can be extended to one corporate group. Lending to infrastructure projects headed by a local conglomerate, for example, may be subject to such upper limits. In addition, the strengthening of bank capital regulations, such as Basel III, raises the possibility that banks will avoid long-term loans that place a heavy burden on their balance sheet.

As a result, the bond market is increasingly being recognized as an important source of funding to supplement bank loans. Project bonds, which use cash flows from the infrastructure project to repay lenders, are seeing considerable use in Malaysia, where Islamic finance is taking hold. Islamic finance must abide by Islamic law, which forbids the charging of interest. Islamic financings therefore are based on the concept that borrower and lender share in the transaction's risk and returns based on the actual business and assets realized through the financial transaction. Project bonds therefore are highly suitable for use in Islamic finance.

Project bonds are most often used to finance infrastructure projects in the brownfield stage. To stimulate wider issuance of project bonds, the Credit Guarantee and Investment Facility (CGIF) – established as part of the Asian Bond Markets Initiative (ABMI) to promote issuance of local-currency bonds within the ASEAN+3 (Japan, China and Korea) region – announced a new framework that will contribute to reducing the risk of the greenfield infrastructure projects by providing credit guarantees during the project's construction stage.

Infrastructure funds are entities that collect equity capital from a small number investors via private placements (unlisted funds) or an unspecified larger number of investors (listed funds). On a global basis, most infrastructure funds are unlisted, but listed infrastructure bond markets have emerged in the ASEAN region, specifically in Thailand and Singapore. A listed infrastructure fund system was introduced in Thailand in 2012. As an added incentive for investors, dividend payouts from such funds and the infrastructure assets included in the funds are exempt from taxation. As of the end of December 2016, Thailand has five listed infrastructure funds with an aggregate market capitalization of around THB 237.8 billion. Also in Thailand, the government is now preparing for the launch of its large-scale infrastructure fund, named the Thailand Future Fund (TFF). The TFF portfolio will initially include tollcharging expressways already in use. After the fund's listing, the government plans to expand its portfolio to include new expressway projects in the greenfield stage.

# Future Challenges and Japan's Experience

As noted above, Asian nations are seeing a diversification of instruments enabling private-sector investments in infrastructure projects, especially those in the brownfield stage. In particular, instruments that utilize capital markets, such as project bonds and listed infrastructure funds, are increasing to attract the attention of investors. However, the domestic capital markets of most ASEAN countries still have a rather small investor base. Meanwhile, global investors are unlikely to prioritize investment in high-risk greenfield projects in Asia. Considering the limited fiscal resources of most Asian nations, the gap in supply and demand for equity capital for greenfield projects remains huge and will require some action going forward.

Japan's Fiscal Investment and Loan Program (FILP) may be a good reference point for Asian governments. FILP is a system for providing long-term, low-interest financing through investments and loans that are funded by various public funds backed by the Japanese government's strong credit. After World War II, Japan rebuilt its infrastructure using citizens' postal savings and premiums paid into postal insurance plans. These funds were channeled into infrastructure development through the FILP via FILP agencies, such as the Japan Highway Public Corporation, Japan Railway Construction Public Corporation (now the Japan Railway Construction, Transport and Technology Agency), and the Japan Development Bank (now the Development Bank of Japan, a special company under the jurisdiction of the Ministry of Finance). The FILP agencies (also called zaito agencies) were responsible for the development of key infrastructure, including such public utilities as electric power and telecommunication systems, highways, and housing projects, under the management of the former Ministry of Finance's Trust Fund Bureau. During Japan's period of rapid economic growth in the 1960s and 1970s, the scale of the FILP reached 30-40% of the government's general account. This so-called "Second Budget" had a great influence on Japan's economic

development, with about 40% of all FILP investments and loans allocated to infrastructure development. After the opening of Japan's financial markets to the outside world and the development of the domestic private banking sector and capital markets, various adverse effects of the FILP were pointed out, resulting in repeated reforms that have transformed the program into its present day form. Nonetheless, its importance to the greenfield phase of infrastructure development in Japan cannot be dismissed. The FILP was supported by Japan's unique postal savings, which are government-guaranteed savings deposits made by individuals at their local post office. The Japanese government was able to use these retail saving deposits as funds to finance infrastructure development during the country's period of rapid economic growth, when the nation's capital markets were not yet well developed.

In today's global economic system, it probably is unrealistic for Asian countries to create a national government-run system like Japan's former FILP. However, a system that enables the use of funds from domestic retail investors to promote and expand greenfield infrastructure development would have the added benefit of enabling individuals to profit from their country's economic growth while also expanding and diversifying the capital market's investor base. We therefore think this would be a rational strategy for Asian nations to adopt. Another mechanism for promoting greenfield infrastructure investments would be to monetize the assets of infrastructure in the brownfield stage through PFIs, listed infrastructure funds, and other instruments and then use the returns on those assets to finance greenfield investments.

Lastly, the contribution for infrastructure finance by Japanese financial institutions might be further emphasized in the future. On the public sector side, Japanese Bank for International Cooperation (JBIC) and Japan International Cooperation Agency (JICA) have had a lot of track records and in the industry side, Japanese largest commercial banking groups, so called mega-banks, have strong presences in project finance in ASEAN countries. In reality, Japanese households now have huge a financial asset base of about JPY 1,700 trillion (about USD 15 trillion) but are faced with low interest rates and a dearth of growth opportunities in Japan. It would therefore seem plausible that Japanese households could become important investors in brownfield infrastructure projects in Asia.

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### DANANG PARIKESIT

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# Recent Advances in Indonesia's Infrastructure Development through Private Sector Financing

### Abstract

This paper highlights Indonesia's demand for infrastructure development and the investment policy scenario that needs to be developed. The strategy to diversify the source of capital investment is the centerpiece of the current administration, by combining public and private sector finance, as well as leveraging the financial capacity of state-owned enterprises (SOEs). In this article, the evolution of the Indonesian public-private partnership (PPP) scheme and the most recent framework are elaborated.

Case studies of the Central Java Power Plant and a limited concession scheme for Soekarno-Hatta International Airport are used to highlight some of the lessons learned by the contracting agencies to improve the quality of Indonesian PPP schemes and attract international investors to develop infrastructure in Indonesia. On the way forward, future Indonesian PPP policies should (1) be linked with the macroeconomic policy of the Indonesian government by incorporating the PPP planning process into the budgetary process, (2) be focused to improve the capacity of the government contracting agencies, (3) improve the quality of concession agreement design, renegotiation and dispute settlements, (4) strengthen the role of SOEs as project developers and partners in infrastructure investment, and (5) ensure a regular PPP policy review process, repository of Indonesia's experience, and public information disclosure for PPP plans and contracts.

### Indonesia's Infrastructure Development and the Need for a Comprehensive Financing Strategy

The current Indonesian administration, through BAPPENAS (National Development Planning Agency, which also serves as the Ministry of National Development), identifies that in order to stimulate development for the high-growth and least-developed economy of the country, the government should invest heavily in infrastructure and provide enough energy. Right after President Joko Widodo took power, he has continuously and consistently expressed his vision that infrastructure should be his top priority\*<sup>1</sup> besides adjusting the expenditure and revenue structure, including rationalizing subsidies and ener-

gy prices, as well as continuing a reform in the natural resource sector, notably oil, gas and mineral resources. He also continues his campaign for improving the condition of people at the Indonesian border, in villages and in remote areas. Reallocation of financial resources coming from the new fiscal window (due to the reduced fuel subsidy) is used to develop infrastructure in those regions, both using decentralized funds, direct investment and the newly established "village funds" to be allocated to each village in Indonesia. The government is committing to increase its infrastructure spending by more than 5% in the next 5 years.

Large investments, including commercially feasible projects such as power plants, toll roads, and ports, continue to seek financial resources from the private sector, either through PPP or by utilizing SOE financing as an investment vehicle. BAPPENAS data analysis demonstrates that there is an up-and-down of investment among the privately funded projects. The telecom sector, which is relatively fully deregulated and the most investment-friendly sector, records the highest proportion of privately funded projects, followed by the energy sector - where the government is still using PLN and PERTAMINA (the Indonesian energy company, previously oil and gas company) to invest heavily in power plants and oil and gas production/refinery facilities. The electricity connection from designated power plants and the main gridline is still an issue due to the loss of energy.

The Mid-Term review from the BAPPENAS/JICA (Tusk Advisory, 2013) just before the new administration took over indicated that the budget window for infrastructure is merely 7% of the existing budget,\*2 leaving a huge demand for investment to come from other sources.

The study team estimated that, with the government's plan to utilize SOEs as the main driver for economic development, the method to reallocate the IDR 2,086 trillion funding gap will be determined. Rinaldi (2016) however reported that the Indonesian government through BAPPENAS has indicated that IDR 4,796 trillion\*3 (around USD 368 billion, at 1USD=IDR13,000) is required. Out of that number, 41.3% will be financed using the government budget (national and sub-national), 22.2% is to be SOE capital investment, and 36.5% is expected from the private sector.\*4 The fact that the earlier analysis depicted in Figure 1, and the current estimate of more than double. shows either that the demand for infrastructure finance is expanding to include expenses not covered in the earlier analysis i.e., only infrastructure with commercial value, or that the method of estimating infrastructure needs was not robust. The later issue is considered critical by foreign investors and they view it as political risk exposure.

On the supply side, the source of capital will have a challenge. Trihargo (2016) reported that at the moment the big government-owned banks can only provide IDR 338 trillion loan facility over the next five years. Non-bank financing is currently holding IDR 1,484 trillion in assets under management which should be allocated to various asset classes. The source of these assets is insurance and pension funds as well as capital held by fund managers.

### **Evolution of the Regulatory Framework** in the PPP Scheme

Until today, Indonesia's PPP regulations can be divided into four stages of development. Parikesit and Laksmi (2016) have identified the stages and summarized them as follows.

#### 1<sup>st</sup> Generation of PPP (up to 1998)

The first generation of Indonesian PPP is characterized by the market opening of two sectors, namely the toll road and



Source: Tusk Advisory and BAPPENAS/JICA, Medium Term Economic Infrastructure Strategy: Background Study for RPJMN 2015 - 2019 (2013)

Figure 1: Financing Gap and Possible Sources of Funding

power (IPP) sectors. PPPs or "Kerjasama Pemerintah dan Swasta" (KPS, until 2014) or "Kerjasama Pemerintah dan Badan Usaha" (KPBU, since 2015) were initially introduced in the early 1990s for infrastructure development projects, especially for toll roads. Due to the increased need for the government to expand a toll road project, which had started in 1978, the government began to opt for a financial arrangement under a PPP scheme. Under this scheme, business sector involvement was used to fulfill government targets to accelerate the development of transport infrastructure through partnerships with a state-owned enterprise, PT Jasa Marga, which was assigned as the regulator and operator until being replaced by a buffer body named the Indonesia Toll Roads Authority (BPJT). As a legal foundation for private sector participation as well as to attract private sector interest in the construction of roads through PPPs, the government enacted Act No. 13/ 1980 concerning Roads. Following this, toll roads began to be managed by the private sector in 1989 from which point private sector participation in toll road operations began to grow, although at a slow pace.\*5

#### 2<sup>nd</sup> Generation PPP (1998 – 2004)

The first general PPP regulation that applied to all sectors is the Presidential Decree (Keputusan Presiden) No. 7/1998 concerning Cooperation Between Government and Private Business Entities In The Development and or Management of Infrastructure, which was later replaced by Presidential Regulation (Peraturan Presiden) No. 67/2005 concerning Cooperation Between Government and Business Entities In The Provision of Infrastructure. This regulation has been amended three times - by Presidential Regulation No. 13/2010, Presidential Regulation No. 56/2011, and Presidential Regulation No. 66/2013. Most recently, on March 20, 2015, Presidential Regulation No. 38/2015 replaced all, with the condition that the matters this regulation does not address are subject to the previous regulation.

The 2015 regulation addresses loopholes in previous regulations, sets the agenda for open and transparent public priority projects to be implemented; created the mechanism for proposing unsolicited projects and increasing government support. Apart from the main regulations related to PPPs, each line ministry has also published a number of relevant government regulations in order to provide more detailed information to private business entities working on and outside of infrastructure projects. The government has also issued many policies and implemented regulatory reform as an umbrella to speed up PPP project implementation and boost private investment in public services.<sup>\*6</sup>

#### 3rd Generation PPP (2005 – 2015)

Many organs supporting PPP were established in the period 2005-2015. These are Committee of Infrastructure Priorities Development Acceleration (KPPIP), an SOE named PT Sarana Multi Infrastruktur (SMI), and the Indonesia Infrastructure Guarantee Fund (IIGF / PT PII). Besides these organs, there are also some new regulations which replaced prior regulations. Local governments began to experiment with their own versions of the PPP scheme, often without a proper risk allocation procedure (Parikesit and Laksmi (2016)).

#### 4<sup>th</sup> Generation of PPP (from 2015)

The latest generation of Indonesian PPP is marked by the enactment of Presidential Regulation No. 38/2015. The expansion of scope for PPP projects and various new incentives provided to attract project developers, mediators and government contracting agencies are expected to give impetus to the increase of projects financed through the PPP scheme. Table 1 summarizes the content of the regulation.

Soon after the government issued this Presidential Regulation, BAPPENAS enacted Minister Regulation No. 4/2015 highlighting the implementation procedure for the new PPP scheme, notably the processes (1) to identify potential PPP projects, (2) to develop outline business case, (3) to organize market sounding, ensuring the need for viability gap funding and government guarantee scheme, (4) for prequalification and request for proposal, (5) for announcement of the tender winner and establishment of the project company, and (6) for financial closing. Further, the government identified a menu of financing modalities (Trihargo, 2016) as shown in Figure 2.

### Lessons in Engaging the Private Sector for Financing Infrastructure Development

This section will highlight the experiences of the Indonesian government to close the financing on a PPP project and to propose



#### Table 1: Summary of Presidential Regulation No. 38/2015

Aspect	Regulations				
	Articles 6, 7, 8 and 9				
Subject of Partnership	<u>Government</u> Minister Head of Agency Mayor/Governor SOE/LOE	Private Sector SOE/LOE International companies Limited liability companies Cooperatives			
Object of	Article 5				
Partnership	Economic and social infrastructure (19 categories)				
Government Contributions	Partial financing (Art. 19) Government support (Art.15 and 16) Government guarantee (Art. 17 and 18)				
	Article 11				
Financial Return to Private Sector Investors	User charge Availability payment Other forms of payment in compliance with government regulations				
Stages	Planning Preparation Transaction				
Stages	Preparation Transaction				

#### Figure 2: Various Modalities for Infrastructure Financing

Securities	Financial Instrument & Product Alternatives					
	IPO / Secondary	Venture Capital				
Equity	RDPT Equity	Private Placement / MSOP				
	Debt-Mezzanine	Subordinated Loan				
Quasi-Equity	Convertible	Hybrid				
	Asset Backed Securities	Leasing				
	Factoring	Project Finance				
Asset / Debt	Obligation / Bonds	Medium Term Notes				
Structured	REITS	RDPT Debt				
	Short Term Bank Loan (Revolving, Working Capital)	Bank Loan Long Term (Investment, Construction)				
	Forex Hedging / Trading	Open Ended Mutual Fund				
Other Product	Hedge Fund	SBLC / SKBDN Lending				
	Promissory Notes	Others				
Do not have im	pact on leverage Have in	mpacts on leverage				

Source: Trihargo (2016)

a new initiative for a brownfield project. The first case is the financial closing on the Central Java Power Plant (CJPP) project and the second case is the proposal for a limited concession scheme (LCS) for Soekarno-Hatta International Airport (SHIA).

#### Case #1: Central Java Power Plant

The Central Java Power Plant project started in 2008 when the Indonesian energy company PT PLN completed its feasibility study, followed by prequalification of IPP bidders in 2009. This was the first PPP project in power generation using a guarantee mechanism for government non-compliance through IIGF - a newly established SOE having a mandate to guarantee political risks of private sector investors, notably PLN non-compliance on the payment. The drafting process of the guarantee agreement was undertaken between 2010 and 2011. Between March and June, 2011 the tender was organized and granted to PT Bhimasena Power Indonesia - a project company consisting of Indonesia-Japan consortium members. The power purchasing agreement, guarantee agreement and recourse agreement were signed in October, 2011. The financing on the project was expected to close in 2013, but the delay in land acquisition shown in Figure 3 caused a 3-year delay in the closing, which finally took place in June, 2016.

Despite the delay in the financial closing, the Indonesian government especially its contracting agencies and the guarantee firm have been able to learn how to mitigate risks, especially the payment compliance risk and how to measure it. It has successfully formed a Joint Monitoring Committee to ensure that information asymmetry, notably in land acquisition can be managed. Currently for other projects, for example toll roads, IIGF has been able to provide land acquisition compensation for government non-compliance on the project timetable and ramp-up traffic guarantee. The lessons learned from this project have enabled other projects, for example the Palapa-Ring National Broadband project, to reach a financial closing in a record-breaking period of only 6 months.

### Case #2: Asset recycling for Jakarta Airport

The Indonesian government realized that it is difficult to attract investors for greenfield projects. During Indonesia Infrastructure Week 2016, the President called for a new approach to attracting the private sector to invest in infrastructure projects, including to brownfield projects. Using the limited concession scheme (LCS), the government will ask a ministry or an SOE to invest and develop the projects and then invite private sector bids for a concession to operate the infrastructure assets.

In response to this policy directive, the Coordinating Ministry for Economic Affairs through the Committee for Acceleration of Priority Projects is drafting a plan for the first infrastructure asset-recycling project under LCS, that of SHIA. The plan is following Turkey's success with the LCS scheme used for Ataturk Airport in Istanbul (Winaryo, 2016), which was able to generate a USD 3 billion upfront concession fee paid to the Turkish government, attracted international airport operators to increase the airport's standards and technologies, and exposed Turkey and its infrastructure to best practice PPPs. The LCS plan for SHIA was already presented to the Indonesian government, and currently is in the planning stage for tender process.

### The Way Forward for Next Generation Private Sector-financed Infrastructure Projects

Indonesia's PPP framework has progressed quite significantly since it was introduced in 1998. At the same time, the Indonesian government is also committed to the principle of good governance, and hence all procedures and mechanisms should be bulletproof to avoid misconduct and misappropriation of authority, especially by the gov-

ernment contracting agencies. The amount of investment required for infrastructure development, using both public and private sector money is huge, and requires a careful planning and implementation strategy. PPP project processes will have to be harnessed despite the difficulties in implementing the scheme and the complex government policy-making exercise often cited by international investors. The presence of an infrastructure financing company established by the Indonesian government (SMI, and its subsidiary, PT Indonesia Infrastructure Finance IIF), as well as the infrastructure guarantee company, PT Penjaminan Infrastruktur Indonesia or IIGF, have served as catalysts for the complex undertaking of Indonesia's PPP scheme.

Learning from the case studies, there is scope for improvement in implementing PPP projects in Indonesia. Reiterating



#### **Figure 3: Land Acquisition Progress**

the earlier works of Parikesit and Laksmi (2016), given the size of investment required, and the existing government capacities to procure infrastructure projects, Indonesia's private financing scheme should (1) be linked with the macroeconomic policy of the Indonesian government, for example by incorporating the PPP planning process into the government budgetary process, (2) focus on improving the capacity of the government contracting agencies, especially when it comes to sub-national levels of government, (3) ensure the improved quality of concession agreement design, renegotiation and dispute settlement, (4) strengthen the role of SOEs as project developers and partners in the infrastructure investment, and (5) ensure a regular PPP policy review process, repository of Indonesia's experiences, and public information disclosure of PPP plans and contracts.

### Notes

- \*1 http://www.antaranews.com/en/news/96567/ jokowi-leads-cabinet-meeting-focuses-oninfrastructure-development
- \*2 The study team (Tusk Advisory, 2013) utilized a method to obtain the available budget for economic infrastructure by deducting the total revenue from tax, oil/gas and other revenues by debt servicing, mandatory and emergency spending such as salaries for government officials, and social infrastructure.
- \*3 Other reports, for example those published by Trihargo (2016) from the Ministry of SOEs, identify that the total infrastructure development needs in 2015-2019 is IDR 5.519 trillion, of which the Ministry of SOEs is responsible for 19.32% of investment.
- \*4 BAPPENAS uses a global benchmark of 22%, with countries like UK, Thailand, Portugal and Brazil are utilizing more than 40% private sector investment for their infrastructures.
- \*5 Strategic Asia for the UK Foreign Commonwealth Office, "PPP (Public-Private Partnerships) in Indonesia: Opportunities from the Economic Master Plan," presented in Jun 2012, p 48.
- \*6 Ibid

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# The Importance of Infrastructure Bond Market Development in Asia

### Background

The Asian Development Bank, ADB, (2017) says that infrastructure demand in Asia is estimated to be approximately USD 26 trillion from 2016 to 2030 or USD 1.7 trillion per year. However, rising fiscal burdens in the post-crisis period and falling bank lending under Basel III have widened funding gap for infrastructure projects and consequently renewed the attention to private participation in infrastructure financing in order to boost infrastructure developments in the region. Behind the efforts to facilitate private participation in infrastructure projects is also the region's relatively high economic growth.

To bridge the widening funding gap in Asia, local currency bond financing for infrastructure is becoming an alternative avenue for infrastructure financing. Large financing gaps and the advantages of bond financing for long-term infrastructure projects provide an impetus for the development of long-term, local currency bond markets and therefore the rationale for the Asian Bond Markets Initiative (ABMI). In this context, ASEAN+3 governments proposed a study exploring new debt instruments for infrastructure financing at the 10th ASEAN+3 Finance Ministers' Meeting held in Kyoto in May 2007.

Bonds also would be suitable financial products for institutional investors with long-term liabilities such as pension funds and insurers, which are moving toward increasing allocation into infrastructure largely due to the current low interest rate environment. It is expected that the emergence of institutional investors in Asia will further spur the development of infrastructure bond markets as major investors of infrastructure bond.

### Bond Financing for Infrastructure

Usually, an infrastructure company carries out an infrastructure project by setting up a special purpose company (SPC) through which to raise capital. From the perspective of financing, equity capital mostly consists of investments from construction companies or infrastructure funds while debt capital includes infrastructure bonds or loans from various financial institutions such as international organizations, public and private financial institutions, etc. In some cases, the operation company directly raises capital by issuing stocks or bonds. The issuance of general obligation bonds is based on the credibility of the company and is different from that of infrastructure (project) bonds that are based on the future cash flows from a specific project.

Each stage of an infrastructure project has different risks and expected returns, and thus requires a different financing method. During the early stage of planning and construction (greenfield), equity investments and bank loans represent a primary part of financing. Once the project enters the mature stage (brownfield) and creates stable cash flows, capital can be raised via bond issuance. And the participation of international organizations or state-owned banks can help an infrastructure project enhance its viability and thus facilitate financing of large-scale and long-term capital. However, when these public sources are used, Hyun, Nishizawa and Yoshino (2008) insist that it is critical to design a risk-sharing mechanism to prevent moral hazard and to strike a balance between the public nature of a project and its commercial viability that is an incentive for private sectors.

Traditionally large banks in developed countries remain major financiers to emerging countries. According to the World Economic Forum (2014), commercial banks provided an estimated 90% of all private debt for infrastructure financing from 1999 to 2009. However, banks with short-term liabilities are not suitable to hold long-term assets on their balance

sheets. Under Basel III, the regulatory capital burden is increasing particularly on illiquid long-term assets for infrastructure projects by banks. And revenues from infrastructure projects are generated in local currencies while the major financing sources are provided in foreign currencies by foreign banks. In this case, hedging can be one solution for mitigating currency risk. However, hedging cost would be very high because hedging markets are illiquid in most Asian countries. These situations might pose the problem of a double mismatch, in maturity and currency, in infrastructure financing as experienced in Asian financial crisis in 1997-1998.

Therefore it is critical to nurture infrastructure bond markets in order to raise long-term, large-scale capital and to fill the gap created by commercial banks' reluctance to extend loans under Basel III. Infrastructure bonds are defined as bonds issued to finance the infrastructure projects of public interest such as railways, toll roads, airports and so on. The scope of infrastructure also has evolved significantly, covering a broad range from traditional infrastructure such as power, oil and gas, water as well as hospitals, schools, and prisons to low-carbon, climate resilient infrastructures such as renewable energy.

By nature, principal and interest payments on infrastructure bonds are based on a stream of cash flows from projects, instead of issuer's credibility. Hence, such bonds require an independent, differentiated evaluation method that takes into account uncertain cash flows in the future. Infrastructure bonds are closely associated with the development bond markets and therefore primarily issued in developed markets and euro markets that are equipped with appropriate conditions, e.g., the US, Europe, Australia, Canada, and etc.

### Infrastructure Bond Market Development in Asia: Comparison with Europe

Although local currency bond financing can plug large financing gaps and finance long-term infrastructure projects in Asia, the Asian infrastructure bond market is in a nascent stage with a meager size of bond issuance compared to the large amount of investment required. Then what makes local currency bond financing difficult for infrastructure projects in Asia?

Ehlers, Packer and Remolona (2014) explain the reason why bond financing is difficult as follows. Firstly, infrastructure projects are complicated and require highly specialized expertise from both governments and investors. Secondly, there are some risks inherent in infrastructure projects which cannot be controlled by sponsors. Thirdly, bond financing has co-movement between bond market and infrastructure bond market. Lastly, the lack of depth and liquidity of domestic local-currency bond markets makes bond financing difficult. Therefore, infrastructure bond markets are closely related to bond markets in general. The development of domestic local currency bond markets will consequently facilitate further bond financing of infrastructure projects in Asia.

ADB (2015) reviews extensively the recent experience of infrastructure bond markets in Asia and the lessons from other markets such as revenue bonds in the US and Project Bond Initiative (PBI) in the EU where infrastructure bonds are commonly used. Therefore I attempt to compare infrastructure bond market in Asia and that in Europe in order to address fundamental challenges in developing the infrastructure bond market in Asia, and to derive implications and lessons from Europe's experience.

To understand the difference between Asia and Europe, Table 1 reports the mean standard deviation, and number of observations for all variables in the sample period of 2003-2015 with 29 countries.<sup>\*1</sup> As seen from the table 1, the variables are significantly different between regions, Asia and Europe. As seen from the figure 1 and table 1, we know obviously that countries in Europe had relatively developed infrastructure bond markets with average issuance 11.7% of GDP while Asia showed a comparatively small issuance with 6.8% of GDP. As Eichengreen and Luengnaruemitchai (2006) insist, economic size is

#### Table 1: Descriptive Statistics related to Infrastructure Bond Markets in Asia and Europe

	ASEAN+3			Europe		
	Mean	Standard Deviation	OBS	Mean	Standard Deviation	OBS
Bond/GDP (%)	6.845	(8.75)	143	11.730	(21.33)	221
InGDP	26.487	(1.84)	143	26.857	(1.33)	221
ln(GDP per capita)	9.567	(0.97)	143	10.608	(0.27)	221
General government balance (% of GDP)	-0.963	(3.74)	143	-2.756	(4.10)	221
Inflation (of GDP deflator, %)	3.888	(4.71)	143	1.656	(1.43)	221
Volatility of the FX rate	1.271	(0.70)	117	0.724	(0.50)	221
Domestic credit by banks (% of GDP)	94.188	(48.03)	138	118.837	(43.48)	221
Average institutional factors	48.031	(24.28)	143	78.289	(12.13)	221
Property index	48.636	(28.10)	143	81.425	(13.43)	221
Corruption index	46.577	(24.54)	143	75.095	(15.62)	221
Investment Freedom	48.881	(22.90)	143	78.348	(12.23)	221

Note: OBS=observations; GDP and GDP per capita are transformed to their natural logs Source: Dealogic, Bloomberg, BIS, World Bank, IMF, Heritage Foundations positively related to bond market development because the small and fragmented economies in Asia may lack the minimum efficient scale needed for deep and liquid bond markets.

Asia's small economic size and large discrepancy in economic development are reflected in the small means and large standard deviations on the economic variables for the region compared to those for the European region. This might impede the further development of infrastructure bond markets with liquidity and depth. For the variables measuring institutional factors, such as the corruption freedom index, the property index, and the investment freedom index, the means for Europe are higher than those for Asia, which indicates a more favorable environment for infrastructure financing for Europe. Therefore, low values on the property index, corruption index, investment index also are critical barriers to financing infrastructure projects through bond markets in Asia.

### Lessons from European Experience: Project Bond Initiative (PBI)

The PBI was created in response to the global financial crisis and subsequent debt crisis in Europe, which has led to a reduction in financing options for infrastructure projects. Traditional funding options such as public sector debt have become less important in the wake of the European debt crisis. In addition, more stringent capital adequacy requirements under Basel III have made bank loans less preferable. The PBI aims to provide partial credit enhancement to infrastructure bonds in order to attract more investors.

As seen from Figure 2, most infrastructure bonds in our sample have been rated by at least one of three international rating agencies such as Fitch, Moody's and S&P in order to assess the importance of country risks. When we chart the distribution of issues by average rating, the share of infrastructure bonds rated AA or above is about 52% in Europe, while only about 16% of infrastructure bonds in Asia are rated AA or above (Figure 2). About 57% of infrastructure bonds in Asia are rated A. Meanwhile, BBB-rated (investment grade) infrastructure bonds are also frequently issued to finance infrastructure projects in Europe.<sup>\*2</sup>

Asian infrastructure bond issuance poses a challenge to corporate issuers because their credit ratings are lower than those of their respective governments considering the region's low sovereign ratings, which consequently raises the cost of debt financing. Therefore, preferential treatment for Asian local currency bond markets through credit enhancement policies is required to bridge the rating gap. As an example, credit enhancement by the European Investment Bank increases the ratings of infrastructure bonds and thereby decreases funding costs on projects in the region.

Credit enhancement programs in Asia can facilitate infrastructure bonds issuance by providing Asian investors with higher rated bonds. The ABMI's Credit Guarantee and Investment Facility (CGIF) is expected to help bridge this gap. Howev-



#### Figure 1: Infrastructure Bonds Size/GDP

Note: Average values, GDP=gross domestic product Source: Dealogic, Bloomberg, World Bank

![](_page_23_Figure_1.jpeg)

![](_page_23_Figure_2.jpeg)

er, considering the huge investment needs and financing gap in Asia, this facility will need to be strengthened to successfully facilitate infrastructure bond issuance.

### Lessons from Korean Experience: Social Overhead Capital (SOC) Bond

To facilitate private participation in infrastructure in Korea, the Promotion of Private Capital into Social Overhead Investment Act (PPI Act) was passed and enforced for the first time in 1994. The PPI Act and the Enforcement Decree, as the principal components of the legal framework for Public Private Partnership (PPP), define "eligible facility types, implementation schemes and process, conflict resolution/termination mechanism, and the roles of the public and private parties." The Act was amended in 1999 to introduce a risk sharing and minimum revenue guarantee (MRG) mechanism and again in 2005 to introduce the Build-Transfer-Lease (BTL) scheme, diversification of facility types, and expansion of investor profile.

The Korean government supported PPI projects with various policy measures. Construction subsidies can be granted to the concessionaire if the subsidy is necessary to maintain the user fees of the services provided at an appropriate level. A certain fraction of projected revenue can be guaranteed through MRG agreement if the actual operating revenue falls short of the projected level. Also, various preferential tax treatments are applied to PPI projects. Furthermore, Korea Infrastructure Credit Guarantee Fund (KICGF), which was established in 1994, provides credit guarantee services, including guarantees for infrastructure bonds.

Among these government supports, the MRG mechanism resulted in a fiscal burden increase because the actual revenue fell far short of the projected revenue. Against this background, since the revision of the PPI system in 2006, the government has become more selective about providing MRGs. While the number of MRGs continues to be reduced, the government expects an increasing demand for infrastructure credit guarantees.

Korean SOC bonds were popular

in their early stage because of the special tax treatment as well as of the difficulty in obtaining syndicated bank loans in the aftermath of the 1997 financial crisis. However, in recent years, a relatively low expected rate of return and high transaction costs involved in SOC bonds made them a less attractive option for infrastructure financing, while investors are competing for higher returns provided by alternative financial products as reflected in the recent performance of private sector infrastructure funds in Korea.

### Conclusion

As Eichengreen and Luengnaruemitchai (2006) insist, the small and fragmented economies of Asia face difficulties in developing liquid and efficient bond markets because they require a certain minimum efficient scale. Economic size is one critical determinant of the infrastructure bond market. The on-going discussion on standardization and harmonization in the ASEAN+3 Bond Market Forum (ABMF) can facilitate the integration of Asian regional bond markets to obtain the minimum efficient scale that would enhance liquidity and depth in the regional integrated bond markets.

As learned from European experience and Korean experience, credit enhancement for infrastructure bonds has contributed to infrastructure bond market development. Considering this positive impact on the development of the infrastructure bond market, ASEAN+3 economies also should take more active policy measures to facilitate infrastructure bonds and furthermore the function and the role of CGIF should be strengthened in order to provide guarantees for infrastructure bonds.

Thus far, the Asian infrastructure bond market is in a nascent stage with the size of issuance still meager compared to the required investment level. However, some meaningful progress has been underway in terms of forming a ripe environment for infrastructure bonds as ASEAN+3 expressed interest in facilitating and developing infrastructure bonds and the regional Credit Guarantee and Investment Facility began to provide guarantees for infrastructure bonds. This implies that now is an opportune time for ASEAN+3 to launch its regional initiative to promote infrastructure bonds from the regional perspective of Asian bond market development.

#### Notes

- \*1 Asia refers to Brunei Darussalam, China, Hong Kong, Indonesia, Japan, Korea, Laos, Malaysia, Philippines, Singapore, and Thailand while Europe refers to Austria, Belgium, Switzerland, Cyprus, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Sweden. In line with Ehlers, Packer, and Remolona (2014), this article focuses on infrastructure bonds that finance economic infrastructure such as roads and electricity (though it excludes the oil, gas, and mining industries), as well as social infrastructure such as schools and health care. The data is merged from Dealogic and Bloomberg and cover infrastructure bonds issued by national and local governments, government agencies, and government development banks regardless of whether these bonds are used solely for financing infrastructure projects.
- \*2 European investors might be more prone to take on the higher risks of BBB rated bonds than Asian investors are.

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![](_page_25_Picture_1.jpeg)

### HEE KONG YONG

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# Infrastructure Financing in Malaysia

### Infrastructure Development and National Transformation Programme in Malaysia

Main alaysia has one of the highest quality of infrastructure a study by Goldman Sachs Global Economics,<sup>\*1</sup> Malaysia ranked one of the highest in 'quality score' at 5.1 compared to South Korea (5.9), Thailand (4.6), Indonesia (3.8) and Philippines (3.2). In the latest report by Asian Development Bank (ADB), Malaysia has one of the highest road densities (km per 1000sqkm of land area)<sup>\*2</sup> in the region. Income growth and urbanisation in the country will continue to drive infrastructure demand particularly in power, roads, airports and water.

Malaysia's high quality infrastructure has mainly been due to the government's unwavering commitment to its five-year economic plans (known as Malaysia Plans) to implement the many infrastructure projects. A key factor for the successful implementation of the country's infrastructure projects is the adoption of public-private partnership (PPP) in the early 1980's. PPP allowed the government to launch more infrastructure projects by sharing the burden of funding these projects with the private sector. This, in turn, has made the private sector an important engine of national growth.

Infrastructure development is one of the main drivers in the National Transformation Programme (NTP) of Malaysia. The government saw the need to transform both the economy and how the government was to deliver public services. In 2010, the government unveiled the New Economic Model (NEM) which aimed to transform Malaysia into a high-income nation by 2020.

In 2010, the NTP was launched to implement the NEM. The NTP comprises two components: the Economic Transformation Programme (ETP) which was to transform the economy, and the Government Transformation Programme (GTP) which was to transform the ways the government delivers its mandate to the people in terms of public service deliveries. The initiatives under the ETP collectively were aimed at propelling Malaysia to a high-income nation with Gross National Income (GNI) of up to USD 15,000 by attracting investments exceeding USD 444 billion by 2020 and the creation of 3.3 million new jobs. The thrust of the ETP was to transform the economy to a private sector-led economy. Of the USD 444 billion investment required, 92% was targeted to come from the private sector (while Government-Linked Companies (GLCs) are expected to contribute 60% of the total investment).\*3

### Infrastructure Achievements under the Tenth Malaysia Plan (2011–2015)

The Tenth Malaysia Plan (10MP) was the first 5-Year Plan following the adoption of NEM. In terms of infrastructure development, the 10MP focused on upgrading physical infrastructure to enhance access and connectivity; developing a people-centric public transport system; growing logistics and trade facilitation; continuing efforts to restructure the water services industry; and ensuring effective sourcing and delivery of energy.

During the 10MP, the government made large investments in transport, digital and energy infrastructure in line with rising demands for these assets. In the 5-year period, the road network grew by 68%, connecting more rural areas to national economic growth.\*<sup>4</sup> In the same period, cargo and container volume increased by 23%, supported by the two major ports of Port of Tanjung Pelepas and Port Klang, which were amongst the world's Top 20 container ports. The number of air passengers grew by 46% in the period, supported by a new runway and terminal (KLIA2). Under the National Broadband Initiative, Table 1: The Tenth Malaysia Plan (2011-2015) Resulted in the Following Enviable Achievements\*5

Infrastructure	Achievements			
New roads added in the 5 years	93,100 km			
National Road Development Global Index	From 1.42 in 2010 to 2.29 in 2014			
Increase in air passengers handled	39%			
Increase in urban rail ridership in the 5 years	32%			
World Bank Logistics Index ranking	29 in 2013 to 25 in 2014			
Household broadband penetration	70% in 2014			
Population served with clean and treated water	95% by 2013			
Sewerage coverage in population	41 million			
Generation capacity added	5,458 MW			
Electricity coverage of population	98%			
Source: The Tenth Malaysia Plan (2011-2015)				

almost 56,000 km of fibre was rolled out, increasing the penetration to more than 70% of Malaysia's households. Under this 5-year Plan, the Pengerang Integrated Petroleum Complex (PIPC) was started in 2012, on 9,100 hectares of land, helping to improve energy security for Malaysia.

### Infrastructure Development under the Eleventh Malaysia Plan (2016–2020)

The Eleventh Malaysia Plan (11MP) will build on the achievements of the 10MP. The five focus areas are:

- A. Building an integrated need-based transport system
- B. Unleashing growth of logistics and enhancing trade facilitation
- C. Improving coverage, quality, and affordability of digital infrastructure
- D. Continuing the transition to a new water services industry framework
- E. Encouraging sustainable energy use to support growth

11MP listed many infrastructure projects under each of the focus areas. The government intends to achieve balanced economic development for the whole country and has stated its intention to focus highway developments outside the Klang Valley. The 11MP will thus focus on rural and rural-urban connectivity. Several projects were mentioned in the 11MP: The Pan Borneo Highway, the Central Spine Road, Kota Bharu-Kuala Krai Highway, and the Lebuh Raya Pantai Timur. The completion of the West Coast Expressway in 2019 will also provide better access to the West Coast of Perak and Selangor.

The government has placed emphasis on increasing the usage of public transport in urban areas. To this end, continual emphasis is placed on completing the Klang Valley Mass Rapid Transit (KVMRT) system. The KVMRT system will become operational during the 11MP. The KVMRT Line 1 traverses 51 km between Sungai Buloh and Kajang, through 31 stations serving about 1.2 million people with a daily expected ridership of 400,000. Construction on KVMRT Line 2 started in 2016 and is expected to become operational by 2022. Additionally, construction on a Light Rail Transit (LRT) Line 3 connecting Bandar Utama to Klang, running over 36 km and serving 25 stations will start in 2017 with expected completion in 2020.

Several of these projects in the 11MP have already commenced construction. Infrastructure job awards in the first half of 2016 (1H16) came to MYR 30 billion, per statistics by the Construction Industry Development Board. This has exceeded the MYR 26 billion awarded for the whole of 2015. The MYR 30 billion should include MYR 23 billion worth of Klang Valley Mass Rapid Transit 2 (KVMRT 2) jobs. It is estimated that the total infrastructure award value for 2016 exceeded MYR 40 billion including the Sungai Besi-Ulu Kelang Elevated Expressway (SUKE) and Damansara-Shah Alam Elevated Expressway (DASH). There are still the remaining packages of the KVMRT 2 (estimate over MYR 5 billion), Pan Borneo Sarawak Highway

(MYR 11 billion) and West Coast Expressway (MYR 2 billion), besides the KVLRT 3 (MYR 9 billion), to be awarded in 2017.

Beyond 2017, the Kuala Lumpur to Singapore High Speed Rail (HSR), estimated at more than MYR 50 billion, will be the single largest infrastructure project. A study on the KVMRT 3 (Circle Line) has also started positively. Other rail related commitments are the Gemas-Johor Baru double track rail (MYR 7 billion) and East Coast Rail (estimated at MYR 55 billion), the latter will help support the development of Kuantan Port.

In addition to these are many projects that have been announced as part of Chinese investments into Malaysia. Many of these projects are claimed to be part of China's 'Maritime Silk Road Initiative' (MSRI) even though they may not be. Some of these projects are described further below.

### Financing Infrastructure Development in Malaysia

Prior to the adoption of the Malaysia Privatisation Masterplan (MPM) in 1983, most infrastructure development was financed through the Government Development Budget (DE) as capital items of public goods. With the introduction of PPP in Malaysia through the MPM, the funding of many infrastructure projects was shifted to the

private sector. This has helped to alleviate the financial burden on the government. Another recent development in Malaysia is investment in infrastructure projects by Chinese companies under the MSRI. Some of these projects will be financed through soft loans by Chinese government agencies and contractor-financing.

#### Public sector debt and budget deficit constraints

The NTP has also resulted in the decrease in budget deficits over the years. The government has worked hard to rein in public spending to reduce budget deficits, from 6.7% in 2009 to 3.2% in 2016. However, this has constrained the government's ability to allocate more funds for development expenditure. Some of the recent large infrastructure projects have been funded through Non-Financial Public Corporations (NFPCs) which raised debt financing for these projects through the local capital market. An example is DanaInfra which was established pursuant to the Malaysian Economic Council's decision on 14 June 2010 after in-depth consideration for the need to have an Infrastructure Financing Entity (IFE) to advise and undertake funding for the proposed Mass Rapid Transit Project (MRT Project). The main objectives of the IFE are to set up a separate fund-raising activity from infrastructure construction, to develop the most cost competitive, efficient and sustainable financing models, and to maintain the government's fiscal position through most competitive financing and timely disbursement of fund. To date, MYR 46 billion has been raised for the MRT projects.\*<sup>6</sup> DanaInfra will also be raising funds for the first phase of the Pan Borneo Highway project (MYR 13 billion). The debt will be repaid through annual allocation by the government. Most of the debt raised by NFPCs is guaranteed by the government even though it is not reflected in the official public sector debt.

Despite the various measures to reduce budget deficits whilst transforming the economy, Malaysia has found the options to raise more debt to fund development projects to be decreasing. The debt service ratio has been increasing annually, rising to 12% in 2016. This has constricted the wiggle room for the government to be able to raise more debt for both operating and development expenditure.

At the same time, the public debt-to-GDP ratio has almost breached the 55% mark. This ratio is lower than in most developed countries and breaching it would not normally have any immediate significant impact on the economy. However, to change the ratio limit would require the support of opposition lawmakers in parliament and this is unlikely to happen at present. The government has transferred some public-sector debt to special purpose vehicles and NFPCs and hence taken it partially 'off balance sheet'. The public-sector funding options available to the government have been limited by this 55% ratio.

### Financing Infrastructure Development through PPP

Malaysia launched the MPM in 1983 which introduced private sector investments in public infrastructure. It was commonly known as Privatisation until 2009 when a dedicated agency, Unit Kerjasama Awam Swasta (UKAS, formerly also known as 3PU), was set up. UKAS is responsible for monitoring and implementing PPP projects and acts as secretariat for the government's projects in the five dedicated economic corridors. It also oversees the Facilitation Fund from the national budget which is used to help bridge the viability gaps of PPP projects. Since 1983, many infrastructure projects have also been carried out using the PPP mechanism where some of the project risks are transferred to the private sector. Because of PPP, many of the multi-lane highways in Malaysia are tolled, and today, Independent Private Producers (IPPs) constitute more that 50% of the total power generating capacity of the country. Most of the major ports are privately owned. The major international airports, KLIA1 and KLIA2, are also privately owned, albeit by a GLC. Some of the

![](_page_27_Figure_10.jpeg)

#### Figure 1: Increase in Debt Service Charges

past failed PPP projects have cost the government when they had to be bailed out or nationalised. These included the Kuala Lumpur public transport system. Moving forward, there are not many projects left that can be carried out via the PPP mechanism where the users pay for the services or use of the facilities. The government has also used the Private Finance Initiative (PFI) mechanism, a funding model similar to that used in the United Kingdom where the government is contracted to pay private developers and investors for services provided over a long period. Some hospitals and universities have used the PFI mechanism. The PFI mechanism is generally not suited for developing countries\*7 as it will result in the government carrying a contingent liability on its books. This is in line with the International Public Sector Accounting Standards 32 (IPSAS32). The UK Parliamentary Select Committee on PFI published a scathing report on the UK PFI Programme in 2011, in which it questioned the rationale of using PFI for many public-sector services.\*8 Malaysia has since scaled back the use of the PFI mechanism and other similar mechanisms to deliver public services to avoid these contingent liabilities.

PPP projects in Malaysia are typically funded using non-recourse project-financing methods. These projects have, in the past, helped Malaysia to establish itself as a world leading issuer of sukuk or Islamic bonds.

#### Financing Infrastructure Development the Chinese Way

Though Chinese investments in Malaysia have gained more prominence over the last two years with many of the proposed projects being declared part of the MSRI, the Chinese invested in Malaysia even before the One Belt, One Road Initiative was announced by Xi Jinping in 2013. Most of these projects are either Foreign Direct Investments (FDIs) or PPP with no obligations from, or liabilities to, the government. Some of these projects are deemed to be publicly-funded projects, financed through soft loans to Malaysia, for example, the East Coast Rail project (ECRL).

One of the earliest high profile investments was the property play in Iskandar Malaysia where Chinese developers partnered with local developers to launch massive property developments. These include Country Garden, R&F Properties and Greenland Group which bought large strategic land banks. Chinese funding and investments into Malaysia are likely to continue especially given the deepening of ties between the two countries. Recent Chinese investments into Malaysia include:

- The setting up of the Malaysian campus of Xiamen University
- The MYR 7 billion Gemas-Johor Baru electrified double tracking rail project
- The Malaysia-China Kuantan Industrial park, owned jointly by Chinese investors and Malaysian companies, and which saw investments of more than MYR 6 billion to build a steel mill, upgrading of the port and other facilities
- The USD 10 billion deep sea port in the Melaka Gateway Project
- The MYR 18 billion acquisition of 1MDB's power assets
- The Bandar Malaysia property development and HSR terminal at Bandar Malaysia

There are also several proposed mega projects that have been attributed to MSRI. Though some projects do not seem to relate to maritime projects, they have been promoted as part of MSRI, for example the Bandar Malaysia project. Each of them will have a significant impact on the Malaysian economy and will help the country to maintain or increase the NTP momentum. However, like most of the signed MSRI-related projects, each of them will have political-economic impact on Malaysia.

#### The MYR 55 billion East Coast Rail Line (ECRL) Project

In the 2017 Budget, the Malaysian Prime Minister announced the intention of the government to build the ECRL.\*9 This mega project would help Malaysia maintain its NTP momentum. The proposed 600 km, MYR 55 billion project will cut through four states, linking Klang Valley, Pahang, Terengganu and Kelantan. It will also link Kuantan Port and the Malaysia-China Kuantan Industrial Park to the West Coast. Both projects are deemed to be part of MSRI, and hence the ECRL project is also, by association, deemed to be part of MSRI. ECRL will connect many rural townships such as Port Klang, ITT Gombak, Bentong, Mentakab, Kuantan, Kemaman, Kerteh, Kuala Terengganu, Kota Bharu and Tumpat, and is part of the larger plan to connect rural areas. The government has said that the railway link will lower transportation costs between the West and East coasts of Peninsular Malaysia, bring down prices of goods, and reduce travelling time. The project, which is part of the East Coast Economic Region will be developed in several phases over a five-year period. The government sees this project as crucial to Malaysia and have said that this project should not be delayed as it would not only spur the country's transportation industry development, but also help to speed up growth of small towns along the way. The project would also assist in the transfer of technology in the railway industry, he said.

Malaysia is currently in negotiation with China to sign the Framework Financing Agreement and Engineering, Procurement, Construction (EPC) Contract for the ECRL project.\*10 The Prime Minister paid a 6-day visit to China last year during which sixteen bilateral MOUs were signed. This was the third visit by the Malaysian Prime Minster to China and underscored the economic and financing importance of China to Malaysia. It was reported that China was set to build and finance the ECRL project with the signing of the Framework Financing Agreement and EPC Contract for the project. China is expected to provide soft loans with very favourable terms, a 20year repayment period with 7-year no-repayment period. The project is expected to be fast-tracked and is expected to commence construction in 2017.

#### Kuala Lumpur – Singapore High Speed Rail (HSR)

On 15 December, 2016, Malaysia and Singapore signed a bilateral agreement to jointly develop the 350km HSR. This project will reduce the travelling time between the two cities by two hours, to approximately 90 minutes. The HSR serves as an alternative mode of public transport travel between Kuala Lumpur and Singapore. It is seen to be in line with the transformation of Malaysia by linking the two capital cities to meet growing demand, catalysing economic growth and enhancing long term economic competitiveness while improving the quality of life of its people. It will also help to open and rejuvenate smaller cities in Peninsular Malaysia.

The project is expected to cost more than MYR 50 billion.\*<sup>11</sup> The mode of financing is still uncertain. There are already many companies which have expressed an interest in bidding for some of the works on this project. Like the ECRL project, Chinese companies and agencies may offer soft loans as part of their bidding strategies.

#### **Bandar Malaysia and HSR Terminal**

The Bandar Malaysia project is a property development project that sits on 500 acres of prime land just 10 minutes from the capital city's centre. This used to be the Malaysian Air Force airfield. Its

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link to MSRI is that it will also be the Kuala Lumpur Terminal for the proposed HSR project that will link Kuala Lumpur to Singapore, connecting ports in Malaysia and Singapore. This project has been attributed to be part of MSRI. The government has recently divested 60% of the shares of the state-owned company that holds the development rights to the land to a consortium comprising China Railway Engineering Corp (CREC) and Iskandar Waterfront Holdings, the master developer of Danga Bay in the southern state of Johor (CREC Consortium). CREC is a listed company on the Hong Kong Stock Exchange. The company has built a large proportion of the HSR projects in China. To date, China has more than 20.000 km of HSR tracks.

Bandar Malaysia's expected gross development value is MYR 160 billion. It is a huge development and will feature the world's largest underground city, shopping malls, indoor theme parks, a financial centre as well as the MYR 8.3 billion regional headquarters of CREC. When completed, it will turn the Malaysian capital into a most impressive railway terminal along the socalled Iron Silk Route linking Beijing with Singapore via Thailand.

The CREC Consortium is likely to use this development to support its bid to secure the construction work of the HSR project. The funding for this project is not clear at this stage, but it is likely that China would offer an attractive financing package as part of its bid. China has already won the bid for the Medium Speed Rail (MSR) link between Jakarta and Bandung, and is likely to provide loans for the Thailand section linking China to the Malaysian border.

#### **Chinese Investments in Malaysian Ports**

There are already significant Chinese investments or joint ventures in Malaysian ports. For example, Gaungxi Beibu Gulf International Port Group has a 40% stake in Kuantan Port Consortium and a 49% stake in Malaysia-China Kuantan Industrial Park. SM International Wholesale (China) is operating the Port Klang International Trade and Halal Industry Centre, and Guangdong province announced that it will invest USD 10 billion in a deep-sea port in the Malacca Gateway project. Discussions are also ongoing with the Chinese to build another port in Port Klang.

Malaysia and China have also signed a Port Alliance agreement in 2016 which laid down the foundation for cooperation between ten Chinese ports (Dalian, Shanghai, Ningbo, Qinzhou, Guangzhou, Fuzhou, Xiamen, Shenzhen, Hainan and Taicang) and six Malaysian ports (Port Klang, Malacca, Penang, Johor, Kuantan and Bintulu). This alliance is part of the MSRI.

### Maintaining the Infrastructure Development Momentum

Infrastructure plays a pivotal role in the National Transformation Programme of Malaysia and the development of the country. It has a tremendous impact on benefitting the population and on bridging the economic gap between the rural and urban population. The country will continue to urbanize with the many new land and air transport infrastructure projects. The decision on infrastructure development, including the types and the mode of financing, will have significant implications on their sustainability. The government's ability to fund future projects has been constrained by the current large public-sector debt and high debt-service ratio, exacerbated by declining oil prices which has reduced the contributions from the National Oil Company, Petronas. Malaysia has used PPP to finance many of its infrastructure projects since 1983 and will continue to adopt new PPP funding models. The major constraint posed to new PPP projects is the ability of users to pay for them. Chinese investments in Malaysia's infrastructure projects, whether in the form of FDIs, PPP or contractor-financing, will continue to be an alternative to the government.

![](_page_29_Picture_10.jpeg)

#### Notes

- \*1 Goldman Sachs Economics Research Issue No:13/18, May 2013
- \*2 ADB, "Meeting Asia's Infrastructure Needs," 2017
- \*3 http://etp.pemandu.gov.my/About\_ETP-@-Overview\_of\_ETP.aspx
- \*4 Economic Planning Unit, Prime Minister's Department, *Eleventh Malaysia Plan* (2016-2020)
- \*5 Economic Planning Unit, Prime Minister's Department, *Tenth Malaysia Plan* (2011-2015)
- \*6 http://www.danainfra.com.my/index.php? option=com\_content&view=article&id=1 54&Itemid=303
- \*7 HK Yong, "Making PPPs work in developing countries," Commonwealth Trade and Investment Report 2013
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![](_page_30_Picture_1.jpeg)

### PUBLIC-PRIVATE PARTNERSHIP CENTER

# Philippines:Infrastructure Development is a Priority

resident Rodrigo Duterte's administration has made tackling the country's infrastructure deficit a major priority. The fourth item on the President's 10-point Socio-Economic Agenda calls for boosting annual infrastructure spending to account for 5% of GDP, "with Public-Private Partnerships (PPPs) playing a key role". In addition to this explicit support of PPPs, several of the Agenda's other objectives increasing competitiveness and the ease of doing business, supporting rural development, investing in health and education, and promoting science and technology to enhance innovation - require infrastructure improvements in order to be realized. Overall, government spending on infrastructure is estimated to be USD 163 billion through 2022, with PPPs playing a key role. This planned spending is in addition to the USD 6.24 billion worth of PPP projects already awarded.

### Public-Private Partnership Center Supports Sustainable Financing Sources for Bankable PPPs

In addition to sponsor equity, privately financed infrastructure in the Philippines has typically relied on banks to fund construction and operations. High levels of liquidity and a preference for bank financing, as well as certain taxes that disfavor bonds, help to explain the relatively limited use of the domestic capital markets for infrastructure. However, the focus by policymakers to address the national infrastructure deficit has highlighted the need to develop a wider range of financing options. Working with other Philippine government bodies and the private sector, the Public-Private Partnership Center (PPPC) has led the discussion and actively supported reforms that will enable greater use of capital markets for infrastructure finance. With support from the Asian Development Bank and the US Treasury Office of Technical Assistance, the PPPC's efforts have been wide-ranging and include the following: providing significant technical input that enabled the Philippines Stock Exchange (PSE) to develop specific listing rules for PPP companies; supporting legislative changes that facilitate expeditious acquisition of - and just compensation for - the required right of way (ROW) for national infrastructure projects as well as limiting the ability to needlessly delay projects through the courts; updating legislation (the PPP Act) that institutionalizes best practices and proper incentives; hosting large conferences that attract domestic and international capital market professionals, as well as "knowledge-sharing seminars" targeting government agencies.

These direct and indirect efforts in support of capital market development for infrastructure finance are in addition to the PPPC's primary role, which is to support the development of well-structured, bankable projects that attract private developers and operators. It serves as the hub of PPP expertise within the Philippine government, and acts as the central coordinating and monitoring agency for PPP projects in the Philippines. Crucially, the projects remain "housed" within the implementing agencies, which retain technical responsibility and oversight of projects. It champions the country's PPP Program by enabling implementing agencies in all aspects of project preparation, providing project advisory and facilitation services, and monitoring and empowering agencies through various capacity-building activities.

### Characteristics of Infrastructure Assets

Large up-front cash outlays are required in the construction phase. Once operational, costs decrease substantially, although periodic capital expenditures associated with deferred maintenance and rehabilitation are common. On the revenue side, there is no income during the construction stage for greenfield projects (i.e., those assets built from scratch). When existing assets are expanded or renovated, revenue may continue to flow during the course of the new construction, although it is unlikely that such revenue will be sufficient to meet the operating and financing costs of the entire (existing and expanded) asset. Once construction is complete, cash flows are expected to increase during the ramp up period of the new/expanded asset and then reach a steady state, with revenues driven by a combination of usage and tariff increases, and sometimes pre-agreed ("availability") payments from the government. Infrastructure investors are attracted by the expectation of consistent, long-term returns that are often viewed as a natural hedge against inflation, assuming tariffs are increased in accordance with rising input costs.

There are of course many challenges associated with infrastructure finance. Probably the biggest are in the construction stage, when the developer must secure financing for the significant up-front costs in the absence of revenues, and then complete the construction on time and within budget. Once operational, the viability of forecasts is tested – are enough users willing to pay the regulated prices to realize the project revenue? Can the asset be operated at the planned cost levels? A final challenge is the willingness of both private and public partners to respect the roles and responsibilities assigned to them under the agreement. Is the developer/operator providing all services at the expected levels as required under the contract? Are the implementing agency and other public sector stakeholders (e.g., the regulatory authorities and the executive branch) able and willing to deliver right of way, enact pre-agreed tariff increases, etc., in a predictable and timely manner? None of these and other potential risks can be entirely eliminated for any one project. Thoughtful and comprehensive preparation and monitoring of projects can, however, substantially mitigate them.

### Private Sector Engagement in Philippine Infrastructure

The Philippines has a fairly long history of engaging the private sector in infrastructure development and operations. A Build-Operate-Transfer (BOT) law was passed in 1990 – the first one in Asia – and was then amended in 1994. That law, Republic Act (RA) 6957 as amended by RA 7718, provides the legal framework for Philippines PPPs and is implemented under rules and regulations that were revised in 2012. The Coordinating Council of the Philippine Assistance Program (CCPAP), attached to the Office of President, was created under Administrative Order No. 105, s. 1989 for the overall implementation of the Philippine Assistance Program and then later on, the BOT Program under Memorandum Order No. 166, s. 1993.

In the 1990s, the policy makers relied heavily on the BOT model to address the nation's crippling energy shortages. This approach succeeded in developing over USD 8 billion worth of power generation assets providing in excess of 8,000 megawatts. Given the challenging economic environment, government absorbed demand and foreign exchange risks. The currency depreciation and economic stagnation caused by the Asian Financial Crisis of the late 1990s required government to absorb costs associated with these risks. In the early 2000s, BOTs were again utilized, this time often for unsolicited projects in the transportation sector. The key takeaway from the first two decades of private sector engagement in public infrastructure was the need for careful due diligence and project preparation, in order to better identify the risks and then assign them to the partner (public or private) best able to manage them. These experiences led to the current

![](_page_31_Figure_8.jpeg)

operating framework in which the PPP Center acts as the technical hub for PPPs, advising implementing agencies on their projects. In 2010, the BOT Center was renamed the PPP Center.

Philippine legislators have acted to improve the enabling environment for PPPs. The Right of Way Acquisition Act (RA 10752) provides the procedures for the easier acquisition of right of way for government infrastructure projects. Another law, RA 8975, prohibits the issuance of temporary restraining orders by lower courts on national projects implemented under the BOT Law to ensure expeditious implementation and completion. At the moment, a draft bill - the PPP Act - is under consideration which would enhance the existing BOT Law. This is critical legislation that aims to institutionalize PPP policies, regulatory frameworks, and process improvements, cementing the sustainability of the gains that have been achieved thus far. The proposed Act has several objectives, such as institutionalizing best practices like the Project Development and Monitoring Facility (PDMF), which finances the development and structuring of viable projects; allowing for alternative dispute resolution provisions in contracts; and modernizing procedures related to the Swiss Challenge period to unsolicited proposals. Longer term, provisions that limit foreign participation to a 40% share for PPP projects that require a public utility franchise hope to be addressed in order to facilitate greater competition and innovation.

Since 2010, fifteen PPP contracts have been awarded for a total of approximately USD 6.4 billion.<sup>\*1</sup> These include completed projects, such as the NAIA Expressway, a 7.75 km elevated expressway that improves access to the country's gateway airport in Manila, and 12,202 classrooms that were built in various regions throughout the country. Other projects that are under construction include the Mactan-Cebu International Airport New Passenger Terminal Building and the Bulacan Bulk Water Supply Project, both currently identified as good deals in the international PPP space.

### PPP Project Development and Approval Process

The PPP Center, led by an Executive Director (equivalent to Undersecretary) appointed by the President, is attached to the National Economic and Development Authority (NEDA). A PPP Governing Board

![](_page_32_Figure_6.jpeg)

![](_page_32_Figure_7.jpeg)

\*Projects started from 2010 onwards (excluding MRT 7 and MMS 3, which were developed before 2010, and the terminated MPOC)
\*\*Amount does not include 28 other projects with no estimated costs yet

Source: The PPP Center

(PPPGB) sets the strategic direction as well as creating an enabling policy and institutional environment for PPPs. Chaired by the Socioeconomic Planning Secretary from NEDA, the PPPGB includes representatives from the Department of Finance (DOF), Department of Budget and Management (DBM), Department of Trade and Industry (DTI), Department of Justice (DOJ), Office of the President (OP) and a private sector representative from the National Competitiveness Council (NCC).

As one of its key decisions, the PPPGB approved and adopted the new appraisal process for PPP projects. Pursuant to this policy, the Investment Coordination Committee – Technical Working Group (ICC-TWG) composed of NEDA for socio-economic appraisal, the DOF for financial appraisal, the Department of Environment and Natural Resources – Environmental Management Bureau (DENR-EMB) for environmental impact analysis, and the PPP Center for value for money analysis.

PPPs in the Philippines undergo an extensive development and review process, ensuring that viable, and bankable projects attractive to a wide range of sponsors will be put up for bid. The first step is to identify and allocate risks to the partners best able to manage them. The framework is the Generic Preferred Risk Allocation Matrix (GPRAM). The GPRAM enables the Investment Coordination Committee (ICC), which is responsible for green-lighting PPPs, to review how the risks were identified, shared and/or mitigated.

In keeping with the theme of technical "ownership", projects are developed within the implementing agencies (IA), which are encouraged to create internal PPP units to take the project from development, approval, to bidding completion, and operations. The IA completes a full feasibility study of a project, identifying and structuring the project as a PPP and thereafter submits a complete project proposal to the ICC-TWG. The ICC-TWG then evaluates the project and endorses such to the Investment Coordination Committee (ICC), which considers the fiscal, monetary and balance of payments implications of major national projects. With a positive ICC recommendation, the project goes to the NEDA Board, chaired by the President of the Philippines, for final approval.

This process is extensive for good reason. The Philippine government has learned from its long history of engaging the private sector in infrastructure development, that a comprehensive process is necessary for large and complicated projects to be properly vetted.

### Financing PPPs in the Philippines

While there is no requirement, Philippine PPP capital structures have tended to be about 80% debt and 20% equity. The debt component has generally been financed by domestic banks. There are several reasons for this. First, banks tend to be the primary source of project finance debt throughout the world, especially during the construction stage. Larger banks, including those in the Philippines, often have the in-house capacity to structure and monitor projects. Second, consistently strong domestic economic growth in the Philippines (GDP increased 6.8% in 2016, above the 5.9% achieved in 2015 and in line with 7% projected for this year), enhanced by increasing remittance

Figure 3: Annual Corporate Bond Statistics

flows and investment in the business process outsourcing sector, have led to high liquidity levels. Well prepared PPPs that provide essential services are therefore attractive investments for these healthy banks. Third, companies engaged in PPPs have a large local component, given the constitutional requirement that facility operators of "public utilities", which includes most public services, be majority (60%) Filipino-owned. Many of the largest Filipino conglomerates that have pursued PPPs have relied on existing relationships with - and in some cases, ownership shares in – domestic banks. A liquid banking sector and local corporate involvement have minimized currency risk which large infrastructure PPPs often face.

And fourth, bank capacity to finance PPPs and other infrastructure projects was enhanced between 2010 and 2016 through regulation. The central bank (Bangko Sentral ng Pilipinas, or BSP) waived the Single Borrower's Limit (SBL) for banks in the case of loans extended to projects falling under the government's PPP Program. Under this waiver, existing limits that capped a lender's exposure to a single borrower at 25% of the lender's net worth were increased by an additional 25% for "national PPPs". Extended for an additional three years in 2013, the waiver expired in December 2016.

Largely for the reasons outlined above, domestic capital markets have to date played a smaller role in PPP infrastructure finance. However, both peso-denominated bonds and equities have been issued for infrastructure projects, including PPPs. Of the almost PHP 488 billion raised on the local stock exchange between 2013 and 2016, about PHP 67 billion (14%) was for infrastructure purposes (based on use of proceeds). Preferred shares have been the instrument of choice, with notable issuances including Megawide Construction Corporation's raising PHP 4 billion to develop and implement PPPs and San Miguel Corporation's PHP 30 billion issuance last year that included funding for mass transit, airport, toll road and water infrastructure purposes. On the bonds side, PHP 115 billion, or 18% of the outstanding PHP 646 billion of outstanding non-government bonds at year-end 2016, were energy, telecommunications and toll roads.

![](_page_33_Figure_7.jpeg)

Source: Philippine Dealing & Exchange Corp.

### Specific Efforts Aimed at Financing Infrastructure through the Capital Markets

The PPPC has long appreciated the importance of capital markets to sustainably finance infrastructure investments. Over the last several years, the Center hosted several round table discussions that involved both domestic and international financiers, regulators, issuers, and ratings agencies. These discussions led to real change in the domestic market. The Center has engaged regulators and investors directly, hosting "knowledge-sharing seminars" on the Philippine PPP process and projects with the SEC, market exchanges and the Insurance Commission. The PPPC has also provided targeted sessions, such as a recent workshop on project finance credit factors for the national pension system.

In 2016, after extensive consultations with the market and PPPC, the PSE developed listing rules that recognize the unique factors associated with PPP companies. Subsequently approved by the SEC, the new requirements permit firms that have completed certain phases of a PPP project to list equity shares even if the project has not yet demonstrated a three-year operating history. Similar requirements are expected to be developed in 2017 that will facilitate the listing of non-recourse, infrastructure or PPP project bonds.

Broader use of project bonds will address several issues. The deleveraging and shrinking of many international banks' balance sheets - together with changes in banks' lending policies as a result of regulations (including the Basel III requirements for increased bank capital and liquidity) – have led some global and regional banks to reduce project finance lending commitments. At the same time, with the declining and even negative yield trend, capital market investors such as insurers, specialist fund managers, pension funds, and sovereign wealth funds are searching for higher yields and have increased their capacity to invest in project bonds and equity.

While both these supply and demand trends are not yet acute in the Philippines, the domestic project bond initiative is proactive, aimed at supporting the current administration's goal of ramping up infrastructure spending. The end of the SBL waiver coincided with other regulatory changes on bank loans to subsidiaries and related parties that encourage ringfenced, non-recourse special purpose entities (SPEs) for PPP-related project financings. Properly structured, each SPE will be treated as an independent entity subject to its own borrowing limits.

Indeed, two domestic transactions in 2016 made use of SPEs. AP Renewables, a project company whose sponsor is Aboitiz Power Corporation, placed PHP 10.7 billion of notes with domestic "qualified buyers" a first debt financing (the 2009 acquisition was 100% equity financed) associated with its operating (or brownfield) geothermal assets, respectively the seventh and fourth largest in the world, called Tiwi-Makban. Later in the year, Hedcor Sibulan, another project company associated with Aboitiz Power Corporation, issued PHP 4.2 billion in notes. Similar to Tiwi-MakBan, Hedcor Sibulan had an established operating history, in this case several run-of-the-river hydroelectric power plants. While the Tiwi notes were unrated, due to an ADB partial credit wrap, the Hedcor notes were assigned Aa by PhilRatings and reportedly placed with non-bank as well as bank investors.

Two aspects of these transactions bode well for the future. First, the use of non-recourse project companies allows experienced sponsors to take on large and potentially risky infrastructure projects but keep them off of their corporate balance sheets. This preserves the corporation's borrowing capacity and more importantly, isolates both the project and the corporation's assets from risks posed by the other. This is a positive development for PPPs, enabling project-specific risks to be allocated among the partners, particularly at the construction (greenfield) stage when they are greatest. Secondly, both of these more complicated transactions were brownfield, enabling lenders to include historical performance in their investment decision. While capital markets broaden the investor base for infrastructure they create a challenge for institutional investors who have little knowledge or experience with the infrastructure sector. Assets with an operating history, although potentially quite complicated credits, are an easier access point for investors new to the sector than during the construction stage.

### Domestic Capital Market Initiatives that Support Infrastructure Finance

The Philippines bond market still remains smaller than most other ASEAN markets but it has experienced rapid growth over the last 10 years. Government securities dominate, with corporate bonds representing only 18% of the total outstanding at the end of 2016. Several years of low rates have challenged the growing institutional investors to realize greater returns in their fixed income portfolios. There are a number of on-going efforts aimed at deepening the Philippine financial markets by promoting transparency and stability, as well as efficient and effective market-based pricing. Four initiatives spearheaded by the interagency Financial Stability Coordinating Council (FSCC), which includes the BSP, DOF, Insurance Commission, and SEC, are good examples.

#### Philippine Peso Overnight Index Swap (PHP OIS)

Strongly supported by the Bankers Association of the Philippines (BAP), the PHP OIS is an interbank, over-the-counter organized market that will allow institutions to manage interest rate risk. The fixed-floating interest rate swap market can also serve as a basis of a new PHP interest rate curve, linked to changes in monetary policy. The PHP OIS can be used as an alternative interest rate benchmark for funding or hedging short-term peso transactions and pricing peso-denominated loans. The PHP OIS is expected to launch in 2017, once a self-regulatory organization has been formed and approved by the SEC.

#### Philippine Interbank Repurchase Agreements (Repo) Program

The enhanced Repo program will provide greater liquidity and depth to the primary and secondary debt markets. This will enable market participants to better manage their risks, as well as broaden investor appeal and facilitate price discovery. The SEC, BSP and Bureau of the Treasury (BTr) are currently reviewing a proposal submitted by BAP and expect to launch the enhanced program this year.

#### **Benchmark Reform**

The BSP and BTr are reviewing the existing benchmark guidelines as well as recommendations to enhance the stability and integrity of reference rates, such as the Philippine Interbank Reference Rate (PHIREF) and the Dealing System Treasury Rate (PDST). A "Benchmark Framework" is envisioned that will contain the principles and guidelines in benchmark setting for the reference rates. Other initiatives include the review of PDST Calculation Guidelines and the proposed Corporate Yield Curves across credit ratings of corporate securities. The benchmark reforms are targeted to be implemented this year.

#### Single Price and Other Efforts towards Regional Market Integration

Adoption of the single price convention would facilitate regional market integration and the establishment of a tax-unified local debt market. The Treasury is working on instituting a single-price auction system for government securities.

In addition to the efforts outlined above, other policies have already been implemented by the SEC to improve time to market, reduce unnecessary costs, and remove barriers towards regional integration. For instance, shelf registration, which was enhanced in 2015, enables corporate issuers to manage their costs by matching capital-raising efforts with projected cash flows. Securities that are credit-enhanced by multilateral organizations are now exempt from registration, allowing for faster market access and a broader investor base. New best-effort underwriting rules allow for different distribution plans (subject to SEC approval) and reduce capital charges associated with firm underwriting. Constraints on selling time and financial statement validity have also been liberalized. In order to attract regional liquidity, the SEC is involved in integrating the ASEAN capital markets. The ASEAN+3 Multicurrency Bond Issuance Framework simplifies the process for foreign players to raise capital domestically, reducing their forex risk and incentivizing their entry into the Philippines (and vice versa). There is also a regional effort to create cross-border dispute resolution mechanisms and develop a Corporate Governance Scorecard, which will raise standards of publicly listed companies and increase their visibility to investors. Finally, the SEC is advocating the adoption of widely accepted Green Bond principles, in an effort to attract global fund managers who are responsible for over USD 11 trillion of assets and are committed to pursuing investments in this rapidly growing sector.

These various capital market efforts are supported by BSP's recently revised framework for monetary operations under the interest rate corridor (IRC) system. The BSP explains the IRC is "intended to help ensure that money market interest rates move within a reasonably close range around the BSP's policy rate...providing

the fundamental basis for monetary policy transmission." Accordingly, the BSP has replaced its Special Deposit Account with an auction-based 7- and 28-day term deposit facility and a standing overnight deposit facility (the IRC's "floor", currently at 2.5%). The repurchase facility (the corridor's "ceiling") was replaced by an overnight lending one (the IRC's "ceiling", currently at 3.5%) and the reverse repurchase facility (RRP) is now an overnight RRP offering the policy rate (3%). Since June of last year, as the BSP has steadily increased the amount of pesos Philippine banks could compete to deposit in the term facilities, the rates have gradually moved towards the 3% policy rate. Liquidity however, remains quite strong, with bid-to-cover ratios of 1.4-1.7x on the PHP 180 billion on offer during the first two weeks of February 2017. These moves by the BSP enhance the foundation supporting the Philippines capital market by providing greater market input into monetary policy.

### Conclusion

The PPP Center has served a critical role in promoting private sector engagement in the Philippines infrastructure. First, it has developed expertise in the identification, development, bidding and monitoring of bankable PPPs. Second, working with agencies across government, the PPPC has promoted policy improvements that recognize both government and private sector risks and objectives, including the institutionalization of its capital markets development initiatives through the proposed PPP Act and its eventual Implementing Rules and Regulations. Third, the PPPC appreciated early on the importance of assuring sustainable sources of financing to infrastructure projects by attracting institutional investors as well as banks to the sector. Over the next several years, working with its partners in government, such as the Department of Finance and the SEC, as well as the private sector, the PPPC will continue to address obstacles and promote opportunities for insurance companies, pension funds and asset managers to support infrastructure development that is critical to the Philippines' future.

![](_page_35_Figure_11.jpeg)

![](_page_35_Figure_12.jpeg)

#### Notes

\*1 Amount based on January 2017 average daily pesos per US dollar rate (1 USD=PHP 49.736)

![](_page_36_Picture_2.jpeg)

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### PUBLIC-PRIVATE PARTNERSHIP CENTER

By virtue of the Executive Order No. 8/2010, as amended by Executive Order No. 136/ 2013, the PPP Center is mandated to facilitate the implementation of the country's PPP Program and Projects.

The PPP Center is the main driver of the PPP Program. It serves as the central coordinating and monitoring agency for all PPP projects in the Philippines. It champions the country's PPP Program by enabling implementing agencies in all aspects of project preparation, managing of the Project Development and Monitoring Facility (PDMF), providing projects advisory and facilitation services, monitoring and empowering agencies through various capacity building activities.

The PPP Center provides technical assistance to national government agencies, government-owned-and controlled corporations, government financial institutions, state universities and colleges, and local government units as well as the private sector to help develop and implement critical infrastructure and other development projects.

The Center also advocates policy reforms to improve the legal and regulatory frameworks governing PPPs in order to maximize the great potentials of these infrastructure and development projects in the country. It also acts as the Secretariat of the PPP Governing Board, which is the overall policy-making body for all PPP-related matters, including the PDMF.

![](_page_37_Picture_1.jpeg)

### THITITHEP SITTHIYOT

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# The Truth about Thailand's Transport Infrastructure Development and Financing

### Introduction

A healthy body needs well-functioning flow systems such as blood circulation, respiration, and metabolism in order to transport nutrients, oxygen, carbon-dioxide, heat and waste products. For these substances to flow well, a strong and healthy mass transport system is required. Like the body, a healthy country relies upon excellent flows of goods, services, money, people, information, knowledge, culture, water, air and wastes. For these items to flow well, they must be supported by an excellent infrastructure network.

Viewing the body as a metaphor for a country and a mass transport system as a metaphor for an infrastructure network, it is widely agreed that Thailand is not very healthy due to a lack of infrastructure investment to support flows of economic and social activity. There is clear evidence indicating the poor health of Thailand, such as the high cost of logistics and transportation, traffic congestion in urban areas, deteriorating quality of life, and loss of competitiveness. Amornvivat et al. (2015)

argue that Thailand has lagged behind other countries in the region in terms of infrastructure investment since the Asian financial crisis in 1997. The relatively low quality of Thailand's infrastructure compared to other countries in the region is one of the major factors resulting in Thailand's sinking competitiveness. According to the Economist (2015), Thailand fares relatively poorly in international rankings when it comes to the quality of rail infrastructure and facilities, limiting its overall logistics performance in the view of many industries. In addition, the International Monetary Fund (2016) notes that Thailand needs to upgrade its infrastructure to keep up with regional competition, lift its potential growth, and avoid the middle income trap.

In 2015, the military-led government announced the Transport Infrastructure Development Master Plan 2015-2022 (hereinafter "Master Plan") with a planned total investment of THB 1,913 billion. The aim of the Master Plan is to promote connectivity and transform the country into a regional hub and enhance competitiveness as well as provide a foundation for long-term development (Royal Thai Government, 2016). The objective of this study is to investigate the details of the Master Plan, its sources of financing, and project disbursement. It then discusses some concerns and caveats that could benefit those interested in this multi-year infrastructure development program. Suggestions to improve Thailand's transport infrastructure development and management are also provided.

This study is divided into five sections. Following the Introduction, the second section provides the overview of the Master Plan. The third section lays out the Transport Infrastructure Investment Action Plans (hereinafter "Investment Action Plan") 2015 and 2016 as well as their estimated and actual disbursement performances. It also presents the information on the Investment Action Plan 2017 and its disbursement forecast. The fourth section discusses and comments on Thailand's transport infrastructure development and its financing. Finally, the fifth section concludes and offers suggestions for, but not limited to, Thailand's transport infrastructure project development and management.

### Overview of the Transport Infrastructure Development Master Plan 2015–2022

According to the Office of Transport and Traffic Policy and Planning (2014a), the main objectives of the Master Plan are to strengthen social and economic security, increase transport safety, and improve quality of life as well as enhance competitiveness and gain potential benefits from the ASEAN Economic Community. There are five transportation modes comprising

Figure 1: Transport Infrastructure Development Master Plan 2015-2022 and its Sources of Financing (THB Billion)

![](_page_38_Figure_1.jpeg)

this multi-year Master Plan. They are the inter-city rail network, public transport network in Bangkok and its vicinity, highway network, maritime transport development and air transport development.

For the inter-city rail network, the government plans to upgrade rail infrastructure and facilities as well as to build a double-track railway network (standard gauge) in six main routes with their extension to borders. To resolve traffic congestion and pollution problems in Bangkok and its vicinity, the government plans to extend mass transit railways, procure new public buses, and improve quality of roads and bridges. With regard to the highway network, four-lane-road networks will be developed in order to connect key economic regions and border areas. New motorways and expressways will be constructed. In addition, the government plans to develop road facilities such as rest areas for trucks, a multi-modal transport system and cross-border logistics centers. For maritime transport development, seaports on both the Thai gulf and Andaman Sea will be developed. Lastly, the government plans to increase airport capacity with an aim to be the regional hub for air transportation, enhance the air traffic management system, develop an airport logistics park, and invest in human resources for civil aviation.

Figure 1 shows total investment for the Master Plan categorized by modes of transportation and their sources of financing. This 8-year Master Plan was initially estimated in 2015 to be worth ap-

proximately THB 1,913 billion, of which THB 66 billion was allocated for the inter-city rail network, THB 1,072 billion for public transport network development in Bangkok and its vicinity, THB 624 billion for the highway network, THB 101 billion for maritime transport development, and THB 50 billion for air transport development. According to the Public Debt Management Office (2015), the major sources of financing would come from government and state-owned enterprise borrowings accounting for 52% of total investment. The remaining funding would come from annual budget allocation, public private partnerships (PPPs), and state-owned enterprise revenues which accounted for 28, 16 and 4% of total investment, respectively.

In addition to the Master Plan, the government began implementing annual Investment Action Plans starting the same year. Their purpose is to give priority to projects based on their importance and necessity as well as simultaneously stimulating the economy. The next section surveys the Investment Action Plans 2015 and 2016, and their estimated and actual performances. The Investment Action Plan 2017 and its disbursement forecast are also presented.

### Transport Infrastructure Investment Action Plans 2015, 2016 and 2017

#### Transport Infrastructure Investment Action Plan 2015

The Office of Transport and Traffic Policy and Planning (2014b) reported that the Investment Action Plan 2015 comprised fifty-nine projects with total investment in the amount of THB 848 billion, of which THB 56 billion was expected to be disbursed in 2015 and the rest would be carried over during the next 7-year period from 2016 to 2022. Figure 2 shows the Investment Action Plan 2015 categorized by modes of transportation. It should be noted that this was for the projects worth THB 56 billion expected to be disbursed in 2015 only, of which THB 10 million was for the inter-city rail network, THB 27 billion for the public transport network in Bangkok and its vicinity, THB 22 billion for the highway network, THB 2 billion for maritime transport development, and THB 5 billion for air transport development. With regard to sources of financing, 47% came from government and state-owned enterprise borrowings, 36% from annual

![](_page_39_Figure_1.jpeg)

Figure 2: Transport Infrastructure Investment Action Plan 2015 and its Sources of Financing (THB Billion)

![](_page_39_Figure_3.jpeg)

![](_page_39_Figure_4.jpeg)

budget allocation, 11% from state-owned enterprise revenues, and 6% from PPPs. Even though the government planned to disburse around THB 56 billion, the actual disbursement turned out to be only THB 1.6 billion which was almost 97% below the target.

Source: Office of Transport and Traffic Policy and Planning (2014b)

#### Transport Infrastructure Investment Action Plan 2016

According to Termpittayapaisith (2016), there were twenty projects in the Investment Action Plan 2016 with total investment in the amount of THB 1,796 billion. Figure 3 illustrates the allocation of total investment, of which THB 1,184 billion was allocated for the inter-city rail

network, THB 397 billion for the public transport network in Bangkok and its vicinity, THB 160 billion for the highway network, THB 4 billion for maritime transport development, and THB 52 billion for air transport development. Based on the information from the Public Debt Management Office (2016a), financing for these projects was mainly from government and state-owned enterprise borrowings accounting for 63% of total investment. The second major source of financing was PPPs followed by annual budget allocation. Other sources of financing came from stateowned enterprise revenues and the Toll Road Fund which accounted for merely 3 and 1% of total amount of investment. It should be noted that the Toll Road Fund was an additional source of financing that did not initially appear in the Master Plan.

In December 2016, the Ministry of Transport reported that the total amount of investment for twenty projects in the Investment Action Plan 2016 was revised downward from THB 1,796 billion to THB 1,399 billion. Among twenty projects listed in the Investment Action Plan 2016, there were thirteen projects with total investment of THB 525 billion that were already approved by the cabinet while seven projects worth THB 874 billion were postponed since they were at that time in the process of cabinet approval, under feasibility study or under negotiation. The Ministry of Transport pro-

![](_page_40_Figure_0.jpeg)

Figure 4: Transport Infrastructure Investment Action Plan 2017 and its Sources of Financing (THB Billion)

vided no details regarding the sources of financing of the revised Investment Action Plan 2016. While disbursements were estimated to be around THB 58 billion, the actual disbursement turned out to be only THB 19 billion or 32% of the target. Despite the fact that this disbursement rate was below 50%, it was much improved compared to the mere 3% rate in the previous year.

#### Transport Infrastructure Investment Action Plan 2017

The Ministry of Transport (2016) also reported the Investment Action Plan 2017 as shown in Figure 4 where the government plans to implement thirty-six projects with total investment of THB 896 billion, of which THB 435 billion is allocated for the inter-city rail network, THB 225 billion for the public transport network in Bangkok and its vicinity, THB 189 billion for the highway network, THB 36 billion for maritime transport development, and THB 11 billion for air transport development. These projects are new and were not included in the Investment Action Plan 2016. There are five sources of financing for these new projects (Public Debt Management Office, 2016b). The main financing is still from government and state-owned enterprise borrowings accounting for 64% of total financing. PPPs account for 22% while annual budget allocation and state-owned enterprise revenues account for 8 and 1%, respectively. The government also plans to establish the Thailand Future Fund (TFF) to raise funds to finance these new transport infrastructure projects. Financing that comes from the TFF is estimated to be around 5% of total investment according to the Investment Action Plan 2017. With regard to the disbursement forecast, the government plans to spend THB 8 billion for the thirty-six new projects in 2017. In addition, the government plans to disburse another THB 73 billion for thirteen projects that were listed in the Investment Action Plan 2016 as well as THB 68 billion for seven projects that were postponed in 2016. The total amount of disbursement for 2017 is estimated to be around THB 149 billion.

### Discussion and Comments on Thailand's Transport Infrastructure Development and Financing

As argued in the Introduction, a healthy country, like a healthy body, requires smooth functioning of different types of flows that have to be supported by good infrastructure. However, assessing the performance of transport infrastructure project implementation and its disbursement in Thailand since 2015 reveals several areas of concern about the country's future health. First, the total amount of investment over the 8 years of the Master Plan initially set in 2015 was to be around THB 1,913 billion, but the sum of investment in the Investment Action Plans 2016 and 2017 is THB 2,295 billion. This exceeds the total investment first announced in 2015. Investigating the details of individual projects listed in the Master Plan and those given in the individual annual Investment Action Plans reveals some projects were not included in the original Master Plan but later appeared in the annual Investment Action Plans. This raises the question whether the Master Plan is reliable as a guideline for those who are interested in using the information for their analyses. It seems that the Master Plan simply provides very broad information about modes of transportation that will be developed, but the details about individual projects could be changed or adjusted anytime, depending upon their readiness and appropriateness. Some projects might be withdrawn and new projects could be added in the future. Therefore, it is better to follow the annual Investment Action Plans on a regular basis for projects expected to be implemented in that year. The other caveat is that even the details and number of projects listed in the annual Investment Action Plans could be changed, adjusted or postponed during the year.

Secondly, the sources of financing and their composition have been changed over the years. While the Master Plan identified four sources of financing, namely, government and state-owned enterprise borrowings, annual budget allocation, PPPs, and state-owned enterprise revenues, the Toll Road Fund was later added as another source of financing in the Investment Action Plan 2016 and subsequently, the TFF is the latest source of financing added in the Investment Action Plan 2017. With regard to the composition of financing sources, government and state-owned enterprise borrowings are the key sources of financing whereas the financing from PPPs and the TFF increased as the government tries to avoid raising public debt. However, one should not rule out the possibility that other new sources of financing might be introduced in the future. Those interested in investing in or doing business related to these multi-year mega projects should look for information regarding the sources of financing in the annual Investment Action Plans, not in the Master Plan.

Lastly, on the issue of disbursement which measures progress of the projects in relation to what the government had planned, the performance of disbursements in 2015 and 2016 was still far from perfect. It should be noted that it is not unusual for governments to be over optimistic and for large-scale infrastructure projects to be long delayed. These transport infrastructure projects are no exception as the expected disbursement period for projects listed in the Investment Action Plan 2017 has already been extended beyond the year 2022, according to the Public Debt Management Office (2016b). It remains to be seen how much the government can improve the disbursement rate and manage the implementation of these projects in the future so that the Master Plan would not become a multi-year rolling plan with no sign of completion. Those who plan to provide lending to these projects or conduct analyses about the effects of disbursement on the economy should be aware of these facts and take them into account. This is because a disbursement rate of, say, 97% would give a totally different picture of the economy compared to achieving merely 3% of the target.

### Conclusions and Suggestions for Thailand's Large-Scale Infrastructure Project Development and Management

#### Conclusions

The plan to develop transport infrastructure in Thailand is not entirely new and the effort to put such a plan into action has been long delayed due to economic and political instability during the past two decades. The latest attempt was made in 2015 by the military-led government which proposed the 8-year Master Plan covering 2015 to 2022. The government reasoned that transport infrastructure development would promote connectivity, help transform the country into a regional hub and enhance competitiveness as well as lay a foundation for economic and social development. To put the Master Plan into action, the government has implemented the annual Investment Action Plans starting in 2015 to set project priorities and stimulate domestic economic activity.

Investigating the details of the Master Plan, the annual Investment Action Plans, and the disbursement rate of the projects reveals several concerns. This study finds that there is no consistency between projects listed in the Master Plan and those listed in the annual Investment Action Plans where the latter seems to be more reliable than the former. It also finds that the total amount of investment for all projects is not clear, since the total investment given in the Investment Action Plans 2016 and 2017 combined is far greater than the overall 8-year total investment given in the Master Plan. In addition, the government has not only added new sources of financing but also changed the proportion of financing coming from each source on a yearly basis. Finally, the actual rates of disbursement for the transport infrastructure projects thus far have been relatively low compared with what the government initially estimated. Despite these facts, it should be noted that it is not unusual with large-scale infrastructure project development and management that intent is not the same as outcome. As argued by Dörner (1997), only one hopes that these incidences are always to be found in other projects.

#### Suggestions for Thailand's Large-Scale Infrastructure Project Development and Management

The Office of National Economic and Social Development Board and the World Bank (2008) pointed out almost a decade ago that the transport sector in Thailand exhibited institutional deficiencies such as lack of central planning, weak coordination, and unclear separation between operation and regulation functions. Government and state-owned enterprises played a large role in planning, regulation, and service provision. Without a sound policy framework, there was no continuity in policy and projects were delayed. These deficiencies presented a challenge to financing infrastructure improvements as private investors' readiness to re-enter the market and act as a crowding-in effect was

contingent on policy improvements and reduced risks. While a clear policy framework was needed, the development direction set forth by policy makers should be based on reliable facts and data reflecting Thailand's current status of infrastructure development. Systematic, periodic, and internationally consistent infrastructure information collection and dissemination would provide Thai policy makers with a good background to better evaluate the current situation, identify bottlenecks, set clearer policies and prioritize projects more effectively.

If there were only one change to be made to make the suggestions of the Office of National Economic and Social Development Board and the World Bank relevant to today, it would be to replace 'past tense' with 'present tense;' almost all sentences still remain true based on the findings in this study. This lack of improvement would be unsurprising to Taleb (2012) who notes that government officials often are better at talking about the problem than at fixing it. Taleb (2010) also argues that government officials are motivated more by maintaining their position than by finding real answers. In order to solve these issues, government must not only be benevolent but also must have good intentions for the well-being of the people and for the health of the country. This study views that these are critical assumptions for the successful implementation of public infrastructure development and management. Although they seem idealistic, without them, none of the above issues would be resolved since empirical evidence from around the world seems to indicate that a government that promises its people a paradise on earth typically delivers nothing but chaos and catastrophe, according to Popper (2011).

Assuming a government is benevolent and has a good will to benefit the people and the country, it must also understand that complex systems, like society and economy, cannot be controlled in a conventional way, like pressing a button or steering a car, and that top-down control attempts will usually fail (Helbing, 2009). In addition, Thaler (2017) recommends governments conduct a 'premortem' before any major decision is taken by assuming that, at some time after a plan has been implemented, its outcome is a disaster and then writing a brief history of that disaster. Thaler views that there are two reasons why a premortem might help prevent adverse outcomes. First, explicitly going through this exercise can overcome natural organizational tendencies toward groupthink and overconfidence. The premortem procedure gives cover to skeptics who otherwise might not speak up since the point of the exercise is to think of reasons why a project did fail. The second reason a premortem can work is because starting an exercise by assuming the project has failed, and now thinking of why that might have happened creates the illusion of certainty. Thaler argues that laboratory research indicates that asking people why something did fail rather than why it might fail, inspires them to be more creative in problem solving. Lastly, according to Dörner (1997), government must learn to think in temporal configurations. This is because human beings, by nature, do not give adequate attention to the characteristics of processes that unfold over time. Government must also learn to realize that there is a delay between the execution of a plan and its effects. Furthermore, government must learn to cope with side effects and understand the emergent property of complex systems that the effects of its decisions may show up in unexpected places. Dörner suggests that government can learn to cope with and manage complex systems through computer simulation exercises. A computer simulation can immediately highlight the consequences of a government's decisions and plans thereby helping government officials develop a greater sense of reality.

All of these are suggestions for the government. Until Thailand finds a government that not only is generous, has good intentions for society and the economy, and conducts premortems before making decisions on large-scale infrastructure projects but also thoroughly understands properties of complex systems and more importantly, has the courage to accept them, the smooth flows of social and economic activity and the country's future health remain questionable.

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![](_page_43_Picture_6.jpeg)

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![](_page_43_Picture_9.jpeg)

Lord Mervyn King at the 2015 Forum

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![](_page_44_Picture_4.jpeg)

Cover of *Financial Restructuring* to Sustain Recovery

![](_page_44_Picture_6.jpeg)

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![](_page_45_Picture_10.jpeg)

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