

Providing insights to the challenges facing Asian infrastructure

*Report from a survey
conducted by PwC's Capital
Projects & Infrastructure
team, to understand
perceptions and views on
the Infrastructure market
across Asia*

September 2011

2nd Edition



PwC Survey On Infrastructure

PwC's Capital Projects & Infrastructure team in Singapore has surveyed its key clients, business partners and other leaders within the infrastructure market to understand perceptions and views on the infrastructure market across Asia. Responses were collated from more than 50 respondents working in the infrastructure industry for the purposes of this report. Respondents included consultants, financial investors, and those working with infrastructure companies.



Infrastructure in Asia

It is clear that there is a positive correlation between economic growth and effective, well planned infrastructure investment. Power and water utilities are required by economies to allow the continued operation of factories, industry and businesses; transport networks are required to allow the effective movement of raw materials, goods and human capital; social infrastructure like hospitals and schools, is a necessary requirement to ensure an educated, healthy population that is able to contribute to an economy. In order to deliver large infrastructure projects both government and private sectors require the capital to fund these programmes and the capability and capacity (in terms of skills) to manage and plan infrastructure procurement pipelines, drive effective procurement processes, and deliver efficient assets and operations.

As economies around Asia grow and develop, the demand on each country's infrastructure stock will also grow. A failure to invest effectively in the region's infrastructure will lead to a reduction in

the rate of growth, and eventual stagnation as the infrastructure in developing economies will become unable to cope with increasing demands of power hungry technology, the need to move materials and goods efficiently or the demand for better services of a tax paying population that is growing wealthier and more mobile. A lack of skills and resources within the developing country's government and private sector further exacerbates a country's inability to deliver on the infrastructure promise.

Investment in infrastructure is therefore a necessary part of any country's economic well being. Further, the global financial crisis led to governments across the world using investment in infrastructure as a necessary part of fiscal policy. This is because an increase in public spending offsets the reduction in private sector spending and encourages economic activity. However, the ability of governments to invest in infrastructure to drive continued economic growth is limited by the availability of capital within a respective government.

Unlike China, which invested 7% of its GDP on infrastructure, while growing at an average per capita growth rate of 8.7% between 1995 and 2005, developing economies around Asia do not have the financial capacity to invest such substantial sums on infrastructure.

Therefore, as the demand for infrastructure across the region substantially exceeds governments' abilities to pay for it, private investment is expected to fill the gap. Indonesia for example, expects that US\$90 billion of a total investment of US\$140 billion in infrastructure for the period 2010-2014 will be funded through private participation or private capital. Estimates of the quantum of infrastructure investment required across Asia vary quite substantially. However, in 2008/9 the Asia Development Bank (ADB) estimated an infrastructure deficit or gap of around US\$8 trillion in Asia alone between the period 2010 to 2020.

If Asia's governments are to be successful in delivering new infrastructure stock to bridge the growing infrastructure gap,

large amounts of private sector capital, skills and capacity will have to be used to provide funding of infrastructure and to provide the necessary skills and capacity to deliver large infrastructure projects.

The use of private capital and resources for infrastructure investment is not new. Globally, the private sector is playing an increasing role in supplying infrastructure that was historically provided by government such as transport networks, water supply, power stations and grids etc. The method of private sector participation can vary substantially, but could include everything from short term basic management contracts and design and build contracts, to far longer term concession based design, build, finance and operate contracts.

Commercially, there are many similarities across different territories for the implementation of private sector participation in infrastructure as Public

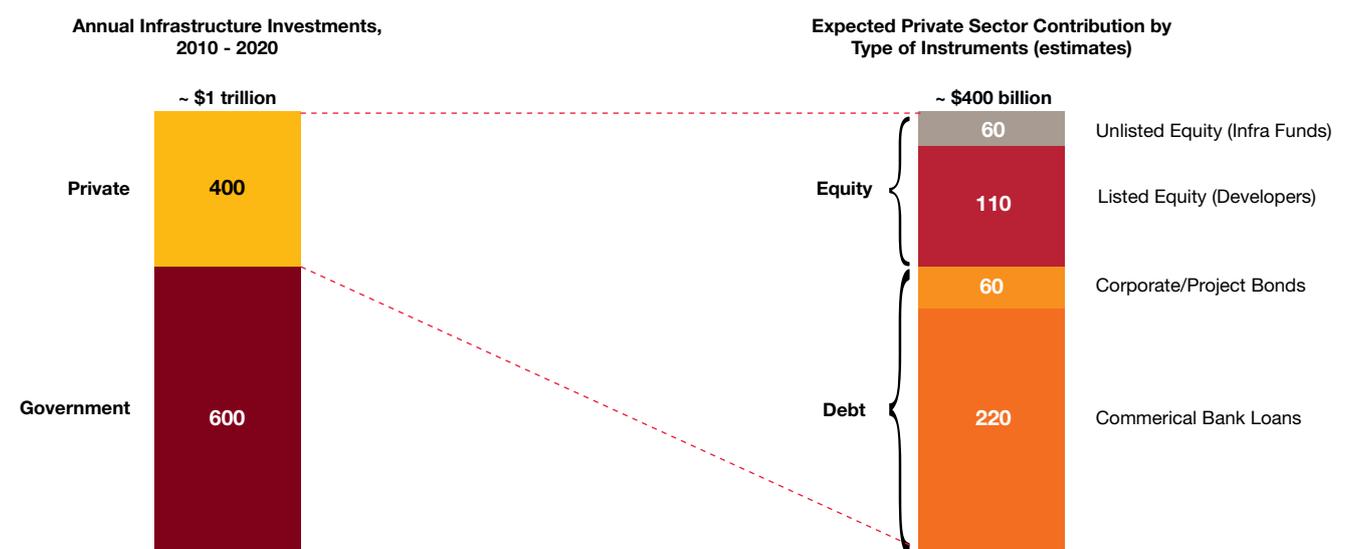
Private Partnerships (PPP) are not new. PPPs have been implemented across many jurisdictions in different sectors for many years – whether power PPP projects in Asia during the early 1990's or the UK's extensive Private Finance Initiative (PFI). These projects serve as precedent for countries looking to adopt more robust procedures, policies and regulatory frameworks in developing their infrastructure markets. More mature markets therefore offer successful examples of procurement policies, frameworks and commercial structures that can be adopted by developing markets in order to successfully implement infrastructure programme. Indeed private sector investors, lenders, builders and operators expect robust procurement processes and legal and regulatory frameworks as a necessary pre-requisite to investing in a market. As such, one would expect similarities to exist between the regulatory and legal frameworks and procurement policies being adopted or amended by developing

parts of the Asian market and those of more mature markets.

The potential for growth in infrastructure projects requiring private sector involvement across Asia is high. The substantial infrastructure gap is well recognized and the need for private capital is obvious. As mentioned above, the ADB estimates that Asia needs \$8 trillion of investment in infrastructure in the period 2010-2020.¹ Another estimate expects approximately \$1 trillion of infrastructure investment every year in the period 2010-2020 with 40% contributed by the private sector (see figure 1).

¹ Bhattacharyay, Biswa Nath (July 2010) 'Financing Asia's Infrastructure: Modes of Development and Integration of Asian Financial Markets' ADB Working Paper Series No.229

Figure 1



Source: Barrow, Michael (June 2010) 'Private Financing of Infrastructure in Asia' ADB Workshop on APEC Growth Strategy, Sapporo, Japan

In light of the recognised need for infrastructure and the required capital and resource investment from both governments and the private sector, developing Asia has been largely unsuccessful in delivering robust infrastructure programmes.

So, what is blocking the supply of private sector capital and skills in the region? Why are governments of developing countries in Asia struggling to successfully procure needed infrastructure? Diagram 1 below summarises the views of respondents to the 2011 PwC Infrastructure Survey and the discussion above.

In the period since 2004, the PPP model has been tested throughout China with varying degrees of success. In 2005, a concession agreement for Beijing's subway line 4 was signed, as a Build-Operate- Transfer (BOT) with private sector participation. This was the first project in the country that involved foreign private capital as well as China's first concession based project in urban railways.² Today, Chinese infrastructure players are very active not only in their own country but also internationally, especially in the power and transport

sectors. The domestic infrastructure market is dominated by Chinese companies and lenders as the international market struggles to compete with local players that have a stronger understanding of Chinese legal and regulatory frameworks and have return requirements below those of international market, considering the risks inherent in transactions. Ownership restrictions inhibit the international market's ability to participate in certain restricted sectors. However, water and renewable energy in China continue to be sectors where foreign capital is attracted. In June 2010, HSBC and China Bank of Communications closed the first wind project finance deal in China.

In the early 1990's, South East Asia successfully implemented a number of PPPs, primarily in the power sector. The Asian financial crisis of 1997 and subsequent currency devaluations led to a number of PPP contracts being renegotiated. This damaged confidence in the market and eroded perception of the strength of contracts signed with government bodies. Total investment in infrastructure was severely affected. For example, Indonesia, which was heavily hit during the 1997-98 financial crisis

saw a significant reduction in public spending on infrastructure as a result of the crisis.³ Long term trends of private sector investment were also affected. In the 16 year period 1990-2006, total private sector investment in ASEAN was US\$163.6 billion, a fraction of the total infrastructure needs of the region (see table 1).⁴

In the nineteen year period 1990-2009, more than 1400 projects with private sector participation were introduced in developing economies of East Asia and the Pacific. As noted above, however, this represents a fraction of the value of investment needed in order to address the current infrastructure gap. In this period, the sector with greatest private participation was energy, followed by water and sewage, and transport (see table 2).

² Kaimeng, Li (2009) 'PPP in the People's Republic of China: Practice via Alterations- Examples in Transport Sector' China International Engineering Consulting Corporation

³ McCawley Peter (2010) 'Infrastructure Policy in Asian Developing Countries' Asian Pacific Economic Literature

⁴ Nangia, R (2008) 'Overview of Infrastructure Financing in ASEAN' ADB Internal Report, Quoted in Abidin, Mahani Zainal (July 2010) 'Fiscal Policy Coordination in Asia: East Asian Infrastructure Investment Fund' ADBI Working Paper Series No. 232

Diagram 1

Infrastructure Deficit of US\$8 trillion (2010-2020)		Investment Barriers	Supply of Capital
Sector	Amount (US\$ trillion)	<ul style="list-style-type: none"> Legal & Regulatory Framework Poorly Defined and Unstructured Procurement processes Haphazard Pipeline Management Risk Allocation and Commercial Structure Lack of Capacity 	<ul style="list-style-type: none"> Government Multi-laterals Private sector (15-60%) <ul style="list-style-type: none"> - Infrastructure funds - Pension funds - Strategic investors <ul style="list-style-type: none"> ~ Constructors ~ Operators Others
Telecom	1.1		
Power	4.1		
Transport	2.5		
- Rail	0.04		
- Road	2.3		
- Others	0.09		
Water & Sanitation	0.4		
Total	8.0	<ul style="list-style-type: none"> Lack of investment subsidy in certain jurisdictions 	

Source:ADBi (2009)
Bhattacharya (2008)

Table 1: Total private investment in ASEAN (1990-2006, US\$million)

	Energy	Transport	Water & Sanitation	Telecom	Total
Cambodia	231	445	–	331	1,007
Indonesia	13,160	4,634	992	18,455	37,241
Lao PDR	2,586	–	–	198	2,784
Malaysia	14,313	16,113	10,144	8,577	49,147
Myanmar	719	50	–	–	769
Philippines	15,818	2,625	8,071	11,545	38,059
Thailand	12,244	3,576	596	14,254	30,669
Viet Nam	2,715	115	213	946	3,989
Total	61,786	27,558	20,016	54,306	163,669

ASEAN = Association of Southeast Asian Nations, Lao PDR = Lao People's Democratic Republic

Source: ADB

Table 2: Infrastructure projects with private participation in developing economies of East Asia and Pacific (1990-2009)

Sector	Percentage	Number
Energy	42%	592
Telecom	5%	75
Transport	25%	349
Water & Sewage	28%	387
Total	100%	1403

Source: PPIAF Database

The Opportunity

The tremendous potential for the infrastructure sector in Asia has been reaffirmed in the 2011 PwC Infrastructure Survey carried out in August 2011. 50% of the respondents believe that South-East Asia is good or excellent in terms of attracting investment in infrastructure. Although this is slightly lower than the previous year's affirmation (when 53% of respondents believed so), it is clear that South East Asia continues to be an area of opportunity. The region was followed closely by North America and Europe in terms of attractiveness, knocking off North Asia which was on the top 3 list last year (see figure 2).

Power

Based on a study by the ADB, if the demand for financing infrastructure in Asia can be met, power infrastructure would record the fastest growth.⁵ For instance, Indonesia's state-owned electricity utility Perusahaan Listrik Negara (PLN) has planned a series of power projects totalling 20 GW, under its first and second fast track programmes. According to one estimate, PLN will need \$20 billion in 2011 to meet its project targets.⁶ The results of the 2011 PwC Infrastructure Survey indicate that Indonesia followed by Vietnam and China offer the greatest potential for investment in the power sector regionally (see figure 3). The recent financial close of Mong Duong 2 should form the basis of

a renaissance in the Vietnamese power market, which has a strong pipeline of identified opportunities. The Philippines remains a strong opportunity in the power sector with recent closed deals acting as precedent and with high feed in tariff, making projects more viable.

⁵ Fan Zhai (June 2010) 'The Benefits of Regional Infrastructure Investment in Asia: A Quantitative Exploration' ADBI Working Paper Series

⁶ Fan Zhai (June 2010) 'The Benefits of Regional Infrastructure Investment in Asia: A Quantitative Exploration' ADBI Working Paper Series

Figure 2: Ability to attract investment in infrastructure by region

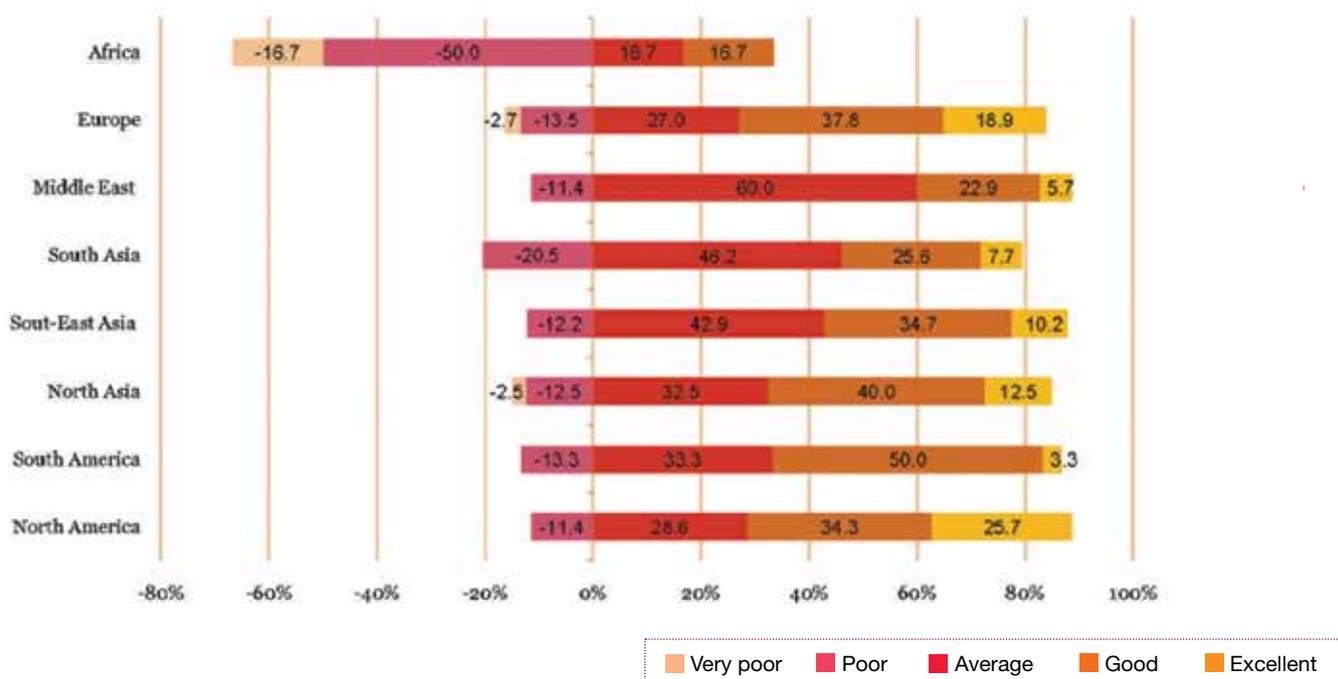
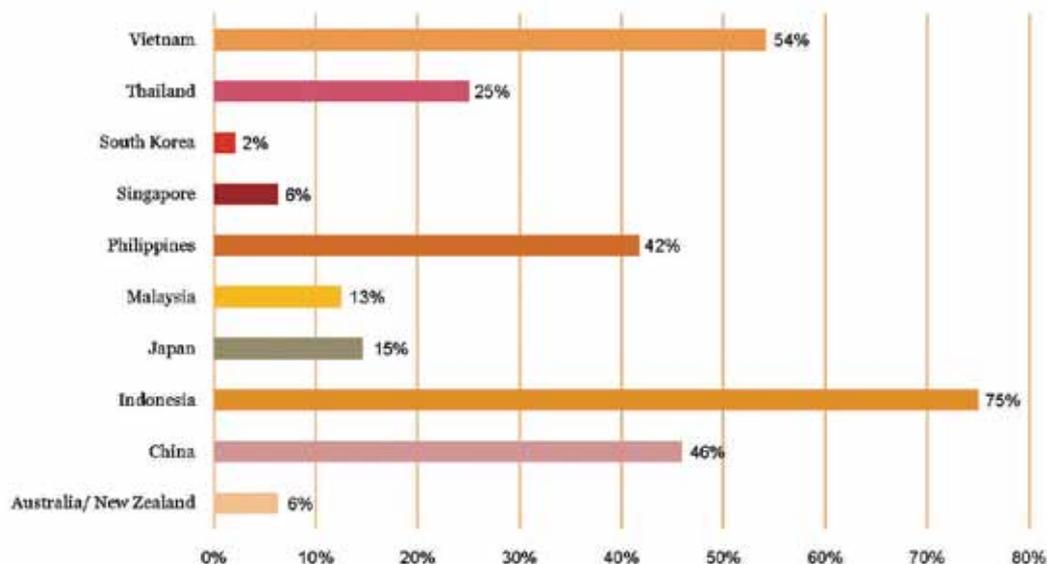


Figure 3: Where is the most opportunity in the power sector?



Transport

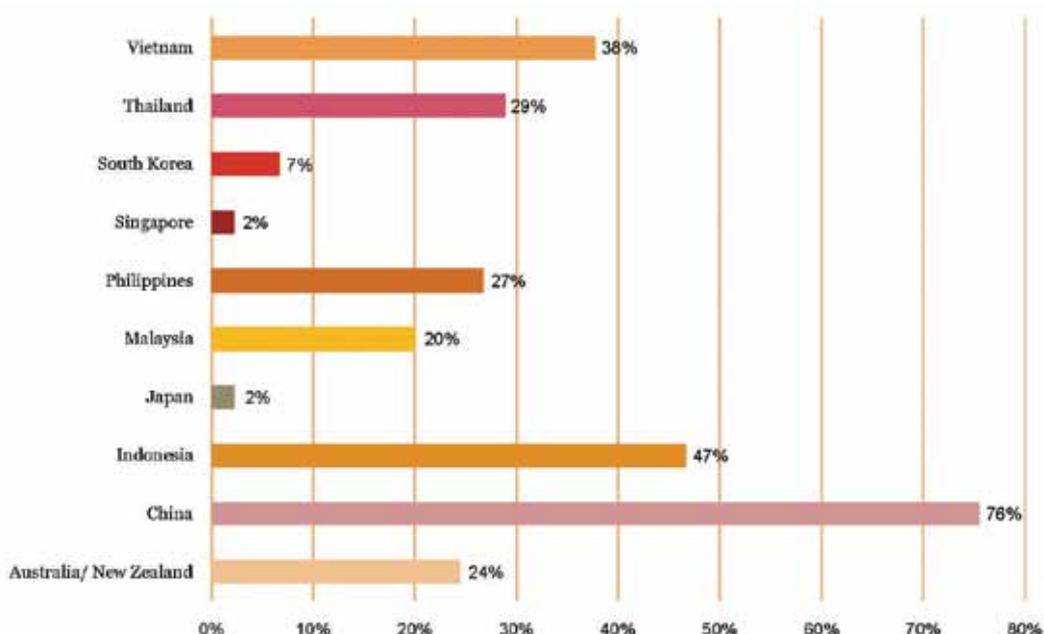
Rail transport is generally characterised by high costs, long payback periods and often limited revenue from user fees. Cities in South-East Asia began to experiment with private participation in their metro systems several years ago. However, results have been mixed, as seen in Bangkok’s Sky Train and Blue line, and Manila’s MRT3.

The road sector in Asia is relatively well developed – Malaysia, Thailand, Philippines, Indonesia, China, South Korea, Japan, Australia and Singapore all have some form of toll roads, although these are predominantly real toll roads (i.e. road users pay a fee to use the road). Developed markets offer far less opportunity in this area than developing economies around Asia – for example, Singapore and Japan are seen to offer almost no opportunity in the transport

sector (according to the 2011 PwC Infrastructure Survey), whereas China, Indonesia and Vietnam offer the greatest opportunity.

The results of the 2011 PwC Infrastructure Survey indicate that China provides the greatest opportunity for investment in transport projects. It is likely that this is largely driven by the extensive rail, road, airport and sea port developments being procured by the Chinese government.

Figure 4: Where is the most opportunity in the transport sector?



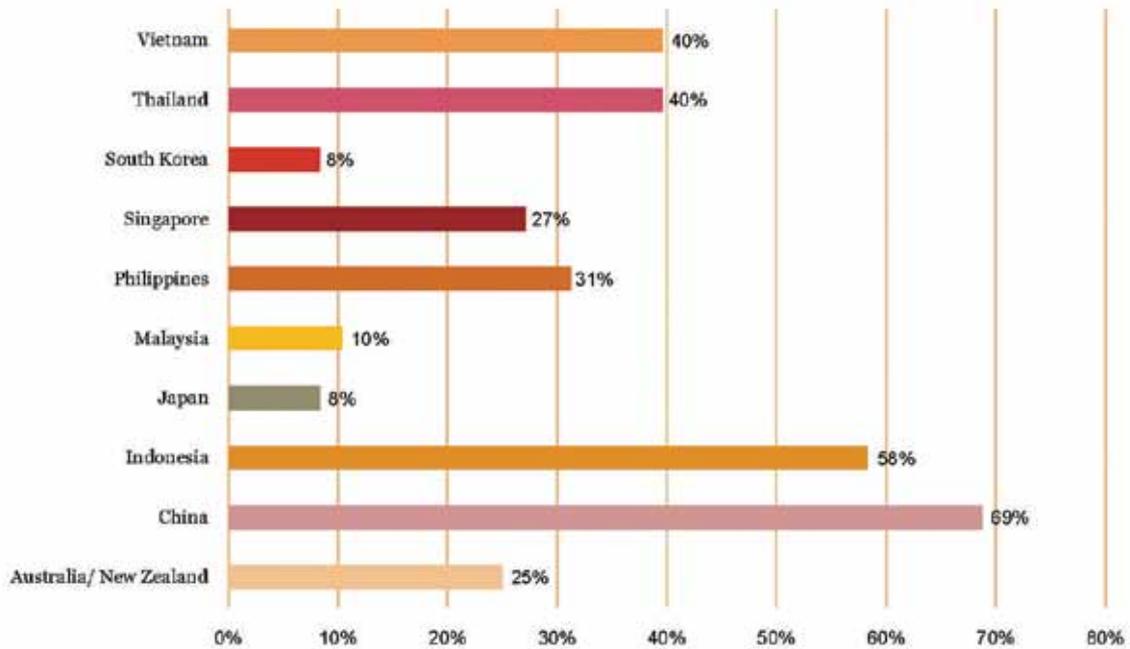
Water

Private participation within the water sector appears more effective when introduced at the beginning of the value chain. Treatment and supply of water can be parcelled to the private sector more effectively than water distribution. Unbundling different parts of the value chain and then packaging the relevant parts into financially viable units is important in creating a sustainable market for private participation.

The treatment of wastewater and the reliance on NEWater and Desalination technologies is likely to become more acute as most countries face pressures due to limited water supply. As water consumption increases in growing economies so the need to invest in water treatment plants and distribution networks will grow. There is a clear demand across the region for private sector participation in the water sector – however, tariff regulation remains a key risk issue for the private sector.

The results of the 2011 PwC Infrastructure Survey indicate that China and Indonesia remain the greatest opportunities for investment in the water sector, with Vietnam and Thailand offering strong opportunity.

Figure 5: Where is the most opportunity in water and wastewater?



Social Infrastructure – Healthcare and Education

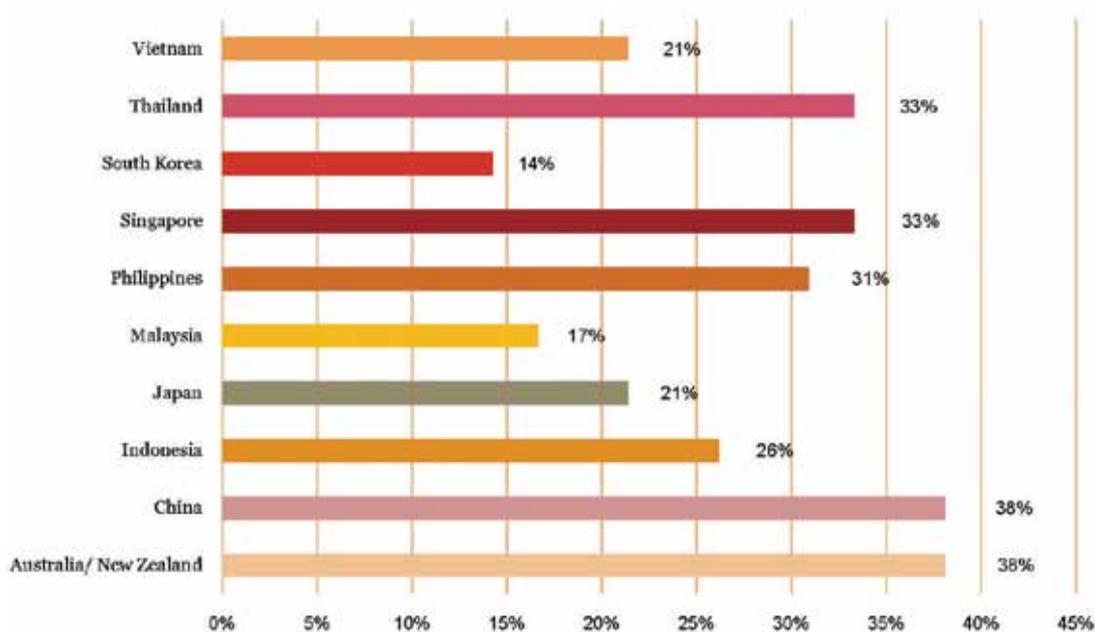
It is a generally acknowledged fact that developing markets will focus most investment in economic infrastructure as these are the necessary parts of an infrastructure stock that drive economic growth. Once these economies transition from developing or emerging markets into more mature markets with strong

utilities and transport networks, so the focus shifts onto social infrastructure such as building public hospitals and healthcare networks and improving the quality of education.

The lack of available government funding for infrastructure in developing markets necessitates the prioritisation of certain infrastructure, normally those that

derive revenues from offtakes (power, water) or user fees (transport networks). Public sector healthcare and education would require substantial government subsidy in the form of capital contributions or ongoing annual subsidies. Generally, for the emerging economies in Asia, these areas are evidently not seen to be priorities (the private sector healthcare and education market is however very strong).

Figure 6: Where is the most opportunity in healthcare?



Indonesia

- Indonesia has potential opportunities in power, transport, and water;
- The government expects to invest USD 143 billion in infrastructure in the period 2010-2014 of which the private sector is expected to invest USD 93 billion;
- The 2005, 2006 and 2010 Indonesia Infrastructure Summits were clear recognition by the Indonesian government of the scale of its infrastructure deficit. In addition, multilaterals continue to focus on Indonesia;
- The government has introduced a series of measures to encourage investment in infrastructure: updated Presidential regulation, Indonesia Infrastructure Fund (IIF), Indonesia Infrastructure Guarantee Fund (IIGF), and the Land Fund, to name a few;
- Pilot projects include: Jakarta Airport Rail Link Project (\$1.1 billion), North Sumatra Toll Road (\$500 million), Umbulan Water Project (\$200 million); and
- Investors have a 'wait and watch' policy and need to see successful projects as showcases.

China

- 37.5% of China's 2008 stimulus plan during the global financial crisis was for infrastructure;¹¹
- There are opportunities in water and renewable energy for international investors who are expected to bring technological innovation;
- China has estimated that it will build 100 waste to energy plants by 2013;¹²
- However, power and transport are SOE dominated;
- Ownership is restricted for foreign investors in most sectors;
- There are issues with legal interpretation of procurement laws;
- Chinese infrastructure players are going international;
- Since 2004, the PPP model has been tried throughout China with varying degrees of success;
- In 2005, concession agreement for Beijing's subway line 4 was signed, to be built as a BOT with private sector participants. The project was the first project in the country that involved foreign private capital as well as China first concession based project in urban railways;¹³ and
- Opportunity in renewable energy exists: In June 2010, HSBC and China Bank of Communications closed the first wind project finance deal in China.

¹¹ Liu, Yang (11 June, 2009) 'Recovery in sight for China's Infrastructure Segment' FT China Confidential

¹² Delaney, Rob (9 April, 2009) 'Waste Management sees Growth turning Trash to Energy' Bloomberg News

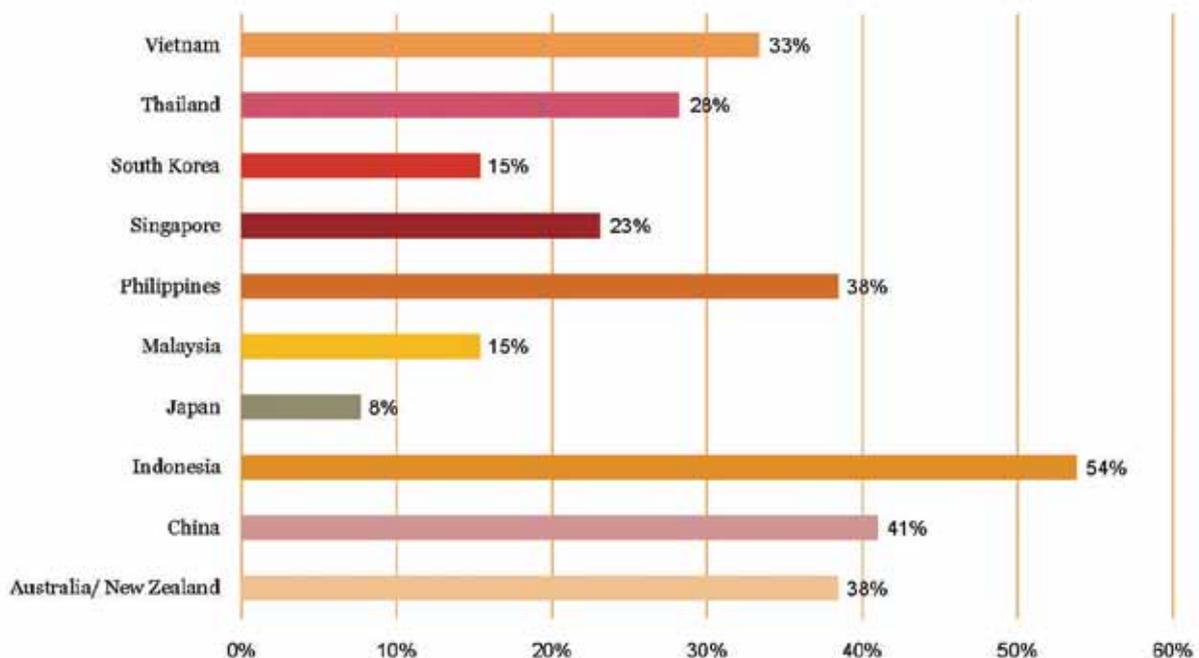
¹³ Kaimeng, Li (2009) 'PPP in the People's Republic of China: Practice via Alterations- Examples in Transport Sector' China International Engineering Consulting Corporation

New, innovative financing structures will need to be considered in order to allow acceleration of investment in social infrastructure regionally. As previously

mentioned, developing economy governments' budget constraints limit the level of subsidy available for these programmes, while private sector

sponsors and lenders require regular revenue streams in order to make the financing of social infrastructure viable.

Figure 7: Where is the most opportunity in education?



Greenfield versus Brownfield?

In developing economies, private investment in Brownfield projects can help restructure decaying infrastructure and maintain production for another 20-30 years. Brownfield or secondary market deals are often easier to deliver in developing markets as the asset is established, with procurement and construction risk no longer relevant, while there is often a clear offtake or revenue stream.

On the other hand, the procurement of Greenfield projects is complex, requiring relatively greater capital infusion, robust procurement processes and clear regulatory regimes to ensure confidence in the bidding process. Each project can have a procurement period of several months (in some cases years) before construction begins. The risk profiles of Brownfield and Greenfield assets therefore differ.

The length of time taken to procure Greenfield assets is often cited as a barrier to PPP when governments

contemplate procurement methodologies. Clearly, long term, robust planning processes and pipeline management can address this issue.

Results from the 2011 PwC Infrastructure Survey show that respondents perceive developed markets to have more opportunity than developing markets in Brownfield infrastructure. This makes sense – mature markets have a larger, more mature infrastructure stock that can be sold in the secondary market. Australia/New Zealand, Singapore and South Korea were perceived to have the most opportunity in Brownfield projects, followed closely by China (see figure 8). These results are consistent with the results seen in the 2010 PwC Infrastructure Survey.

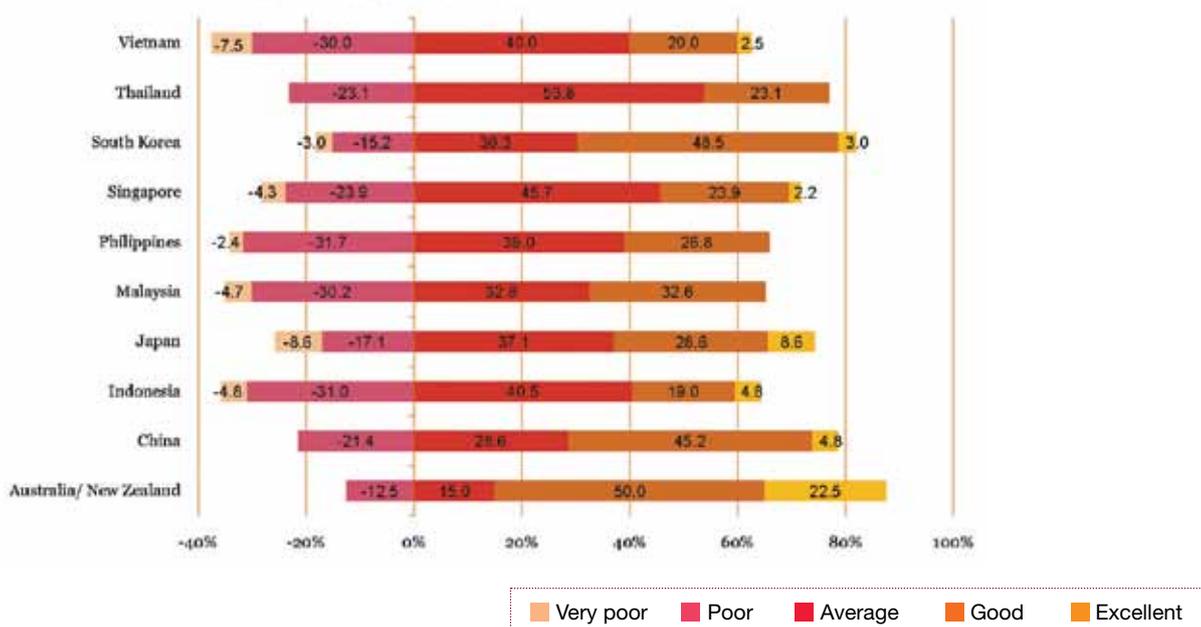
With regard to Greenfield projects, theoretically, the pipeline of opportunities across developing countries should be substantial due to the current infrastructure gap. However, the ability of governments to take these

opportunities to market has been limited due to poor regulatory and policy frameworks, shallow capital markets and inequitable risk allocation.

In last year’s PwC Infrastructure Survey, developed economies were perceived to have more opportunities than developing economies in Greenfield projects, for the reasons noted above. While China was perceived to have the most opportunity, the other markets with high perception of opportunities in Greenfield projects were all developed: Australia/New Zealand, Singapore and South Korea.

However, in the 2011 PwC Infrastructure Survey, the top three spots were taken by developing markets: China, Indonesia and Vietnam (see figure 9). Hopefully this is an indication that the effort being made by the regional developing countries to develop more robust procurement and regulatory frameworks, improve the management of pipeline while recognising that private sector participants will not accept all risk is starting to be reflected in the eyes of the private sector.

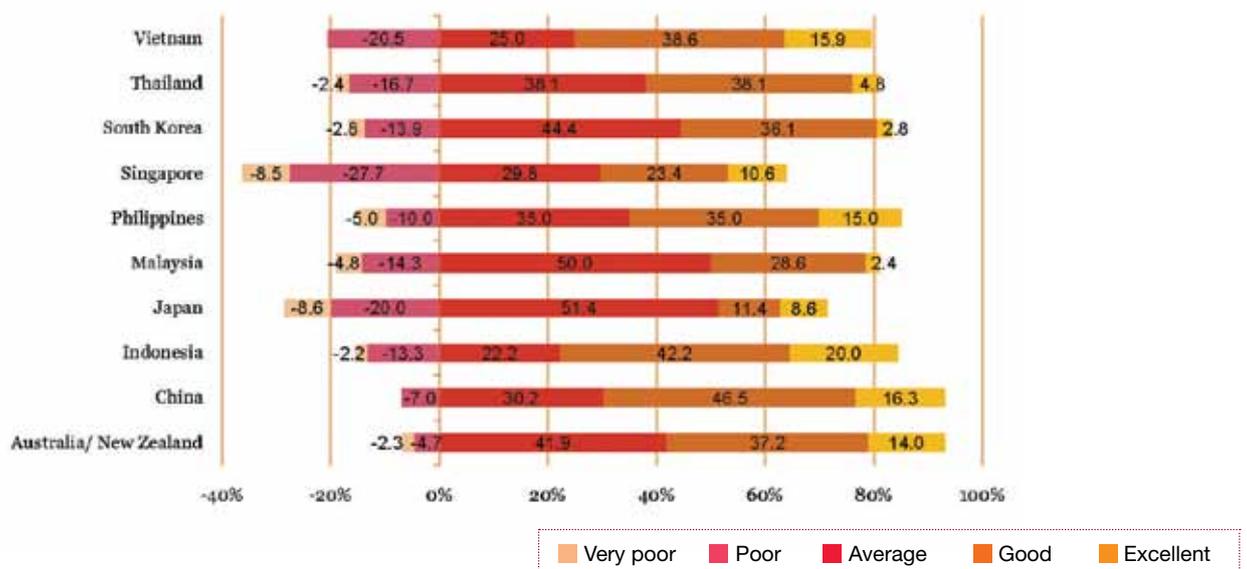
Figure 8: The strength flow and opportunities for brownfield assets (i.e. existing/operating assets) available for investment



Japan

- The total cost required for rebuilding infrastructure due to the recent earthquake is estimated to be around US\$200 billion;
- The nuclear crisis is suddenly opening up a new market in renewable energy, which currently supplies only 1% of power;
- A new feed-in tariff legislation passed by the Diet will be a major driver for renewable projects, including solar and wind;
- A shift to renewable energy will accelerate the demand for development of “smart” cities;
- The use of PFI/PPP is expected for the reconstruction, particularly as the government has amended PFI law to expand the market and allow “concession-type” schemes for economic infrastructure projects;
- Given the fiscal constraint, the government aims at doubling the size of PFI/PPP market for the next decade; and
- Japan is faced with ageing infrastructure. Private sector investment will be required under the current fiscal situation at both central and local level.

Figure 9: The strength of deal flow and opportunities for greenfield assets (i.e. new build assets) available for investment



General Observations

Economies in the region are experiencing strong GDP growth and are therefore setting strong targets for infrastructure investment. As a result, regional governments are doing their best to address concerns of the market around procurement, regulatory and legal frameworks, risk allocation and the level of government support given to certain aspects of delivery.

It is clear from the results of the 2011 PwC Infrastructure Survey that the majority of opportunity remains in economic infrastructure – power, water, transport. Regionally, the most attractive markets appear to remain China, Indonesia, Vietnam, Thailand and the Philippines.

Brownfield opportunity in developed markets is seen to be stronger than the opportunity in developing economies. Greenfield opportunity is becoming more relevant in the emerging markets of Asia,

as governments address real concerns around procurement, legal and regulatory frameworks; manage pipeline more effectively; and consider the implications of inequitable risk allocation. This is clearly being recognised by the market.

However, strong growth in an economy can lead to an over estimation of the needs for infrastructure in the wrong areas. The number of less viable projects also increases as governments see PPP as a solution that can solve all infrastructure needs. This leads to fiscal stress and a relatively higher failure rate in the procurement of non-viable infrastructure projects, which in the end erodes the market's confidence in a government's ability to close viable deals.⁷ It is therefore important that governments set realistic targets for PPP projects, maintain fiscal sustainability as they continue to use PPP as a procurement tool, and manage their procurement pipeline effectively. On the

other hand, the private sector needs to ensure they focus on deals that should be viable – placing more emphasis on identifying the “real” deals that can be done.

Economies that have relatively lower failure rates of PPP projects share certain criteria: strong economic growth and robust capital markets, flexible exchange rates, open economies, well understood regulatory regimes and greater extent of private sector ownership.⁸ Pilot PPP projects in developing markets should be smaller and less complex. These projects have a higher likelihood of success and could be used by a government to streamline process and policy as well as to showcase successful examples to the investor community.

⁷ Renato E. Reside Jr. (March 2009) 'Global Determinants of Stress and Risk in Public-Private Partnerships (PPP) in Infrastructure' ADBi

⁸ Reside, Renato E. Jr, Mendoza Amado M. Jr. (March 2010) 'Determinants of Outcomes of Public-Private Partnerships (PPP) in Infrastructure in Asia' Discussion Paper No. 2010-03, UP School of Economics

Vietnam

- A PPP framework was issued in November 2010, which is aimed at promoting the development of PPP projects;
- Pilot projects announced in 2007 include expressways, sea ports, air ports, bridges;
- Many infrastructure projects are combined with a real estate development component, increasing complexity and risk for investors/lenders;
- The government is actively promoting IPPs to meet electricity demand;
- Decree 108 on BOTs was passed in January 2010, which is aimed at streamlining procurement process;
- Until January 2010, only 2 major power plants were owned by foreign investors, however through 2010 a number of projects have attracted international interest;
- The country faces a significant infrastructure gap, with limited government expertise and experience; and
- The multi-laterals are actively engaged in supporting the Vietnamese government's drive to develop robust procurement frameworks and deliver infrastructure investment.



The Funding

The global financial crisis substantially impacted the funding of infrastructure globally. The immediate aftermath of the crisis saw a sharp reduction in liquidity across the market globally as banks sought to strengthen their balance sheets. Further there was a substantial increase in cost of funds for both sponsors and lenders. Financeable deals in early 2008 became unbankable quickly post crisis due to a lack of liquidity and higher cost.

In the period since the middle of 2010 liquidity has returned to the lending market, albeit with less aggressive project structures (lower gearing, shorter tenors) and at a far higher cost – arrangement and commitment fees are higher, and margins have substantially increased (offset by lower underlying base rates).

There is no shortage of available equity for investment, although identifying good, viable transactions is a challenge. In addition, the level of scrutiny by sponsors and lenders on opportunities in the market is far greater. The result has been more in depth due diligence with

far lower risk thresholds.

The Asian market changed substantially post crisis. Traditional European project finance lenders refocused on their home jurisdictions, leaving a vacuum of available private sector infrastructure finance regionally. This vacuum has been filled by sponsors and lenders who have a stronger understanding and affinity with the Asian market.

Further, the equity and debt capital that is available will gravitate towards only well structured, viable and well understood transactions. This has deep implications for the developing markets of Asia, which must recognise that their projects are competing with all the other projects being procured in other jurisdictions for the limited capital that is available within a market at any one time.

The 2011 PwC Infrastructure Survey clearly shows strong availability of both debt and equity in the developed regional markets. The availability of capital in developed markets is a reflection of their

mature financial markets. Sponsors and lenders understand the regulatory and procurement frameworks in those territories, and projects are structured effectively with equitable risk allocation, using established precedent.

Conversely, the equity and debt capital available for the developing economies is limited. This is a result of thin domestic capital markets, compounded by a lack of transparency in regulatory and procurement frameworks, poorly structured transactions (often overloading the private sector with risks it cannot mitigate and manage), and political risk and exchange rate issues to name a few. However, sponsors and lenders remain willing to invest capital for well structured transactions in developing markets.

Furthermore, there is a clear recognition that mature infrastructure markets are becoming or are already highly commoditised, with relatively thin returns. Asia offers an opportunity to generate higher returns if the correct transaction, with the appropriate risk profile is identified.

Figure 10: The perceived availability of equity

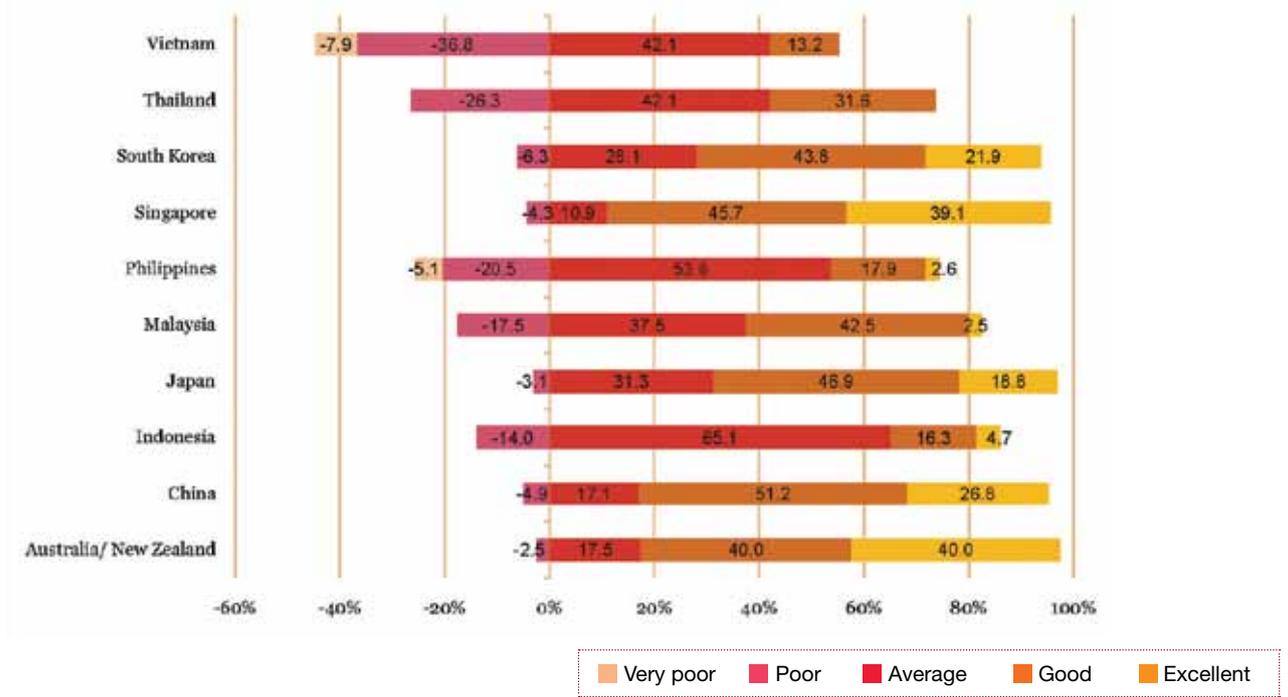
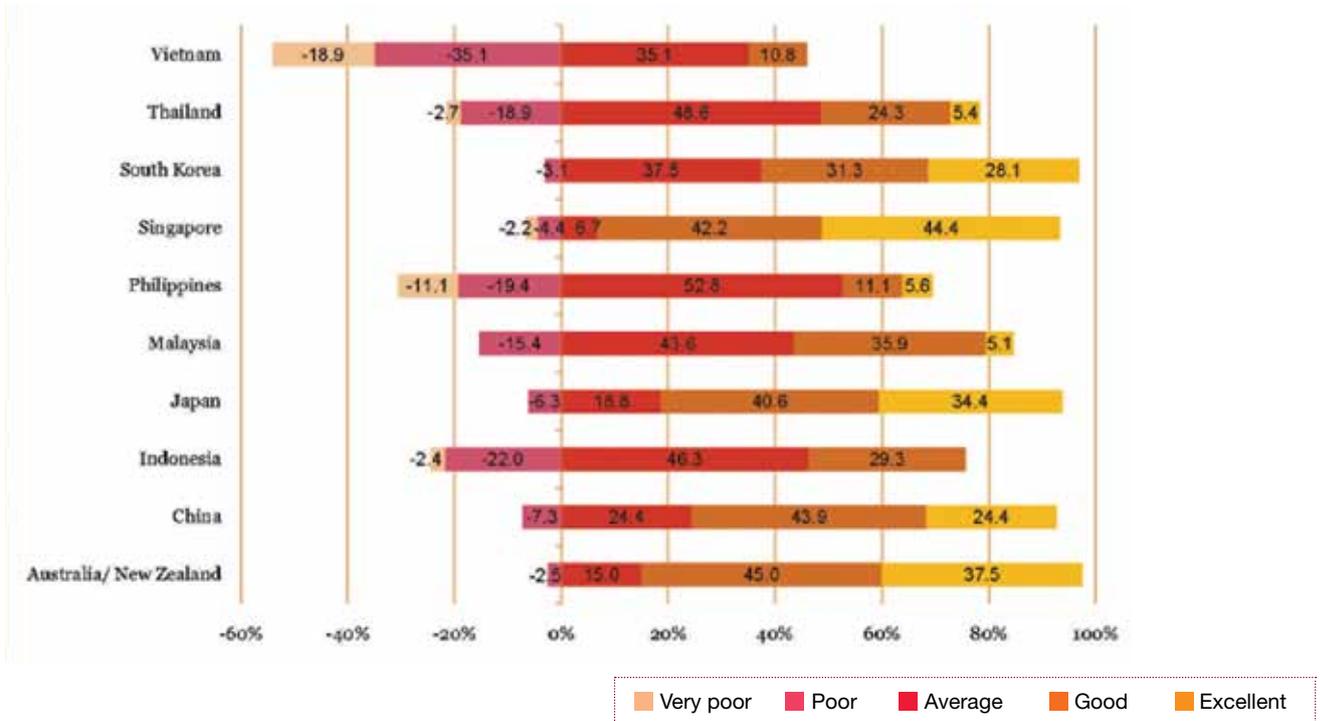


Figure 11: The perceived availability of debt capital



Developing economies receive support from multilateral agencies and development banks (ADB, World Bank, IFC, MIGA, JBIC, JICA etc) which assist in providing long term loans and guarantees. These loans can be categorised into two broad areas – technical assistance loan packages, which are given to governments to spend on capacity building and procurement programmes; and direct lending (and sometimes equity) to projects.

The multilaterals play an invaluable role in providing funding to developing governments. Firstly, most multilaterals require strict adherence to accepted procurement principles as a pre-requisite for providing loan assistance. Secondly,

the technical loan assistance packages provide a source of funding that allows capacity building and the strengthening of government procurement agencies. Finally, direct lending or sponsorship (or provision of political risk insurance) improves the credit relationship between the government offtaker and private sector lenders.

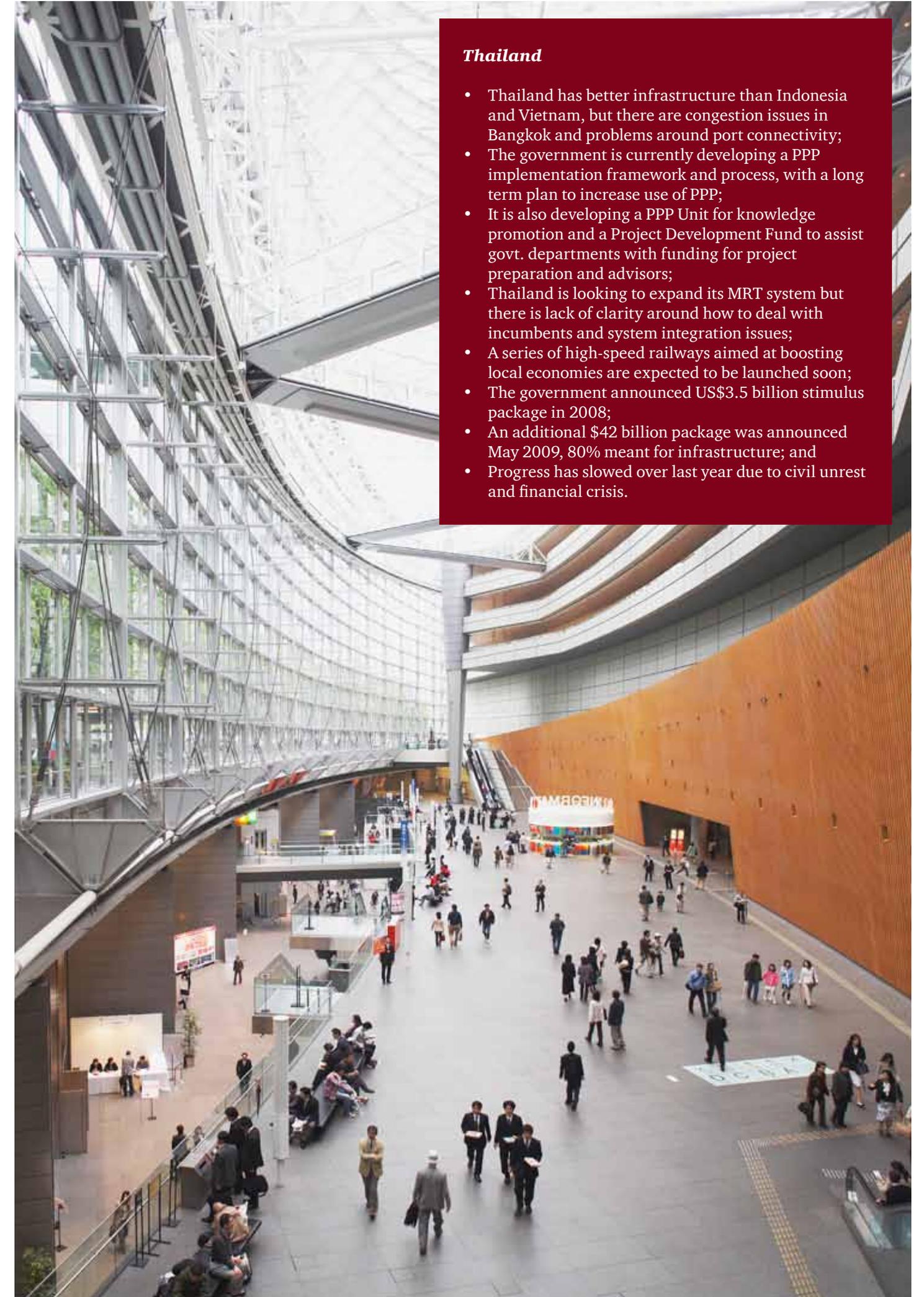
However, multilaterals have limited funds that are considerably stretched. Table 4 below shows that within the developing economies of East Asia and Pacific, in the nineteen year period 1990-2009, only 8% of infrastructure projects with private participation received some kind of support from multilateral agencies.

Over the last few years, the rise of infrastructure as an asset class has been accompanied by a proliferation of infrastructure funds. These funds are backed by investors looking for stable returns over the long run as opposed to private equity funds that look for an earlier exit and higher returns. While in principle these funds provide tremendous potential for projects in Asia-Pacific, infrastructure funds prefer to finance viable Brownfield investments rather than Greenfield projects. Apart from a few exceptions, infrastructure funds are generally not comfortable taking development and construction risks.

Table 4

Type of Multilateral Support	Developing Countries in East Asia and Pacific (1990-2009)	
	Percentage of Total Projects that Received Support from Multilaterals	Number of Projects that Received Support from Multilaterals
Loan	4%	63
Guarantee	2%	22
Equity	1%	13
Syndication	1%	11
Quasi-Equity	0%	6
Insurance	0%	1
Risk Management	0%	3
Total	8%	119

Source: PPIAF Database



Thailand

- Thailand has better infrastructure than Indonesia and Vietnam, but there are congestion issues in Bangkok and problems around port connectivity;
- The government is currently developing a PPP implementation framework and process, with a long term plan to increase use of PPP;
- It is also developing a PPP Unit for knowledge promotion and a Project Development Fund to assist govt. departments with funding for project preparation and advisors;
- Thailand is looking to expand its MRT system but there is lack of clarity around how to deal with incumbents and system integration issues;
- A series of high-speed railways aimed at boosting local economies are expected to be launched soon;
- The government announced US\$3.5 billion stimulus package in 2008;
- An additional \$42 billion package was announced May 2009, 80% meant for infrastructure; and
- Progress has slowed over last year due to civil unrest and financial crisis.

The Risks

Equitable risk allocation is a key part of effective infrastructure procurement. Investors and developers in emerging economies face several risks such as political risks, regulatory risk, currency risk and sub-sovereign risk. Most of these risks would not be relevant in more mature infrastructure economies. These need to be considered when assessing the scale of opportunity regionally.

Regulatory risk arises in economies that have relatively new regulatory systems or that lack robust legal and regulatory systems. Responses from the 2011 PwC Infrastructure Survey show that the countries with mature infrastructure markets are also perceived to have good or excellent legal and regulatory frameworks- Singapore, Australia/New Zealand, South Korea and Japan (see figure 12).

A similar trend is seen in the ability of countries to handle political risk.

According to responses to the 2011 PwC Infrastructure Survey, Singapore, Australia/New Zealand, South Korea and Japan are considered excellent or good in terms of ability to manage political risks (see figure 13).

In order to manage political risk, Partial Risk Guarantees (PRG) and Political Risk Insurance (PRI) can be bought as risk mitigation tools in the market or through multilateral agencies.

Further, it is becoming evident that international investors are recalibrating their risk/return expectations for certain developing markets. The market's appetite for investing in emerging market infrastructure is increasing with specific emerging market infrastructure funds being launched, and more established multi-national companies looking to invest capital in these territories as they seek to capitalise on solid returns for good projects. For example, for the

Jhajar power plant in India, three international banks, BTMU, HSBC and Standard Chartered Bank, provided US dollar external commercial debt, without buying political risk insurance in the market.¹⁰

The fact that developing economies in the region face challenges in closing transactions due to limited access to finance and inadequate legal and regulatory structures is clearly reflected in results of the 2011 PwC Infrastructure Survey. Although China, Indonesia and Vietnam are perceived to have opportunity in infrastructure like transport, power and water, these are also the markets where it is challenging or very challenging to complete transactions (see figure 14). These results are consistent with the 2010 PwC Infrastructure Survey.

¹⁰ Project Finance International (22 December 2010) 'Asia-Pacific Awards'

Figure 12: The perceived strength of the regulatory/legal frameworks

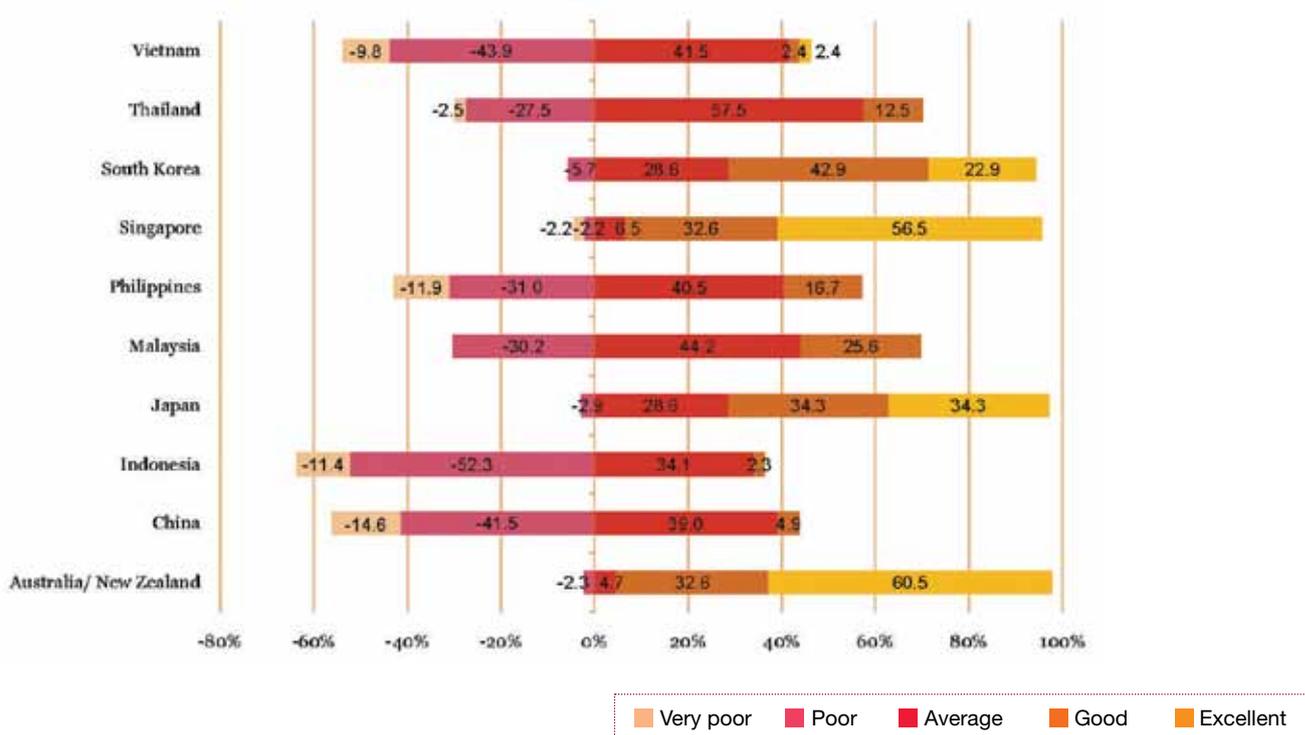


Figure 13: The perceived ability to manage political risk

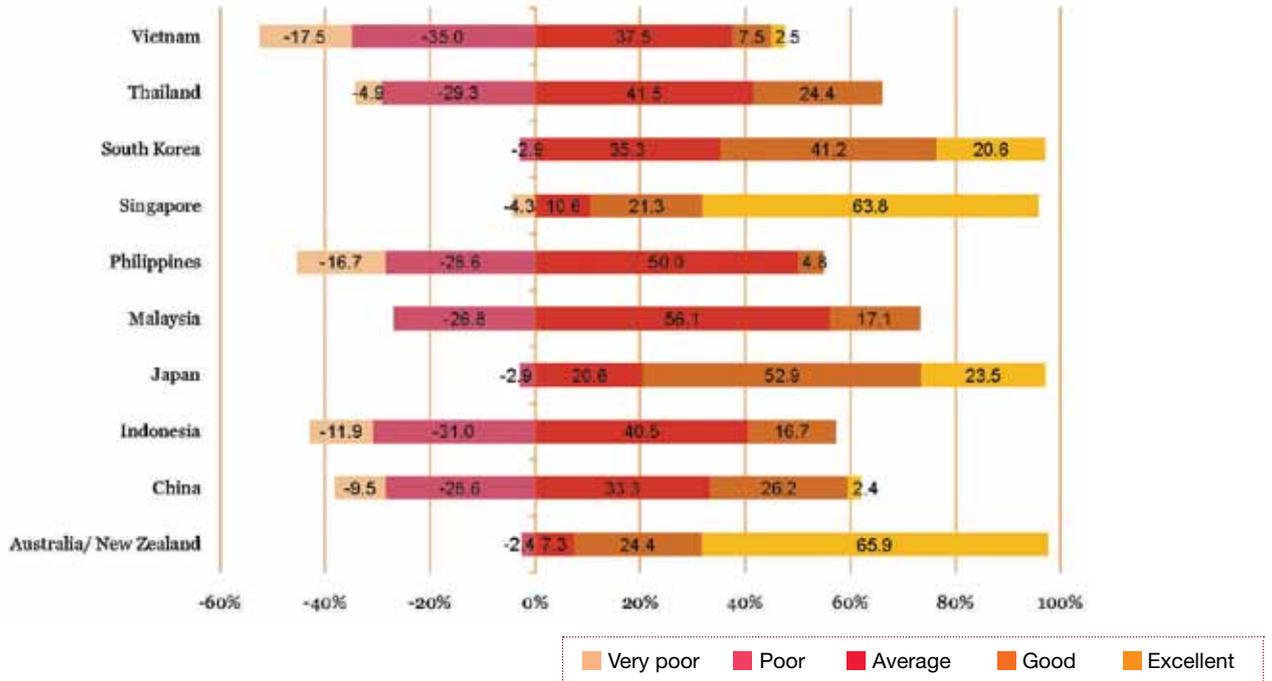
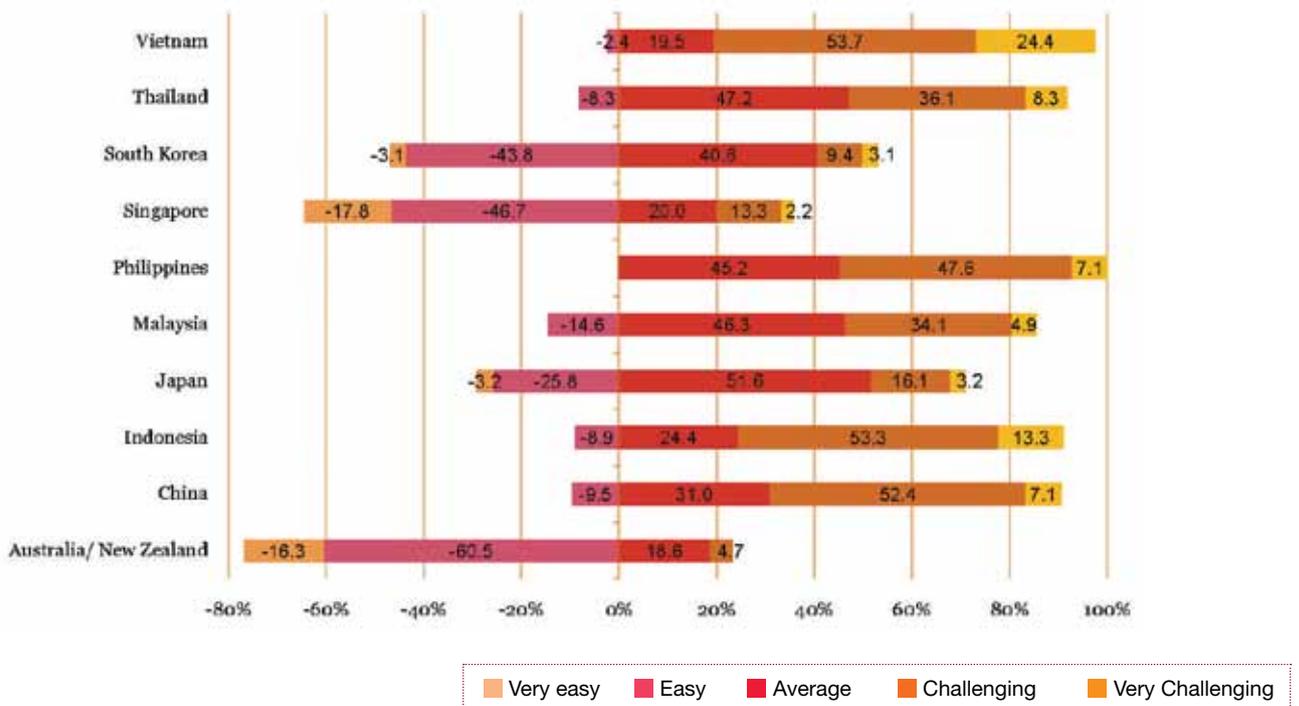


Figure 14: How difficult/easy is it to complete transaction?





The Issues

Poor regulatory and legal frameworks and ineffective procurement processes

Robust regulatory frameworks and a transparent procurement process are two key foundation stones of any government's procurement programme. A lack of transparent procurement process and relatively weak regulatory and legal frameworks remain key barriers to investment in some Asian countries.

Robust procurement processes would make the procurement of infrastructure in developing countries more effective, creating a more transparent environment and reducing cost. Transparent procurement rules should ensure that competition on good projects is strong, as bidders become comfortable with a well understood, fair process.

Lack of proper project pipeline management and communication

Without clear pipeline management and communication, the private sector is unable to plan its investment programme and certain economies may miss out on much needed capital due to failure or inability to plan a robust project pipeline. Capital and skills will flow to those markets with the best opportunity – communication and planning are key parts to ensuring governments attract the best skills and available capital to its projects.

Lack of depth in capability and capacity to deliver large scale infrastructure schemes

Developing economies lack strength in terms of skills/knowledge within both the public and private sectors, depth of construction expertise and operational expertise. Clearly this is an issue that takes time to address. However, as projects successfully come to close in these markets, so the level of understanding and depth of capacity will increase.

Inequitable risk allocation

Although there is an improved appreciation of the principles of equitable risk allocation, further development of these principles is required.

Governments across Asia need to recognise that it is not cost effective to transfer inherently governmental risk to the private sector (indeed, excessive risk transfer will create unbankable deals). The overriding principle should always be that risk should be borne by the party best placed to manage and mitigate the risk.

As an example, the acquisition of land for the purpose of developing infrastructure is a fundamental issue in getting an infrastructure project successfully off the ground. Land acquisition remains a key barrier to successful procurement of infrastructure regionally as government remains reticent or is not legally able to forcibly acquire land – in parts of Asia there is an expectation that the private sector fulfil this obligation once a concession is awarded. This often leads to spiralling costs and project failure as seller value expectations remain well above estimated market value. Clear mechanisms for government to retain this risk and support the private sector in acquiring the necessary land for say transport networks is necessary.

Disincentives for international investors

Local private players in developing economies are able to price and mitigate local risks more effectively than international investors unfamiliar with local market practice. Returns required by local participants are lower than those required by international investors, who increase pricing to compensate for the perceived additional risk of investing in an “unfamiliar” market. International investors therefore lack the incentive to invest their capital in these economies when similar returns can be generated in more familiar territories with more robust regulatory frameworks.

What does Asia have?

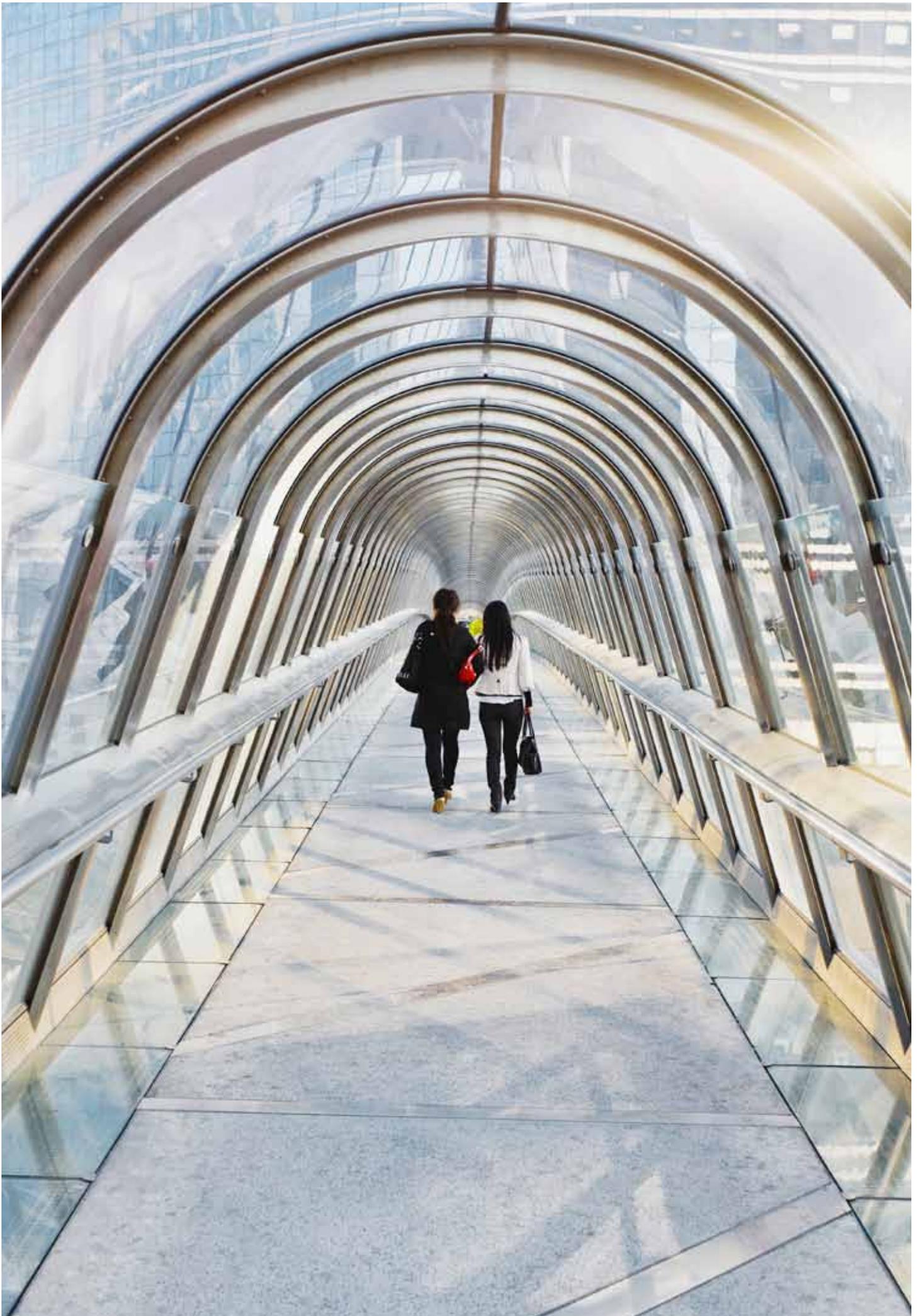
Key Characteristics	Sing	Indo	Aust	Viet	China	Phili	Thai
Robust legislative/regulatory framework	✓	✓	✓	✗	✗	✗	✓
Strong, long-term political commitment	✓	✓	✓	✓	✓	✓	✓
Effective debt/capital market	✓	✗	✓	✗	✓	✗	✗
Macroeconomic stability	✓	✓	✓	✓	?	✓	✓
Equitable project/concession agreements	✓	✗	✓	✗	✗	✗	✗
Feasible projects	✓	✓	✓	✓	✓	✓	✗
Fair and transparent procurement process	✓	✗	✓	✗	✗	✗	✗
Pipeline of projects	✗	✓	✓	✓	?	✓	✓

The Philippines

- The Philippines has opportunities in power, toll roads, airports, water;
- Elections in May 2010 have brought a new government to power, which has promised to provide a push towards strong infrastructure investment;
- The legal framework for PPPs is provided under the BOT Law (RA 7718) and latest IRR amended in 2006. A new PPP center has been set up with the aim of helping contracting agencies in project development and to provide technical assistance through the procurement process;¹⁴
- The aim is to use PPP as a procurement tool more effectively;
- The government expects to invest USD82 billion in energy during 2010-2030;¹⁵
- Renewable energy is drawing investment; and
- However, there is a perception of lack of transparency and high level of long-term currency volatility.

¹⁴ Paderanga, Cayetano W. Jr. (2010) 'The PPP Framework and the PPP Center' National Economic and Development Authority, Presentation made at Infrastructure Philippines 2010 17-19th November, Manila

¹⁵ Rene D. Almendras, Jose (November 2010) 'Energy Sector Investment Opportunities' Presentation made by Secretary, Department of Energy at Infrastructure Philippines 2010



Research methodology

As part of its commitment to developing the infrastructure market in Asia, PwC advises on opportunities and resolves issues in the infrastructure sector throughout the region. This interim report is intended to gauge perceptions among key stakeholders in the infrastructure market in Asia. The preliminary findings were derived from a quantitative survey, which was conducted among more than 50 respondents working in the infrastructure industry. Respondents of this survey included consultants, financial investors and those working with infrastructure companies. Administered online, the results were collated and analysed by a core team at PwC Singapore. The survey which was initiated in August 2011, is in its second year. PwC Singapore had published a report on the previous year's survey in October 2010.

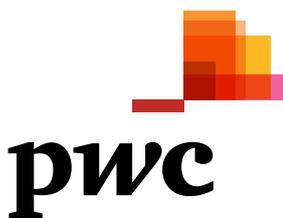
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