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***Investing in the ASEAN  
infrastructure asset class***  
Infrastructure Series Report 3







# Contents

<b>Foreword</b>	3
<b>Methodology</b>	4
<b>Chapter 1: Infrastructure as an asset class</b>	5
Assessing assets under management	5
Fundraising for infrastructure	7
Balancing risk and returns	9
Understanding investor types	10
Making investment decisions	13
<b>Chapter 2: Developments in the infrastructure asset class</b>	18
Key challenges facing infrastructure investors	18
Accepting greater risks to maintain returns	19
A stronger case for investing in renewable energy	21
The rising popularity of dedicated infrastructure debt funds	24
Investors going direct or via club deals	24
The emergence of mega funds	25
<b>Chapter 3: Addressing the challenges</b>	26
The role of government	26
Setting guarantee mechanisms in place	27
Attracting new forms of capital	28
The need for indices	32
<b>Chapter 4: Conclusion</b>	34
<b>Sources</b>	35



**DANGER**  
33000  **VOLTS**  
**HIGH VOLTAGE**

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# Foreword

There is a continued need for sustained infrastructure investment in ASEAN, and without this much-needed infrastructure, economic growth will remain slow. Commerce and industry need transport infrastructure, energy, utilities and logistics networks while taxpayers require fresh water, healthcare and education provision. Very few, if any, governments have the necessary capital to fund all of the infrastructure needs of their economies. As result, most governments aim to use both public and private sector capital sources for this purpose. However, public spending and the roll-out of new infrastructure continues to lag behind the demand for new infrastructure stock, resulting in a widening infrastructure gap.

The private sector has a role to play in bridging this infrastructure gap. Advisors, architects and master planners, constructors, asset operators and financiers are all fundamental to delivering global infrastructure needs. There are a number of barriers that continue to block the delivery of infrastructure. The financing gap or inability to match the demand for infrastructure finance with the necessary sources of finance is clearly a critical part of the infrastructure delivery process. This is all the more true in ASEAN, where government spending has traditionally been the main source of funding for infrastructure projects.

This report is the third and final in a three-part Infrastructure Series. In the first report, *Understanding infrastructure opportunities in ASEAN (2017)*, we discussed the existence of a widening infrastructure gap in the region, highlighted the potential difficulties faced by countries in mobilising infrastructure investments, and examined measures that could potentially address these challenges. In the second report, *Seizing greenfield infrastructure opportunities in ASEAN (2018)*, we discussed how the identified drivers are shaping the pipeline of greenfield infrastructure projects in each ASEAN country, both at a macro level and by looking at specific projects within the pipeline.

In this report, we will consider infrastructure as an asset class and how it compares with other asset classes while exploring the infrastructure investment landscape and financing developments. We will then examine the challenges faced by infrastructure investors, ways to address those challenges and explore possible future trends.

We hope that you find this final report in the Infrastructure Series a useful resource that addresses some of the key issues that we as infrastructure practitioners grapple with. If you would like to discuss any of the issues raised here, please get in touch with us.



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# *Methodology*

The comments and analysis in this report are based on data obtained from industry recognised sources such as Prequin Reports, and the experience and observations of infrastructure practitioners delivering both public and private sector infrastructure. Further, we have leveraged PwC's significant research and findings drawn from various previous

publications, which are available on PwC's websites. These information sources and our findings are supplemented with independent research to provide a holistic view of the topic. We have also included case studies and examples, where relevant, to illustrate the trends observed.



# Chapter 1: Infrastructure as an asset class

Infrastructure investors are a key pillar of the supporting ecosystem for the delivery of infrastructure projects. The role that investors play within this ecosystem has been explained in the first report of this series – they provide the necessary capital for building infrastructure projects and complement the role that has traditionally been filled by governments and commercial banks.

Alternative sources of financing infrastructure have developed over the course of time, as investors seek new ways of generating returns on their capital. Institutional investors tend to have long-term investment horizons and can access trillions of dollars in cash that needs investing. Infrastructure cash flows tend to be long term, with relatively low volatility that are inflation protected.

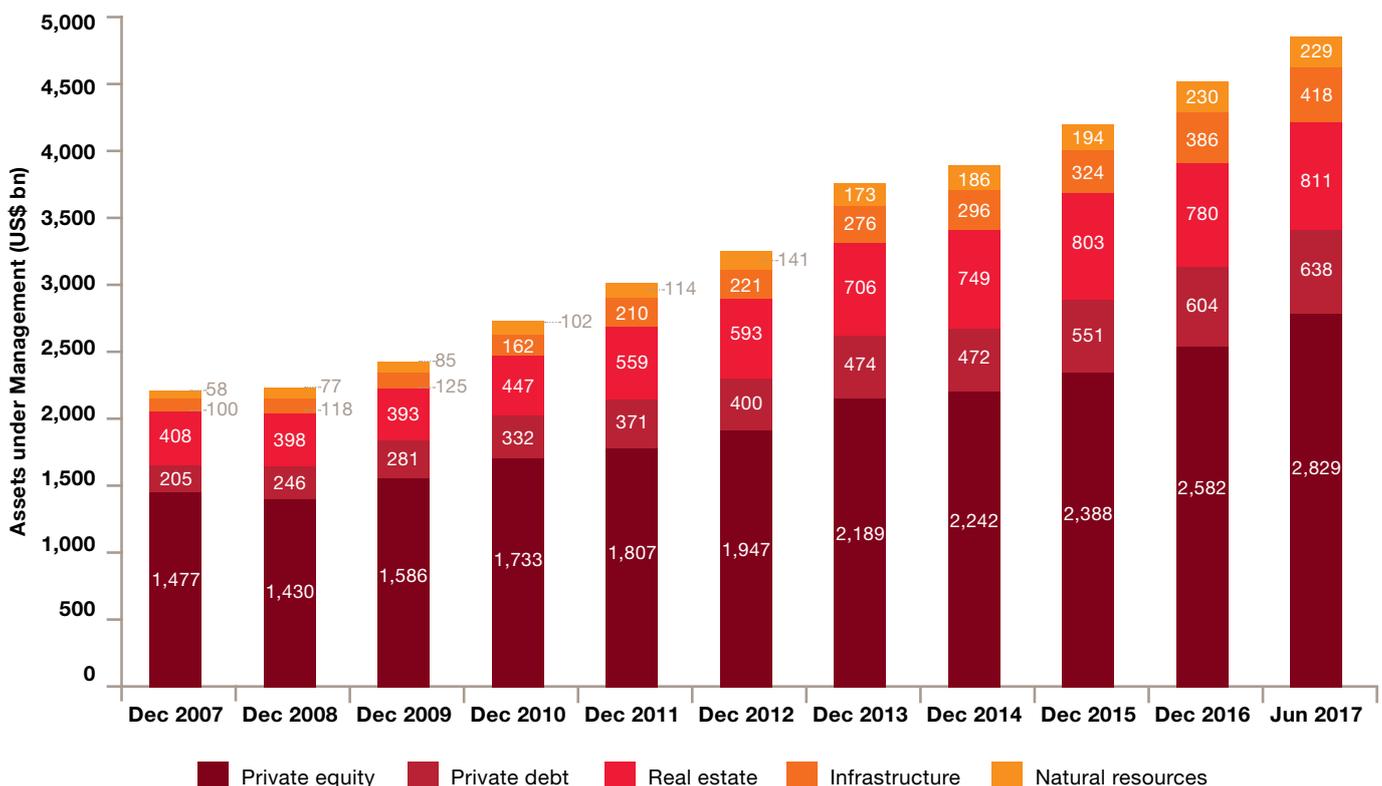
Infrastructure investments are therefore an attractive asset class for institutional investors as the long-term return profile of infrastructure assets act as a hedge to the long-term obligations of these institutions. The long-term nature

of institutional investors' return profiles makes them a very suitable long-term source of capital for infrastructure projects that must be accessed if the region's infrastructure needs are to be met.

## Assessing assets under management

Infrastructure investment is typically characterised by steady cash flows and predictable returns. Institutional investors seek infrastructure asset investments as infrastructure asset return profiles match the long-term nature of institutional long-term obligations, diversify their portfolios and protect against inflation. The unique characteristics of infrastructure assets have fuelled strong growth in fund assets under management (AUM) and enabled recognition of infrastructure as a separate asset class of its own.

Figure 1: Private capital AUM by asset class, 2007-2017



Source: Preqin Global Infrastructure Survey 2018

AUM of the global unlisted infrastructure market stood at US\$418 billion (approximately 8.5% of total private capital AUM) as at June 2017, following year-on-year increases since 2007. In fact, the industry has more than tripled in size since the end of 2009 (December 2009 AUM: US\$125 billion)<sup>1</sup>.

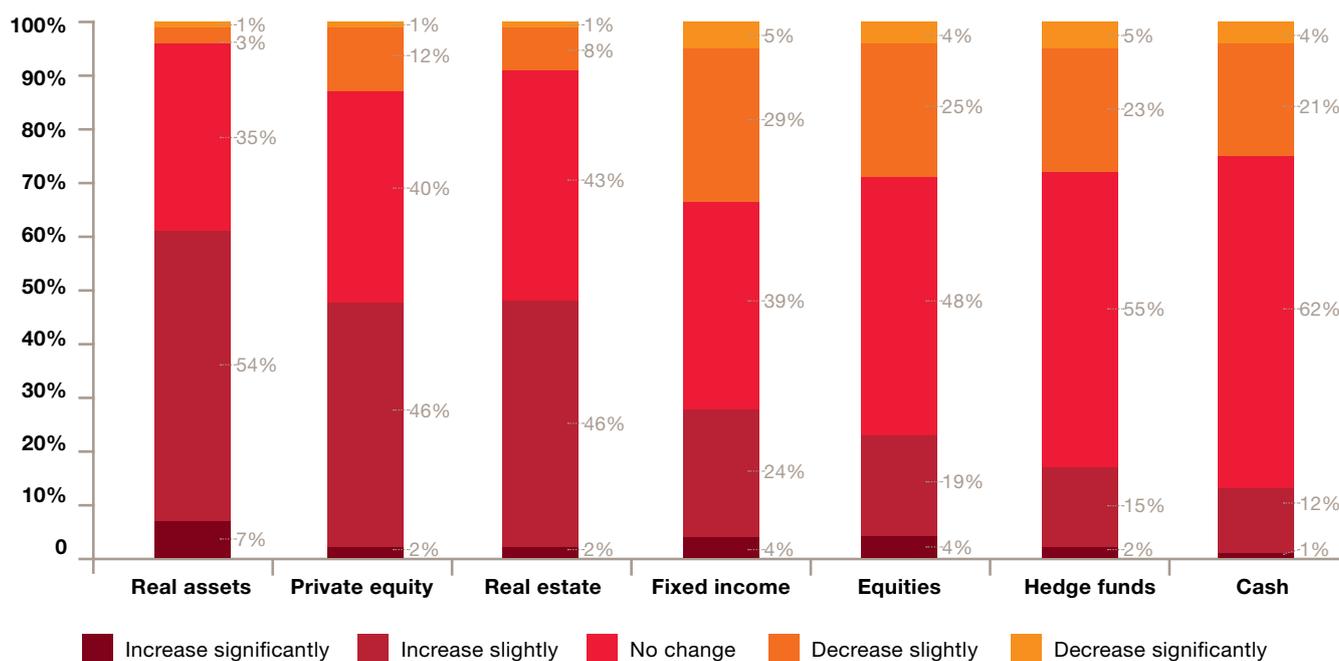
Infrastructure AUM has grown at a compounded annual growth rate (CAGR) of 16.2% in the period between December 2007 and June 2017, which, notably, is almost double the growth rate of the broader alternative assets industry (8.6%). This is representative of the growing importance of infrastructure within investors' portfolios. Of the US\$418 billion, US\$268 billion was in capital commitments in funds that has been called up by fund managers (unrealised value), while capital that has not yet

been deployed by fund managers (dry powder) stood at US\$150 billion<sup>1</sup>.

Listed infrastructure funds remain a relatively niche area. Investor activity and AUM within the listed infrastructure fund market remain a fraction of the AUM within the unlisted infrastructure market. There were 54 listed infrastructure funds at the end of 2017<sup>2</sup>, with an estimated AUM of approximately US\$50 billion at the end of 2016<sup>3</sup>.

In an annual institutional client rebalancing survey conducted by BlackRock, 61% of institutional investors expect to further increase their fund allocation to real assets (including infrastructure)<sup>4</sup>. This was the highest percentage among all the asset classes.

**Figure 2: Institutional investors' expectations for investment strategies in 2017**



Source: BlackRock, 2017 Global Institutional Rebalancing Survey

<sup>1</sup> Prequin Global Infrastructure Report 2018, PwC analysis  
<sup>2</sup> Prequin Global Infrastructure Report 2018  
<sup>3</sup> Financial Times 2017  
<sup>4</sup> 2017 Global Institutional Rebalancing Survey, BlackRock

## *Fundraising for infrastructure*

Globally, infrastructure funds raised US\$65 billion in 2017, as compared to US\$66 billion in 2016 and US\$44 billion in 2015. Of note, US\$15.8 billion was raised by Global Infrastructure Partners III, making it the largest infrastructure fund of all time.

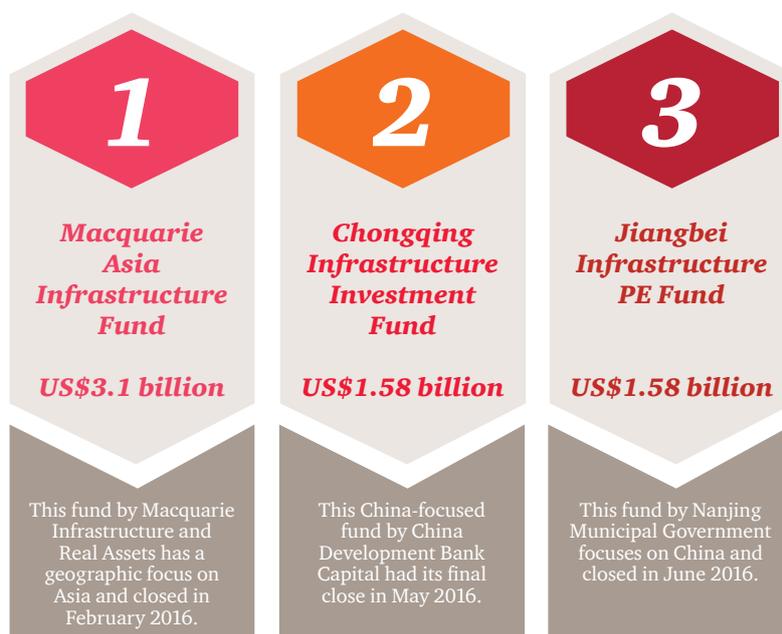
The majority of unlisted infrastructure capital remains focused on the North American and European markets. 2017 was a relatively weaker year for Asia-focused funds, where US\$1.5 billion was raised through seven funds. This could be a result of the large amounts raised in the previous two years and subsequent focus on deploying the raised capital. Further, the lack of viable infrastructure projects

for infrastructure fund investment in ASEAN continues to partly divert investor attention away from ASEAN, to markets with more sustainable infrastructure programmes. In 2016, five Asia-focused funds closed with US\$8.5 billion secured, following US\$7 billion secured by 16 funds closed in 2015. Asia-focused funds raised an average of 16% of global aggregate capital raised from 2012 to 2016.

Macquarie Asia Infrastructure Fund (MAIF) accounted for 36% of the aggregate capital raised by Asia-focused funds in 2016, securing US\$3.1 billion in investor commitments, and making it the largest Asia-focused unlisted infrastructure fund of all time.



**Figure 3:** Top 3 Asia-focused unlisted infrastructure funds closed in 2016 and 2017



Source: Preqin Global Infrastructure Survey 2017, 2018

### Macquarie Infrastructure and Real Assets

Macquarie Infrastructure and Real Assets (MIRA) is the world's largest infrastructure asset manager, managing close to S\$150 billion (US\$114 billion) worth of assets on behalf of pension funds, sovereign funds, insurance companies and other investors. MIRA recently closed two Asia-focused funds — Macquarie Asia Infrastructure Fund 1 and 2.

#### Macquarie Asia Infrastructure Fund 1 (MAIF 1)

In February 2016, MIRA announced the US\$2.3 billion close of its first Asian regional infrastructure platform, MAIF 1. MAIF 1 is focused on investment opportunities in transportation, communications, utilities, power, energy, and waste management assets across the region.

The 10-year fund, which will invest primarily in brownfield assets with a 20% exposure to greenfield assets, is targeting investments in investment-grade Asian countries. The fund targets a net Internal Rate of Return (IRR) of 14-16%, with an average annual yield target of 5-7%. Approximately 52% of its funds have been deployed as of 30 June 2017, across eight projects in various Asian countries, including India and Singapore.

#### Macquarie Asia Infrastructure Fund 2 (MAIF 2)

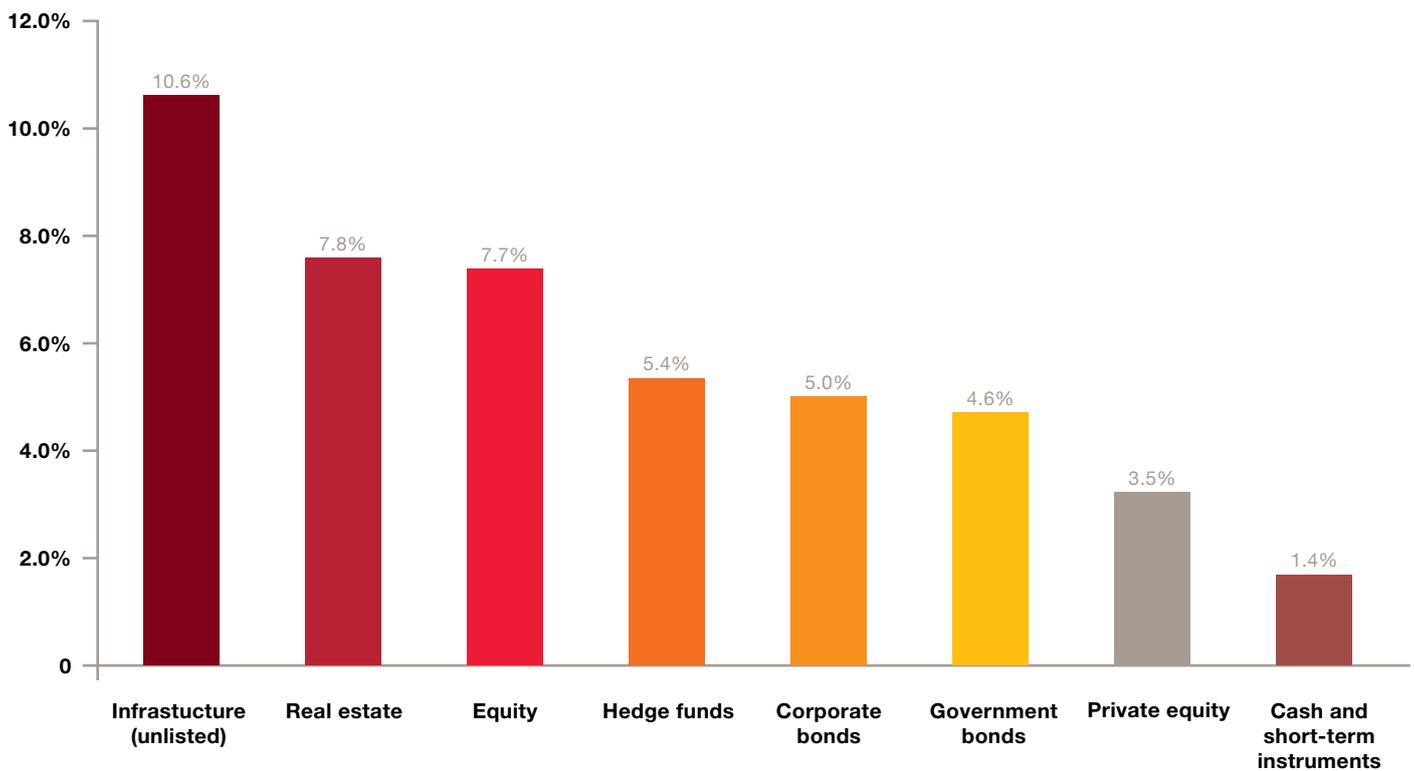
MIRA launched its second pan-Asia infrastructure fund, MAIF 2, with a first close of US\$2.96 billion in 2017. The Singapore-headquartered, 10-year closed-ended fund focuses on brownfield investments in Greater China, India, Japan, Korea, Australia, New Zealand and investment-grade markets in Southeast Asia. Similar to MAIF 1, MAIF 2 targets a net IRR of 14-16%. MAIF 2 made a US\$780 million equity investment in September 2017, co-investing with GIC (Singapore's sovereign wealth fund), in a stake in Energy Development Corporation, Philippines' largest vertically-integrated geothermal developer with 1,169MW of capacity.

## Balancing risk and returns

Institutional investors continue to see strong risk-adjusted returns from their infrastructure portfolios and remain committed to the asset class. Investor sentiments are largely positive with 93% of infrastructure investors surveyed by Prequin stating that the performance of their infrastructure investments met or exceeded their expectations in 2017. This

is up from 77% and 89% of survey respondents in 2015 and 2016 respectively. Additionally, 67% of investors are below their target allocation to infrastructure and 96% expect to either increase allocations or maintain current allocations to the asset class in the future compared to the past<sup>5</sup>.

Figure 4: Annualised 10-year returns, 2006-2015



Source: Prequin, PwC analysis

Historically, the infrastructure asset class has higher risk-adjusted returns, and has been a strong performer over a sustained period vis-à-vis other asset classes. Prequin found

that unlisted infrastructure provided an annualised 10-year return of 10.6% in the period of 2006 to 2015, which is far higher than other asset classes<sup>6</sup>.

<sup>5</sup> Prequin Investor Outlook: Alternative Assets H1 2018

<sup>6</sup> Prequin online

## Understanding investor types

The main players in infrastructure investment are specialist infrastructure funds and private equity funds. These funds tend to have a defined mandate, target return requirements that need to be met for specific investments (usually measured through the Internal Rate of Return or IRR), and

are usually close-ended (i.e. there is a target timeframe). The 10 largest fund managers globally are listed in Figure 5, and the six largest fund managers in Asia are listed in Figure 6, ranked by the total amount of funds raised in the last 10 years (2008-2017).

Figure 5: Top 10 fund managers in the unlisted infrastructure market



Source: Preqin Infrastructure online

Figure 6: Largest Asian fund managers in the unlisted infrastructure market



Source: Preqin Infrastructure online

The main direct investors are:

### ***Sovereign wealth funds (SWFs)***

A 2016 PwC Market Research Centre survey of 19 SWFs found that SWFs allocate an average of 6% of AUM to real assets, with roughly half of this going to infrastructure. Further, the proportion of SWFs investing in infrastructure has increased from 57% in 2014 to 62% in 2016. Most SWFs have a global remit, and 43% of them are investing in emerging markets<sup>7</sup>.

### ***Pension funds***

Pension funds favour infrastructure investments as the long-term return profiles match their long-term liabilities. PwC Global Funds analysis found that pension funds are going to further increase their asset allocation towards alternatives (including infrastructure), in order to diversify their investment portfolios and generate higher, sustainable returns.

### ***Insurance funds***

Insurance funds, like pension funds, favour the long-term return profile of infrastructure as this matches their long term-liabilities. PwC Market Research Centre estimates insurance funds to have the highest AUM growth rate of 7.2% annually from 2015 to 2020, as compared to other institutional investors. Insurance funds are increasingly looking to infrastructure investments as the sector where their increased AUM could be deployed.

The five largest direct investors are listed in Figure 7, and the five largest Asian direct investors are listed in Figure 8, ranked by their total allocations towards infrastructure.



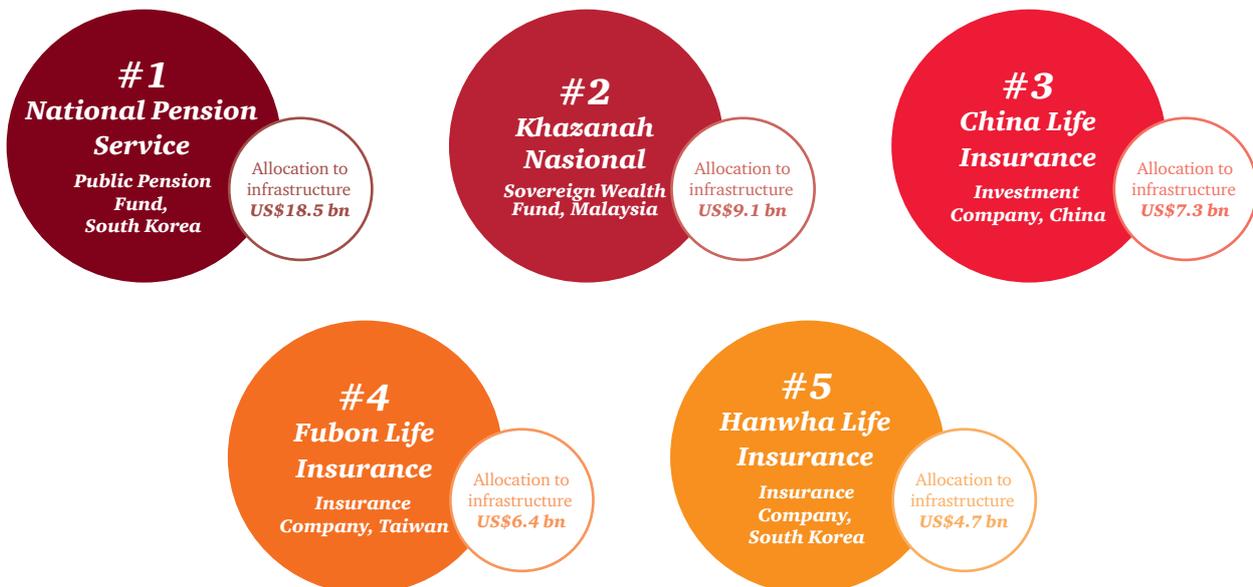
<sup>7</sup> PwC Market Research Centre analysis 2016

**Figure 7: Top 5 direct investors in unlisted infrastructure**



\*Estimated  
Source: Preqin Infrastructure online

**Figure 8: Top 5 Asian direct investors in unlisted infrastructure**



Source: Preqin Infrastructure online

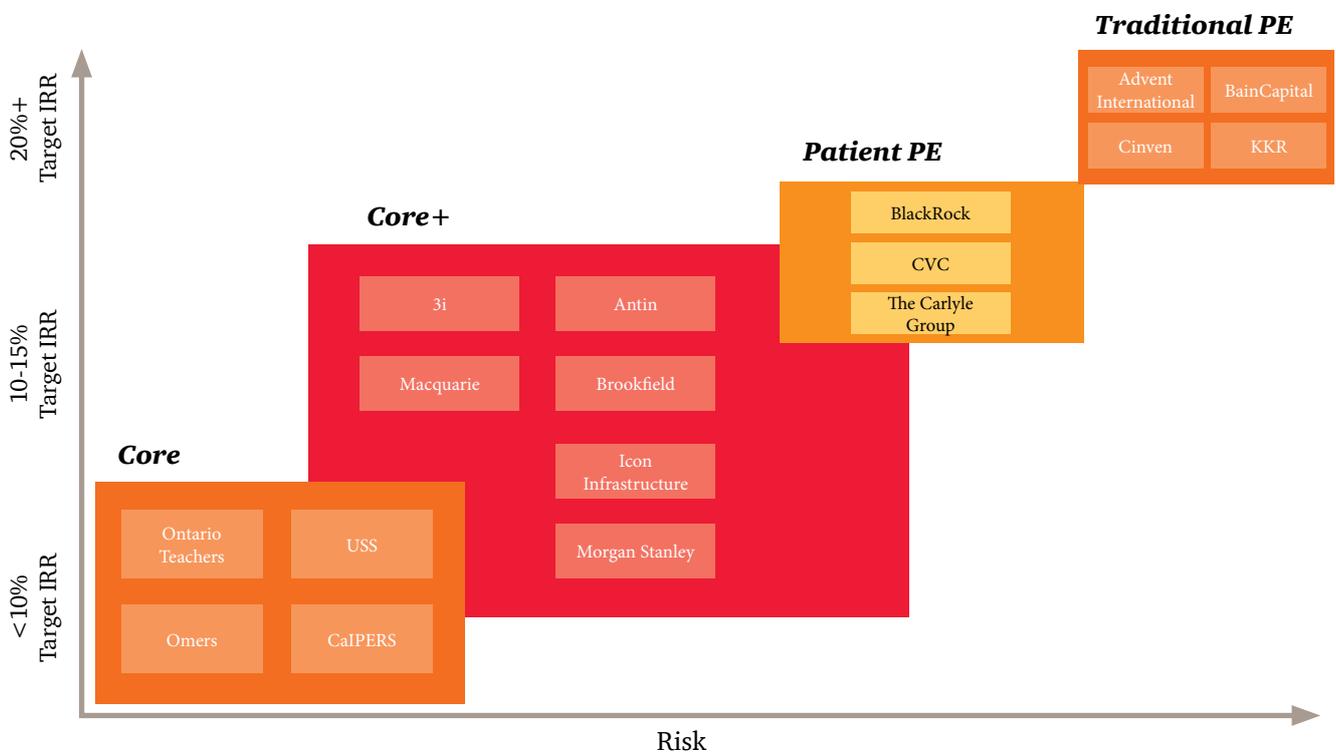
## Making investment decisions

Infrastructure investors deploy their funds according to the different mandates that govern how invested funds are deployed. Within the infrastructure asset class, there are a number of broad categories that define separate types of infrastructure investors:

### Risk-return objectives

Investors can be categorised according to their return objectives and appetite for risk, which are usually determined by the objectives of their stakeholders or the nature of liabilities that the funds aim to service. Figure 9 categorises investors into four broad categories based on risk-return objectives, and provide examples of each category of investor.

Figure 9: Risk-return objectives of infrastructure investors



Source: PwC analysis

Institutional investors tend to have a lower risk-return profile than other investors. They seek long-life assets, with risks that can be mitigated, limited, and understood. They also tend to prefer stable cash flows, rather than high returns over a short term with higher associated risk profiles. This sits within the definition of core infrastructure, which is essential, quality, and defensive assets with stable cash flow generating abilities. Core-plus infrastructure is similar to core, but are differentiated by their less regulated nature and exposure to demand risks.

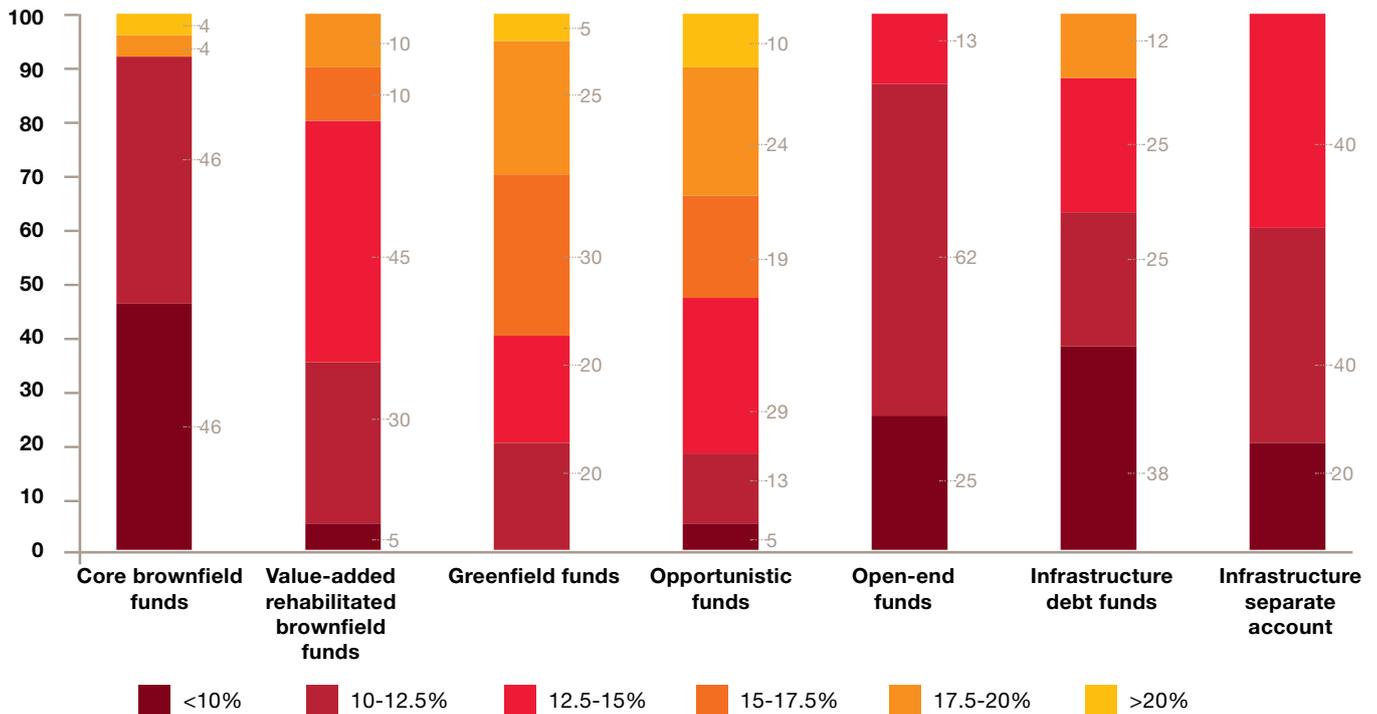
Private equity/infrastructure funds have the highest return requirements among investors, and usually look to exit investments within certain specified timeframes. Private equity players prefer opportunistic infrastructure, which are less defensive in nature and exposed to greater demand and operational risks. In return, opportunistic infrastructure assets offer higher growth potential in terms of value.

### Strategic focus

Infrastructure funds can adopt a particular strategic focus as a result of their specific mandate. Probitas Partners classified

infrastructure funds into seven categories based on their strategic focus, and surveyed investment managers within each category on their respective target IRRs.

**Figure 10: Target net IRRs of unlisted infrastructure funds**



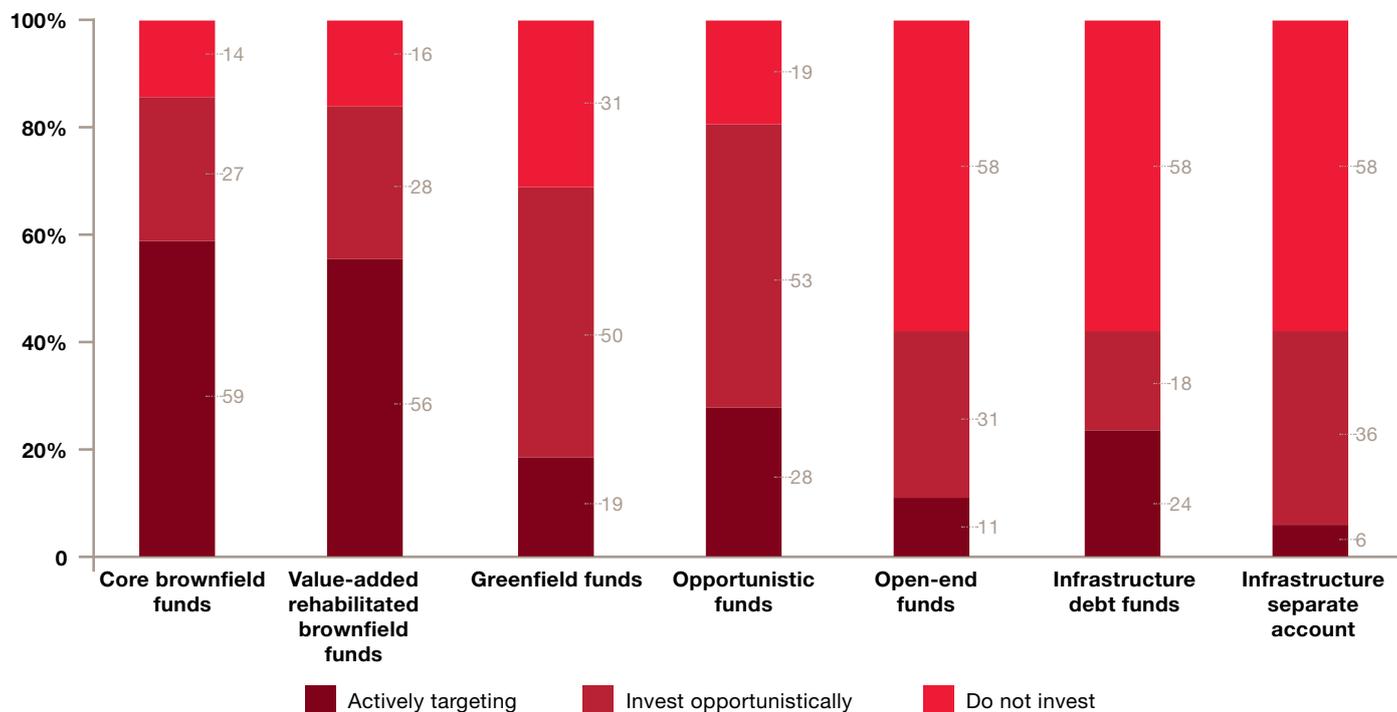
Source: Infrastructure Institutional Investor Trends for 2016 Survey, Probitas Partners

From the data above, we observe several noteworthy points. Firstly, core brownfield funds target lower IRRs, as the investments are less risky — the assets have completed construction and are operational; the investments into these assets are therefore not exposed to development and construction risks. Secondly, value-added brownfield funds, greenfield funds and opportunistic funds employ higher

risk strategies and target higher IRRs. Thirdly, debt funds, a recent entrant to the infrastructure market, have gained in popularity, and have target IRRs in the middle range.

Further, Probitas Partners surveyed institutional investors to gauge their interest in these seven fund strategies.

**Figure 11: Investor interest in fund strategies**



Source: Infrastructure Institutional Investor Trends for 2016 Survey, Probitas Partners

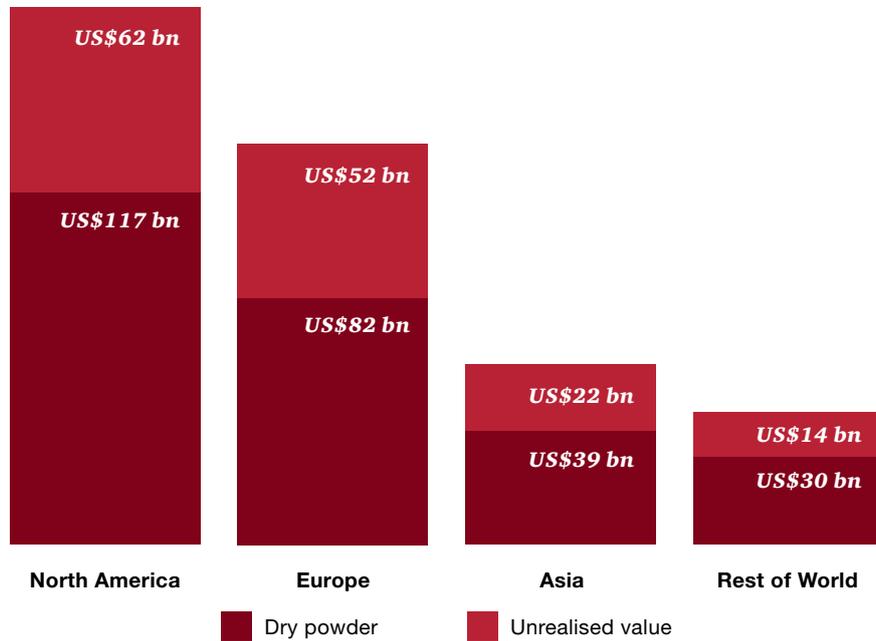
Brownfield funds are still the most popular, with more than 50% of respondents actively targeting core and value-added brownfield funds. Greenfield and opportunistic funds are relatively less popular among investors, with a respective 19% and 28% of respondents actively targeting these funds. However, these strategies are gaining popularity and traction, with more than half of respondents looking to invest opportunistically into these two types of funds.

### **Geographic focus**

Rather than focusing on risk-return objectives or a specific strategy, funds can be geographically focused, recognising that infrastructure assets in different regions in the world have different risk profiles and investor considerations.



**Figure 12:** Unlisted infrastructure AUM (US\$ bn) by primary geographic focus

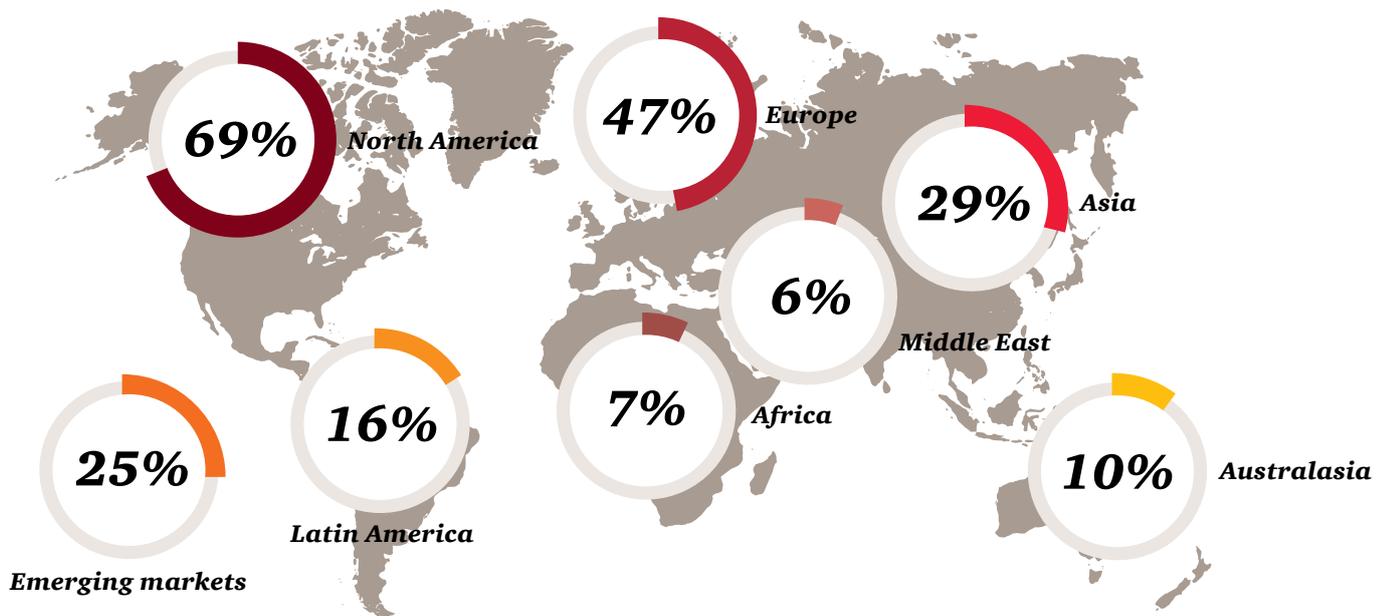


Note: Data as at June 2017  
 Source: Preqin Global Infrastructure Survey 2018

North America-focused funds continue to account for the largest proportion (43%) of global unlisted infrastructure AUM. In contrast, Asia-focused funds represent 15%

(US\$61 billion) of this and 16% (US\$22 billion) of global dry powder<sup>8</sup>.

**Figure 13:** Regions that investors view as presenting the best opportunities



Source: Preqin Global Infrastructure Survey 2018

<sup>8</sup> Preqin Global Infrastructure Report 2018

Over two-thirds of infrastructure investors (69%) believe North America presents the best investment opportunities, with Europe in second place at 47%. This is a reflection of the large amount of capital that has been invested in funds focused on these two regions. It is worth noting that these markets are relatively more mature than those across Asia, and have quite different characteristics. Some of these characteristics are noted below:

- They tend to have higher credit ratings, with less sovereign risk exposure (OECD, or OECD-like countries).
- They have more established, stable regulatory frameworks with transparent procurement processes and fewer incidences of corruption.
- They offer established, predictable greenfield infrastructure programmes, with well-structured projects, realistic risk-return profiles that tend to use past precedent as a basis for contracts. Even though emerging markets have a higher demand for greenfield infrastructure, it is evident that emerging markets are less successful at managing new infrastructure programmes, and rolling out infrastructure projects that are capable of attracting investment.
- They have more significant stock of brownfield investment opportunities that offer less risky investments for institutional investors.
- These procuring governments tend to have more capacity and experience.
- Most of these markets have established capital markets.

The above list is not exhaustive, but it is important to recognise that these characteristics are critical to the successful delivery of a sustainable infrastructure programme that provides confidence to investors and therefore attracts investment.

It bears noting that 29% and 25% of investors believe that Asia and emerging markets offer compelling opportunities at present. This could increase as intensifying competition for assets in established markets push investors to seek investment opportunities in Asia and emerging markets — if emerging market governments are able to better address the investment barriers discussed in Report 1 of this series. Increased competition among investors in mature markets and reducing yields are driving infrastructure investors into new markets where they may access more opportunities, with potentially higher returns. It is therefore an opportune time to create the right environment for these investors in the Asian market.



# Chapter 2: Developments in the infrastructure asset class

## Key challenges facing infrastructure investors

The key challenges faced across the infrastructure project lifecycle that were discussed in Report 1 of this series act as barriers faced by investors when deploying their dry powder. The challenges most pertinent to investors are set out in the table below.

**Table 1:** Key challenges facing infrastructure investors

<p><b>Uncertain legal and regulatory frameworks</b></p> 	<p>An uncertain legal and regulatory framework will block private sector capital from participating in infrastructure projects as investors require comfort and confidence in any market's regulatory regime or governing law. This issue is more prevalent in emerging markets, where there can be a lack of robust regulation and laws, or a failure to implement regulations that otherwise are easily understood by investors and reduce risk exposure. This limits the ability of emerging markets to develop infrastructure stock.</p>
<p><b>Different risk profiles of funds</b></p> 	<p>Fund managers have varying mandates, strategies and preferences (as discussed in Chapter 1 of this report). Investors face a challenge in finding fund managers whose risk profile, strategic and geographic focus align with their own investment mandates, risk appetite and horizons.</p>
<p><b>Inequitable risk allocation</b></p> 	<p>Governments can view private sector involvement in projects as a way to transfer risks to another party. The risks and the price of assuming these risks are key considerations to investors. Investors and potential investors face a challenge where risks are not allocated to them in an equitable manner, such as when investors are unwilling to undertake certain risks or where compensation is inadequate for the risks assumed. Potential investors will then choose to back other projects with a more equitable risk allocation structure or not invest their capital at all.</p>
<p><b>Increased competition stretching valuations</b></p> 	<p>Infrastructure fund managers and investors share concerns over increasing competition for investible assets and the resulting effect of rising asset valuations eroding investment returns. Fund managers cite valuations as the top challenge facing them in 2018, with 59% of fund managers agreeing that it is a key challenge<sup>9</sup>. Record levels of fundraising, coupled with investors going direct, have created an abundant supply of capital competing for these limited investment opportunities. At the same time, the number of viable assets in traditional areas (i.e. brownfield assets in OECD territories) are limited. The demand and supply interaction combine to push prices higher and stretch valuations further.</p>
<p><b>Availability of exit options</b></p> 	<p>The availability of exit options is important to investors looking to divest after a target timeframe. These investors are usually infrastructure funds and private equity players. Before committing the initial investment, investors analyse their exit strategies to free up capital for reinvestment into new projects. The exit strategies may involve a refinancing or sale of interest to an investor with a different risk-return profile that better matches the risk profile of the project at the time of divestment.</p> <p>The availability of a regional secondary market for infrastructure investments is essential, so as to facilitate the recycling of capital, the matching of buyers to sellers, and the matching of investment and exit preferences. Currently, the secondary market in ASEAN is still in the nascent stages, and investors have to navigate the developing legal and regulatory environment. There are challenges in opening the market to a broader group of investors, which is crucial for an efficient and attractive investing environment. For example, some governments in ASEAN have set limitations on foreign investment and ownership, which impedes the access of foreign investors to the region. This is especially prevalent within the infrastructure sector, which is often seen as a sector of national interest that should not permit total or majority foreign ownership. Although this is an obvious blockage to accessing private capital for infrastructure, the restrictions have not been removed.</p>

<sup>9</sup> Preqin Global Infrastructure Report 2018

## Accepting greater risks to maintain returns

Investors are expanding their mandates, moving up the risk-return spectrum and looking more towards emerging market assets in an effort to deploy their capital and access potentially more investible opportunities with higher returns than mature markets. We analyse the various strategies pursued by investors to access more opportunity: targeting wider geographies (developing countries), earlier stages of the project lifecycles (greenfield projects), and projects with different business models.

### Geography

Infrastructure funds have traditionally targeted OECD countries, where there is a longer history of private sector investment and a relatively more stable political and economic landscape, as discussed earlier. However, a crowded and competitive market has driven asset prices higher and forced investors to look elsewhere for affordable assets and improved returns.

Infrastructure funds are therefore expanding their geographical remit, including targeting infrastructure deals within the developing economies of Asia. Developing markets exhibit greater growth potential underpinned by macro, demographic and consumer trends. However, they contain a greater degree of risk due to a developing regulatory, political and legal environment that can lead to higher volatility and uncertainty.

### Project lifecycle

Traditional brownfield infrastructure offers the security of a mature and operating asset (which comes with significantly lower risk exposure). Returns are generally generated through the cash flows generated during the operation of the asset. However, increased competition for brownfield investments have suppressed returns. In Chapter 1 of this report, we discussed how brownfield funds have lower target IRRs and yet are still relatively more popular than other types of funds.

Greenfield infrastructure involves investment in the pre-construction/development phase of a project. Greenfield investments carry higher risk as the assets contain development risk and have a lack of operating history, but present greater potential return profiles as compared to brownfield investment opportunities. There is a higher element of capital appreciation present to boost total returns in exchange for investors taking on these higher risks. This segment has had success attracting pension funds recently, which until recently had largely avoided this segment due to the higher risk profile resulting from development/construction risks.



## Business model

One defining feature of traditional infrastructure investment models is the regulated nature of governmental infrastructure, which results in high cash flow certainty. Investors are venturing into commercially-contracted or even mercantile-styled business models in search for higher yields. An example would be data centres where commercial contracts are usually present but they can be classified as infrastructure investments as they share similar characteristics to more traditional infrastructure investments. As an example, data centre supply contracts can be compared to a power offtake agreement, though they are not governed by government regulation.

There are challenges for 'infrastructure' investors when investing in these projects. A lack of regulatory mechanisms expose the cash flows of the underlying asset to economic factors and demand drivers that are non-governmental. The return profiles can be more volatile due to exogenous factors and the external competitive landscape the asset is in. For example, certain commercial contracts have shorter term lock-ins, which increase the pricing risks on renegotiation and create uncertainty as to demand or future revenues.

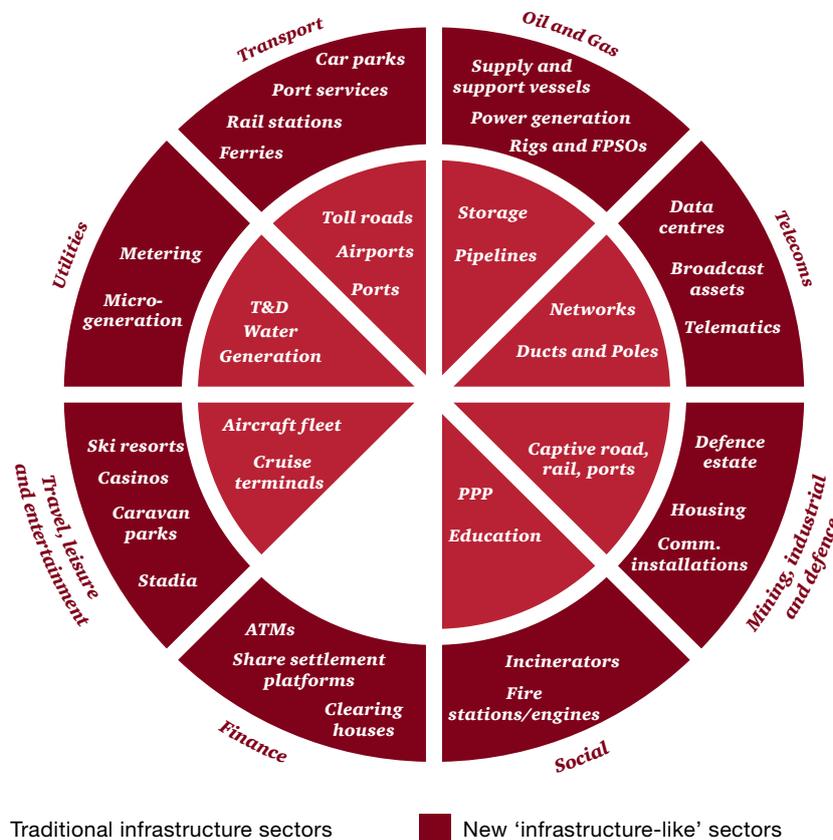
Lastly, key customer risk is more prevalent when dealing with commercial clients instead of a government entity. Despite these factors, these types of infrastructure assets are increasingly attracting specialist infrastructure investors.

## Sector

Fund managers surveyed by Preqin responded that competition within the asset class increased in 2017 as compared to 12 months ago, and that the competition has not manifested equally across all sectors as a whole. Fund managers note that there is greater competition in core and core-plus assets, and relatively less competition in the riskier sectors like opportunistic assets<sup>10</sup>. Investors who have a stronger risk appetite are moving into riskier 'infrastructure-like' sectors, stretching the definition of assets that fall under the infrastructure asset class.

The traditional definition of infrastructure has been focused more on regulated and essential assets in the sectors of energy, utilities, telecommunications and social infrastructure. At present, the asset class is expanding to encompass more sectors, which we have illustrated in Figure 14.

**Figure 14:** Investors are hunting for deals in a wide range of 'infrastructure-like' sectors



Source: PwC analysis

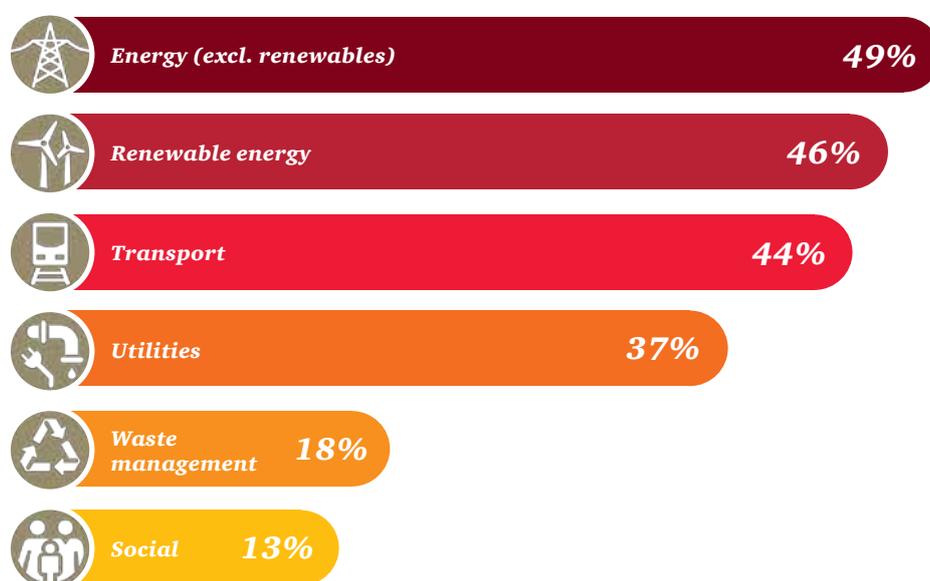
<sup>10</sup> Preqin Fund Manager Survey, Nov 2016

The broader definition of infrastructure presents more investment opportunities for investors. However, at the same time, investors should be wary of the differing characteristics of core-plus assets that alter their risk-return profiles. To fully understand and benefit from investing in these sectors and assets, investors may need new expertise to complement their existing expertise, which has historically been focused on investing in traditional infrastructure assets. Further, they would need an understanding of the commercial risks and other factors impacting these sectors, in addition to focusing on project specific risks and factors.

## A stronger case for investing in renewable energy

Renewable energy continues to have a strong economic case and high potential in ASEAN. As discussed in Report 2 of this series, ASEAN is a region rich in renewable energy sources, and its governments have set ambitious targets to increase the contribution of renewable energy to their total energy supply (TPES) – from 9.4% of TPES in 2014<sup>11</sup> to 23% by 2025<sup>12</sup>.

**Figure 15:** Infrastructure sectors that investors view as presenting the best opportunities



Source: Preqin Global Infrastructure Report 2018

<sup>11</sup> Renewable Energy Outlook for ASEAN, International Renewable Energy Agency (IRENA) and ASEAN Centre for Energy (ACE), 2016

<sup>12</sup> Development of Renewable Energy Outlook for ASEAN – a Remap 2030 Analysis, ACE

Investors continue to view renewable energy investments favourably, with 46% of investors considering the sector to have the most attractive opportunities in 2017 (behind the conventional energy sector)<sup>13</sup>. Increasing investor interest in this sector can be attributed to the following factors:

- Governments are placing greater emphasis on promoting renewable energy investments, through measures such as providing fiscal incentives, and enabling more favourable policies and regulatory frameworks.
- Asia Pacific CEOs are citing “climate change and environmental damage” as one of their top 10 concerns<sup>14</sup>, and are therefore prioritising sustainability goals. As such, investors are looking at renewable energy as part of their Environmental, Social and Governance (ESG) considerations.
- The costs of employing renewable energy technology has been declining steadily to a point where renewable energy projects are able to compete with conventional energy technologies. Improving technologies, supply chain efficiencies and equipment costs has driven down the Levelised Cost of Electricity (LCOE). For example, Solar PV levelised costs are estimated to have fallen 58% between 2010 and 2015, and are predicted to fall a further 51% between now and 2030.

In the global infrastructure deal-making space, 51% of deals completed in 2017 involved renewable energy assets. Asia represents a sizeable region, accounting for 43% of renewable energy infrastructure deals completed between 2008 and 2017. Wind and solar continue to attract the majority of investments by private funds, accounting for 42% and 33% of renewable energy deals completed in that period<sup>15</sup>.

The success of the renewable market in Asia contrasts with the region’s limited success in the broader infrastructure sector. However, it clearly illustrates the potential that Asia offers as an infrastructure investment market.

One notable recent transaction is the sale of Equis Energy to Global Infrastructure Partners III, PSP Investments and CIC Capital for a reported US\$5 billion in October 2017. This highlights strong investor interest in building their renewable energy portfolios.



<sup>13</sup> Preqin Global Infrastructure Report 2018

<sup>14</sup> 21<sup>st</sup> Annual Global CEO Survey, PwC

<sup>15</sup> Preqin Global Infrastructure Report 2018

## Equis Energy

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A recent transaction that illustrates the increased interest of different types of investors in infrastructure projects and portfolios is the acquisition of Equis Energy. Equis Energy was purchased by a consortium which included an infrastructure fund (Global Infrastructure Partners (GIP)), a pension fund (Canada's Public Sector Pension (PSP) Investment Board) and a sovereign wealth fund (CIC Capital).

### Asset Overview

Equis Energy's portfolio of assets includes solar, wind and hydroelectric power operations in Australia, Japan, India, Indonesia, the Philippines, Thailand and Taiwan. It has over 180 assets in different stages of development (i.e. in operations, construction and early development), with a capacity of more than 11GW.

### Motivation for Sale

The primary motivation for the sale of Equis was for the fund investors (including Partners Group) to exit and realise their investment. Equis had built a solid renewable energy platform since its incorporation and capitalised on the attractive opportunities presented by this sector, securing lucrative long-term tariffs in certain jurisdictions. As the renewable energy industry matures in the region and becomes more competitive, the equity returns available to investors would gradually decrease over time. Therefore, it was a good time for the investors of Equis to capitalise on their investments in the business and subsequently deploy their capital elsewhere. It has been reported that Partners Group made three times their original investment in the fund.

### About the Buyer

Global Infrastructure Partners purchased the Equis renewable energy portfolio, along with investors including CIC Capital and PSP Investments.

GIP is an independent infrastructure fund manager. Its current equity fund, Global Infrastructure Partners III, makes equity investments in high quality infrastructure assets in the energy, transport and water/waste sectors. GIP manages over US\$40 billion for its investors. Additionally, the companies in GIP's portfolio have combined annual revenues in excess of US\$5 billion and employ approximately 21,000 people.

CIC Capital is a subsidiary of China Investment Corporation (CIC) and was incorporated in 2015 with a mandate to specialise in making direct investments to refine CIC's overall portfolio management and enhance investment in long-term assets.

PSP Investments is one of Canada's largest pension investment managers, with approximately US\$139 billion of net AUM. It invests funds for the pension plans of the Public Service, the Canadian Armed Forces, the Royal Canadian Mounted Police and the Reserve Force.

### The Valuation

The purchase price for Equis was US\$5 billion including debt — a record for the renewable energy industry globally. The deal included approximately US\$1.3 billion in liabilities. GIP chairman and managing partner, Adebayo Ogunlesi, described Equis as “a strong fit with GIP's global renewable investment strategy”<sup>16</sup>.

### The Significance of the Deal

The size of this transaction and its valuation have alerted both strategic and financial investors of the opportunities available in renewable energy across the Asia-Pacific region. As there is unlikely to be a similar sized brownfield opportunity in the region in the immediate future, the transaction has accelerated the interest of other investors in developing their own greenfield projects. This, coupled with national governments' desire to promote and develop significant energy capacity via renewable energy sources, has resulted in many companies looking to focus on their renewable energy portfolios.

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<sup>16</sup> GIP to Buy Equis energy in Record \$5 Billion Renewable Deal, Bloomberg, 25 October 2017

## The rising popularity of dedicated infrastructure debt funds

Although banks are the primary providers of debt financing for infrastructure projects, liquidity and capital requirements can prevent them from fully serving the market. This shortfall has created an opportunity for the unlisted fund industry to become a player in the provision of debt to infrastructure projects.

Furthermore, the current low-yield environment to traditional fixed income investments has increased the relative attractiveness of infrastructure debt. Infrastructure debt offers the potential combination of investment-grade credit ratings and returns above those achieved in comparable corporate benchmarks.

However, for many investors, infrastructure debt is a new area. Time is needed to develop an understanding of the risk-return proposition and analyse how it can fit into overall portfolio requirements. Further, investors are concerned with the credit quality of infrastructure debt borrowers, and the non-recourse nature of some infrastructure debt. Some safeguards that investors require to mitigate project risks are the need for investment-grade ratings of projects and guarantees, including from sovereigns and multilateral agencies.

Twelve unlisted infrastructure debt funds reached a final close in 2017, securing US\$6.9 billion in institutional capital. Debt funds' share of total unlisted infrastructure capital raised averages at around 10% for the past decade. Most debt funds are focused on North America and Europe, with Asia-focused debt funds only raising US\$0.8 billion historically<sup>17</sup>. This could possibly be due to investor unfamiliarity, risk profile and the lack of investment-grade opportunities in the Asian infrastructure debt market.

## Investors going direct or via club deals

Traditional infrastructure investments were attractive for their 'hands-free' approach, where investors could place funds with fund managers who have the necessary expertise to navigate this niche industry.

More sophisticated investors, however, have moved from fund investments to co-investment and direct investment into infrastructure assets. Direct investment requires management and operational expertise. However, investors can benefit in the form of savings from fund management fees and greater control over investment performance. Fund managers co-investing with direct investors can benefit from networks and market knowledge that direct investors have in their specialist geographies. Further, fund managers can use local direct investors to move into new geographies where it might not have presence, saving time and costs in the process.

### EQT Infrastructure teams up with Temasek

EQT Infrastructure, a Stockholm-based infrastructure fund manager with core expertise in the European and American markets, has identified opportunities in Southeast Asia, and linked up with Singapore sovereign wealth fund Temasek in 2017. These institutions will work together to identify potential investments in Southeast Asia, India, Korea, Japan, Australia and New Zealand, targeting brownfield opportunities in communications, transport, energy and social infrastructure.

EQT is leveraging Temasek's networks and market knowledge in the Southeast Asian and Asia-Pacific region to develop its Singapore office. Similarly, Temasek benefits from EQT's expertise and experience in assessing and managing infrastructure investments in the European and American markets, while offering direct investment opportunities into infrastructure.

This partnership sets a precedent for fund managers based in North America and Europe in partnering sophisticated direct investors to accelerate their market entry into, and navigate their way around Asia. The ASEAN infrastructure market would benefit from a wider selection of financing options and a deeper pool of industry expertise if it were able to create a sustainable infrastructure ecosystem.

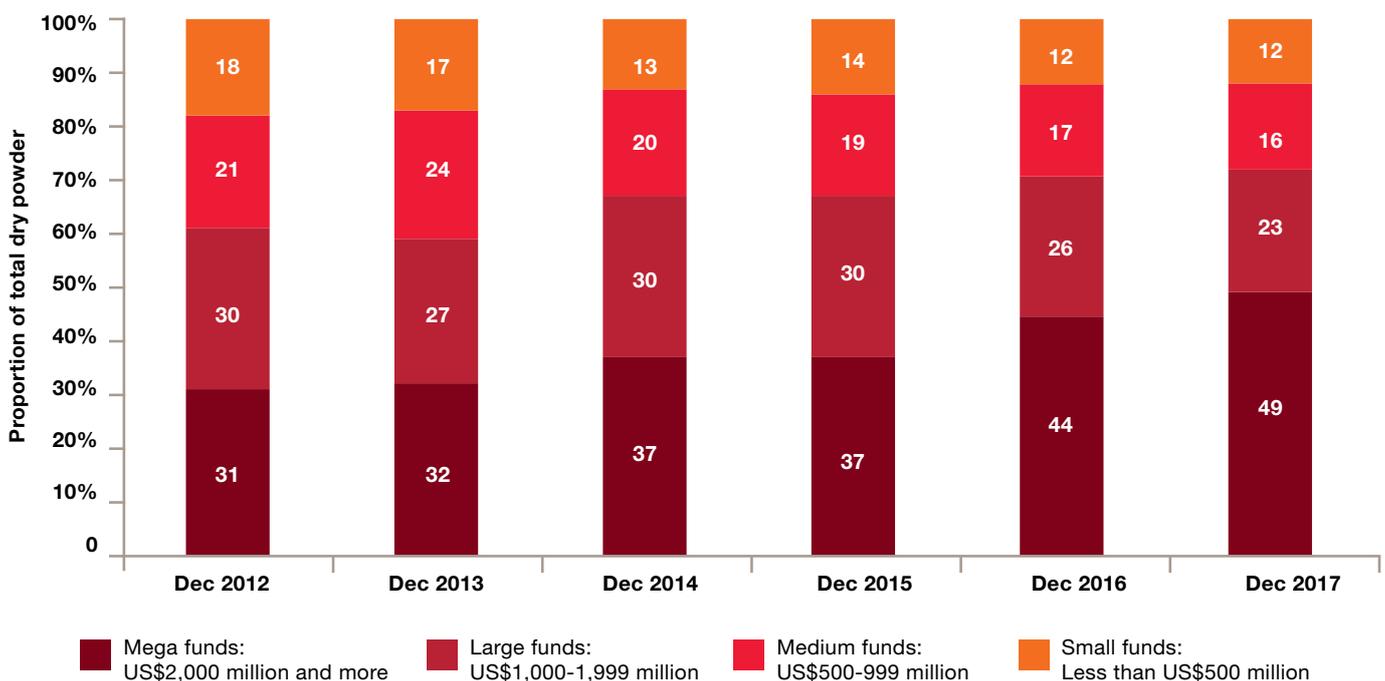
<sup>17</sup> Preqin Global Infrastructure Report 2018

## The emergence of mega funds

Investors are looking for fund managers with a proven track record in delivering strong and consistent risk-adjusted returns. The current market perception leans towards larger managers based on the belief that larger funds have more

experience running funds in the infrastructure space and are better equipped with the capabilities and resources to identify and secure attractive deal opportunities.

**Figure 16:** Unlisted infrastructure dry powder by fund size, 2012-2017



Source: Preqin Global Infrastructure Survey 2018

Dry powder is increasingly concentrated in the hands of large fund managers, as mega funds (defined as having AUM of US\$2 billion and more) hold almost half of global unlisted infrastructure dry powder as of December 2017.

The record for the largest infrastructure fund closed has been broken multiple times in recent years. Brookfield Infrastructure Fund III closed a 2016 all-time record of US\$14 billion – however, it was eclipsed by Global Infrastructure Partners III, which closed the current record high of US\$15.8 billion. Additionally, in May 2017, Blackstone Group announced that its global flagship Infrastructure I fund is targeting US\$40 billion, more than double the size of any current dedicated infrastructure fund.

The downside is that mid-market funds find themselves increasingly overshadowed and crowded out of the fundraising market, while also having to compete with large funds that have significantly more capital to deploy, more capacity and capability, as well as possibly greater degrees of flexibility as to investment approach. With a handful of large funds securing increasingly larger proportions of capital, smaller funds are forced to spend more time fundraising to try to compete for the remaining capital, which deflects attention away from deal origination.

## Chapter 3: Addressing the challenges

While it is clear that the Asian infrastructure investment market is rich in potential, it is also clear that there are many challenges that first must be overcome in order to fully realise this potential. In this chapter, we explore ways in which this can be achieved.

### *The role of government*

Governments play an important role as part of the supporting ecosystem across the infrastructure project lifecycle, and also as a facilitator and catalyst for private sector investments into infrastructure.

#### **Facilitating growth in capital markets**

As an example, the Singapore government is exploring options for statutory boards and government companies to issue bonds to fund infrastructure projects. This comes at a time when Singapore is facing high spending requirements for upcoming projects, which include the Kuala Lumpur-Singapore High Speed Rail, Changi Airport Terminal 5, and new waste and water projects such as the Deep Tunnel Sewerage System.

The government is considering providing guarantees for such long-term borrowings made by statutory boards and government-owned companies to build critical national infrastructure. Government guarantees could help lower financing costs, while also making sure that Singapore does

not draw directly on its reserves to fund major infrastructure spending. Further, this move could help deepen the local bond market, and pave the way for broader-based participation in the local debt markets, from both local and institutional investors.

#### **Developing infrastructure programmes**

Governments have established organisations to support the development of sustainable infrastructure programmes in their respective countries. Examples include the PPP Center in the Philippines, The Indonesia Infrastructure Guarantee Fund and the National Agency for Public Private Partnerships (NAPPP) in Sri Lanka.

Singapore plans to set up an Infrastructure Office to help firms tap infrastructure opportunities in Asia, such as those created by China's Belt and Road Initiative. The new office aims to bring together local and international firms across the value chain — from developers and institutional investors to legal, accounting and financial services providers — to develop, finance and execute projects. In addition, it aims to deepen understanding of the project pipeline, promote collaboration between foreign and local firms across the entire infrastructure value chain, and facilitate projects.

Singapore's Infrastructure Office has the potential to further develop the infrastructure marketplace in ASEAN, connecting stakeholders and promoting activity. The regional project pipeline would benefit from greater flow, and this would strengthen the entire infrastructure value chain.



## Setting guarantee mechanisms in place

Apart from governments, multilateral agencies are instrumental in promoting socio-economic development through supporting infrastructure projects. Often, the presence of multilateral agencies is necessary for projects in developing countries. In addition to direct funding and the provision of credit enhancement, they provide technical guidance and process improvements and can act as enablers for private investors to invest. Their input can help technically challenging, unfeasible or financially unattractive projects become possible, thereby improving the lives and well-being of the communities that use the infrastructure.

One such area is though the provision of guarantees. Infrastructure projects in developing countries often suffer from poor credit ratings, due to the higher risks involved. One such risk is political risk, due to uncertain legal and regulatory frameworks, as discussed in Chapter 2. Poor credit ratings drive up borrowing costs, or result in projects that are not bankable or financeable, even though they may offer significant social benefits or address essential social needs.

Agencies such as the Multilateral Investment Guarantee Agency (MIGA) and GuarantCo promote foreign investment into developing countries through provision of insurance guarantees for the private sector. Such guarantees offer benefits to various stakeholders, including financiers, borrowers/issuers and suppliers such as engineering, procurement and construction companies.

Financiers can transfer certain risks to a credit-worthy agency, and obtain more efficient capital treatment for long-dated transactions through the use of varied types of financing solutions. Borrowers can lower their cost of borrowing through positive signalling on their credit-worthiness, and gain greater access to different financing solutions that were previously unavailable. Suppliers can mitigate their counterparty risks and gain an opportunity to accelerate project mobilisation while capital is still being finalised.

### GuarantCo

GuarantCo's mission is to be a market-driven guarantee solutions provider, aimed at enhancing the availability and role of local currency debt finance for infrastructure related projects. GuarantCo covers a wide range of sectors, from power generation to transport and water. It has strong international credit ratings, being rated A1 by Moody's and AA- by Fitch. The activities and commitments of GuarantCo have enabled US\$4.7 billion of investments.

GuarantCo differs from Export Credit Agencies and private insurers by targeting local currency debt, while the latter two predominantly target hard currency debt. Local currency debt reduces exchange rate volatility for borrowers, as the currency of revenue is matched to that of debt service.



## Attracting new forms of capital

Infrastructure borrowers are exploring different financing options and attracting new forms of capital through the introduction of new tools and instruments for investors to access this market. Borrowers benefit from having greater flexibility in structuring their financing options, and investors benefit from having greater access to a variety of instruments to complement their existing portfolios. Project bonds and listed infrastructure funds and trusts are gaining traction as alternative forms of capital, and, increasingly, ASEAN countries are adopting such tools as their local capital markets develop.

### Project bonds

Bonds can be structured as a government or corporate bond (classified on a government's or company's balance sheet) or a project bond (based on forecasted cash flows of the project entity). Project bonds can be attractive to infrastructure developers as it allows the corporate to borrow off their own balance sheet, and there is limited-to-no recourse for investors apart from the cash flows generated by the assets of the Special Purpose Vehicle (SPV).

A market for project bonds offers significant benefits for the financing of infrastructure projects, including providing additional investor liquidity and diversifying the funding sources available. Also, project bonds provide greater stability to the capital structure of infrastructure projects. Maturities typically can be structured to be longer than what commercial banks are willing to provide, and possibly as long as the concession period. Coupon payments can better match the long-term cash flows generated by infrastructure projects, reduce or eliminate refinancing risks, and thus provide greater stability and certainty for equity investors. Paiton Energy's US\$2 billion project bond issuance in 2017 is a benchmark transaction in ASEAN and one of the largest issuances in recent times in the project bond space.

However, project bonds do have limitations and restrictions. Bond investors may require projects to have an operational history, as cash flows are required to service periodic coupon payments. They typically shy away from projects that are yet to be operational due to high development risks and a lack of cash flows during the construction phase. Alternatively, there needs to be strong levels of comfort over the construction delivery programme that allows the project to be rated as investment grade. Infrastructure projects that raise debt through project bonds typically rely on other sources of financing during the development stage, and then refinance with project bonds after turning operational.

The effectiveness of local currency project bonds is also limited by the depth of domestic debt capital markets. Where

local currency debt is limited, borrowers are limited to shorter tenor bonds and face refinancing risks. Otherwise, borrowers have to raise hard currency debt as an alternative, incurring swap fees or face exposure to the accompanying currency risk. Project bonds see more success in countries where there is a large domestic investor base and sufficiently developed domestic debt capital markets. Tighter borrowing spreads and the elimination of the need for currency swaps can lower borrowing costs for infrastructure projects.

A strong credit rating is required to successfully issue bonds and lower costs of borrowing. Bond investors may only have a mandate to invest in debt securities with an investment-grade rating. This is of greater concern in ASEAN countries, considering the region's poorer sovereign credit ratings (the ratings of project bonds are correlated to the relevant sovereign credit rating). Borrowers can tap on multilateral agencies to bolster their credit worthiness. A recent successful case was Aboitiz Power's peso-denominated bond issuance in 2016, which was backed by the Asian Development Bank (ADB).

### Paiton Energy's US\$2 billion project bond

Paiton Energy, through Minejesa Capital B.V., issued US\$2 billion of USD-backed senior secured project bonds in 2017. Paiton Energy is the second largest Independent Power Producer (IPP) in Indonesia. The debt issue is rated investment grade, with ratings of Baa3 and BBB- from Moody's and Fitch respectively.

A strong operational track record, stable and visible cash flows and the guarantee from Paiton Energy gave investors confidence in the debt issue. Furthermore, Paiton Energy holds long-term power purchase agreements to sell electricity to the state-owned electricity company, rated investment grade, until 2042, beyond the maturities of the project bonds.

This debt issuance "marks the return of Asian project bonds raised in the offshore debt capital markets after many years of absence", according to Terry Fanous, Moody's Managing Director<sup>18</sup>.

A strong pipeline of attractive and investable projects, such as Paiton Energy, will encourage further deployment of institutional capital in ASEAN and points to the potential for project sponsors to utilise new sources of capital for infrastructure.

<sup>18</sup> Paiton Energy-linked US\$ notes issuance raises project bond prospects in Asia, Moody's Investor Service, 6 August 2017

### ADB-backed Aboitiz Power's bond issuance

In 2016, ADB backed Aboitiz Power's issuance of Asia Pacific's first climate bond<sup>19</sup>. AP Renewables, a subsidiary of Manila-based energy company Aboitiz Power, issued the PHP10.7 billion (US\$225 million) bond to refinance a 676.9MW geothermal project in the Philippines that it had bought from the government in 2009. The proceeds will go towards refinancing capital expenditure and ongoing operations and maintenance at Tiwi and Makiling-Banahaw, which are respectively the seventh and fourth largest geothermal facilities in the world.

ADB provided credit enhancement in the form of a bank guarantee for 75% of the bond's total value. The use of the credit enhancement by ADB helped lower borrowing costs, thanks to ADB's AAA rating.

Considered a landmark transaction, this new financing mechanism offers an alternative to bank financing and seeks to expand private sector interest in long-term investments for renewable energy development in Asia. This issue also won the Environmental Finance's Project Bond of the Year 2017<sup>20</sup>.



<sup>19</sup> ADB Backs First Climate Bond in Asia in Landmark \$225 Million Philippines Deal, 2016

<sup>20</sup> Environmental Finance, 2017

### **Listed infrastructure funds**

Listed infrastructure vehicles secure the rights to receive future benefits from a specific infrastructure project, effectively securitising future cash flows of the project. They offer retail investors the opportunity to participate in infrastructure investments, an area previously exclusive to large institutional investors. Investors can enter with smaller ticket sizes and benefit from greater liquidity from the listed status.

Compared to an outright sale of assets, listed infrastructure vehicles allow infrastructure developers to recover part or

all of their invested capital and remain the asset manager/operator. This asset-light model frees up capital for further investments, and generates steady income streams from management and operation fees.

Notably, Thailand-based managers manage 12% of all listed infrastructure funds in the market<sup>21</sup>. The funds, managed by five fund managers, all target domestic opportunities across a range of industries. Jasmine Broadband Internet Infrastructure Fund invests in the Thai telecommunications networks and BTS Mass Transit Growth Infrastructure Fund invests in the Thai rail network system.



<sup>21</sup> Preqin Global Infrastructure Report 2018

## BTS Mass Transit Growth Infrastructure Fund

BTS Mass Transit Growth Infrastructure Fund (BTSGIF), listed on the Stock Exchange of Thailand, was established in 2013 to encourage infrastructure investment in Thailand. THB62.5 billion (US\$2.1 billion) was raised, and proceeds were used to purchase future fare box revenue from Bangkok Mass Transit System PLC (BTSC). BTSC has the exclusive rights to operate and collect fare box revenue from the Core BTS SkyTrain System until December 2029<sup>22</sup>.

The Core BTS SkyTrain System covers the original lines of the BTS SkyTrain System. This spans 23.5 kilometres, and consists of the 17-kilometre Sukhumvit line from Mo-Chit to On-Nut, and the 6.5-kilometre Silom line from National Stadium to Taksin Bridge.

Prior to the BTSGIF's establishment, BTSC suffered from overestimation of ridership forecast. This caused BTSC to default on payments in 2002. Restructuring and rehabilitation commenced soon after. Subsequently, BTSC benefited from a surge in ridership due to two line extensions.

BTSGIF shows that listed infrastructure trusts are a viable exit alternative for investors, allowing risky revenue streams to be securitised so long as there is an operational history. Investors can then free up their capital and recycle them into new projects that better match their risk-return profile. BTSC led a consortium which won the bid to construct the Pink and Yellow Monorail lines in 2017.



<sup>22</sup> BTSGIF IPO prospectus and annual reports

## The need for indices

The use of indices for equity and debt markets are common and well established. The lack of adequate indices and benchmarks for infrastructure assets affects stakeholders' ability to identify and measure the characteristics of this asset class. Numerous infrastructure investors use ad-hoc benchmarks for their unlisted infrastructure investments that are generally not consistent and comparable to each other.

Benchmarks enable investors to understand the evolution and the risks of certain markets. Indices can also be used to monitor investment performance, define asset allocations and create new investment products. As an example, to address these shortcomings, the EDHEC Business School launched a research unit in Singapore, named EDHEC Infrastructure Institute-Singapore (EDHECinfra). Through research, EDHECinfra aims to create debt and equity investment benchmarks to help asset owners and investors better understand the role of infrastructure investments in their portfolios.

In February 2018, EDHECinfra released a paper recommending a set of reference indices for infrastructure, which was based on surveyed investor preferences<sup>23</sup>. Eight broad market indices were developed — four for unlisted infrastructure equity and four for private infrastructure debt — to represent the infrastructure asset class at the global level. The taxonomy will be used by EDHECinfra to compute risk-adjusted performance of unlisted equity and debt investments.

Survey findings showed that the most relevant segmentations of the global infrastructure investment sector involve splitting it by:

- Global unlisted equity and private debt markets
- Advanced and emerging economies
- All corporate sectors/structures and project finance-only

Figure 17: EDHECinfra broad market index families

Unlisted Infrastructure Equity Index Families	Private Infrastructure Debt Index Families
Global Unlisted Infrastructure Equity	Global Private Project Finance Debt
Global Project Finance Equity	Global Private Infrastructure Debt
Advanced Markets Unlisted Infrastructure Equity	Advanced Markets Private Infrastructure Debt
Emerging Markets Unlisted Infrastructure Equity	Emerging Markets Private Infrastructure Debt

Source: EDHECinfra

EDHECinfra also devised sub-indices meant to better specify the risks that investors are concerned with. These are:

- **Business risk:** Different infrastructure investment business models (contracted, merchant and regulated) exhibit different risk-return profiles.
- **Sector groups:** Infrastructure in the same sectors are exposed to common factors, for example, the impact of public policy and procurement cycles.
- **Credit risks:** Credit qualities like default risk, maturity, interest and currency risks can help integrate infrastructure debt investments into broader credit portfolios.



<sup>23</sup> Selecting Reference Indices for the Infrastructure Asset Class, EDHECinfra 2018

**Figure 18:** EDHECinfra Sub-indices

<i>Unlisted Infrastructure Equity Sub-indices</i>		<i>Private Infrastructure Debt Sub-indices</i>		
<i>Business risk</i>	<i>Broad sectors</i>	<i>Business risk</i>	<i>Broad sectors</i>	<i>Credit</i>
Regulated	Transport	Regulated	Transport	Default risk
Contracted	Social infrastructure	Contracted	Social infrastructure	Maturity
Merchant	Energy	Merchant	Energy	Instrument currency
	Renewables		Renewables	

Source: EDHECinfra

The indices and sub-indices address key aspects of the systemic risk that relates to expected performance, which give investors a better understanding of systematic risk factors present in unlisted infrastructure investments. An asset’s performance can be benchmarked against a suitable index that it most closely resembles in terms of risk characteristics. This answers a fundamental question of investors: whether the investment is generating adequate return for the risk undertaken vis-à-vis other similar and comparable investments.

Data analytics can provide further useful insights once the indices have amassed a significant database. Critical information for decision making, such as valuation and default ratios, can be computed and benchmarked against investments to quantitatively measure risk-adjusted returns and investment performance. Portfolio managers can also utilise such outputs to aid in product creation and portfolio allocation decisions.



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## Chapter 4: Conclusion

In this report, we discussed how infrastructure is clearly a new separate asset class of its own, and indeed a broadening asset class, with the benefits of portfolio diversification, inflation protection and stable returns. The asset class has shown strong risk-adjusted returns in the past and has solid fundamentals underpinning future potential growth.

Infrastructure funds have grown in number and fund size, reaching a record US\$418 billion as at June 2017. Funds will play an increasingly important role alongside governments in financing infrastructure projects, especially in developing markets. We also observe a trend of capital being concentrated in mega funds, where the industry will be dominated by a few big players.

However, the growing popularity of infrastructure investment is leading to new challenges – competition in traditional infrastructure is increasing, evidenced by record levels of dry powder, compressing yields and reducing return potentials. Investors have increasingly sought higher returns by venturing into newer areas and taking on more risks. Seeking

higher returns in alternative geographies, project lifecycles, and business models is creative, but undermines the ‘hands-free’ attraction of the asset class.

Apart from core infrastructure funds, investors have access to new tools and instruments to invest in infrastructure opportunities. Sophisticated investors can invest in infrastructure debt funds if there is a match in mandates and risk profiles, or invest directly by partnering a fund manager. Less sophisticated investors and retail investors can invest through project bonds and listed infrastructure funds.

We only see the trends identified in this report, and the earlier ones in this series, continuing. The need for infrastructure is clear, the infrastructure gap is widening and new types and forms of capital are targeting infrastructure projects. However, to fully grasp the infrastructure opportunity, governments and multilateral agencies must continue to develop and strengthen the frameworks for developing and investing in infrastructure, in order to address historical shortcomings.



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