



# Infrastructure investment



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# **Infrastructure investment Challenges and opportunities for social security reserve funds**

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## Executive summary

Low and negative interest rates, a perceived overvaluation of equity and property assets, and the general difficulty of finding sufficient and appropriate income generating assets has led to an increase in social security reserve fund assets dedicated to infrastructure investment.

This ISSA report highlights these trends and outlines the governance measures to be put in place to ensure infrastructure asset choices are appropriate for the scheme.

### *Setting objectives and the appropriate governance structure*

As the point of departure for a general discussion on the investments made by social security institutions, the *ISSA Guidelines on Investment of Social Security Funds* cover the governance journey from investment beliefs, mission and objectives, to putting in place an investment strategy and managing this.

While the principles also apply to infrastructure investment, a dedicated individual guideline has been added to these ISSA guidelines to reflect the additional governance issues that should be considered for this type of asset.

The risks associated with such infrastructure investments are often new and different from existing asset classes; for example, construction risk and managing voids. The choice of asset will also reflect the risk appetite and ability to manage the different risks inherent to varying choices of infrastructure asset.

### *Wide choice of what to invest in and how to invest*

Infrastructure assets include transport, energy and communication assets (e.g. ports, railways, renewable energy, cable networks), and also what is commonly classified as “social infrastructure” (e.g. schools, hospitals, social housing). Each type of asset has different characteristics and risk profiles, which will impact on how they are managed.

The report compares a direct investment approach with the use of external managers and the factors that drive these respective choices. It then considers the different approaches to building a portfolio, including a core or core plus approach, co-investment, an Investor Club model and listed infrastructure options.

### *Benchmarking and foreign investment*

A challenge of infrastructure investment is how to assess performance. As regards benchmarking, a number of options are discussed. Also, when domestic options are limited, the report sets out the issues to take into account when investing abroad.

Infrastructure investment is a growing global trend and may well suit social security reserve funds. It also responds to a growing focus on Socially Responsible Investment. The report concludes with an overview of this trend and highlights the types of assets and the geographical spread of recent investment.



# 1. Context

There is increasing interest in the use of social security reserve fund assets to invest in infrastructure projects. This interest has been driven by a number of factors:

- a decade-long environment of low interest rates making traditional investments less attractive;
- increasing emphasis on the environmental, social and governance (ESG) aspects of reserve fund investment. This is reflected in an increasing focus on socially responsible investment (SRI) as an integral part of the objectives of reserve funds;
- the difficulty finding sufficient and appropriate income generating assets;
- a limited domestic market for traditional investment choices, for example, equities and bonds.

Consequently, there is an increasing move to look at infrastructure investment as an important element of a social security reserve fund's investment portfolio. However for many reserve funds (and also second pillar pension plans where infrastructure investment is already relatively widespread), such investments bring a new range of challenges that require robust governance structures to manage them. Such investments may imply different profiles of risk, working with different third party providers and stakeholders, and dealing with different challenges compared to traditional asset choices. According to the *IPE Real Assets Top 100 Institutional Infrastructure Investors Survey 2018*,<sup>1</sup> the main reasons why social security institutions do not invest in this asset class is the lack of internal resources to undertake due diligence followed by the challenges linked to the illiquidity of the asset class and the sentiment that the total assets under management of the investor are not large enough to justify such an asset choice as part of the portfolio.

This report sets out the nature of such investments, the governance requirements in order that they can be managed appropriately by social security reserve funds, different approaches for investing in such assets as well as current trends in infrastructure investment. The glossary presented at the end of the report provides helpful definitions of some of the terminology used. The report's aim is to set out the key considerations for social security reserve funds that are considering such investments. This report complements Guideline No. 18 of the *ISSA Guidelines on Investment of Social Security Funds*, which refers specifically to infrastructure investment.

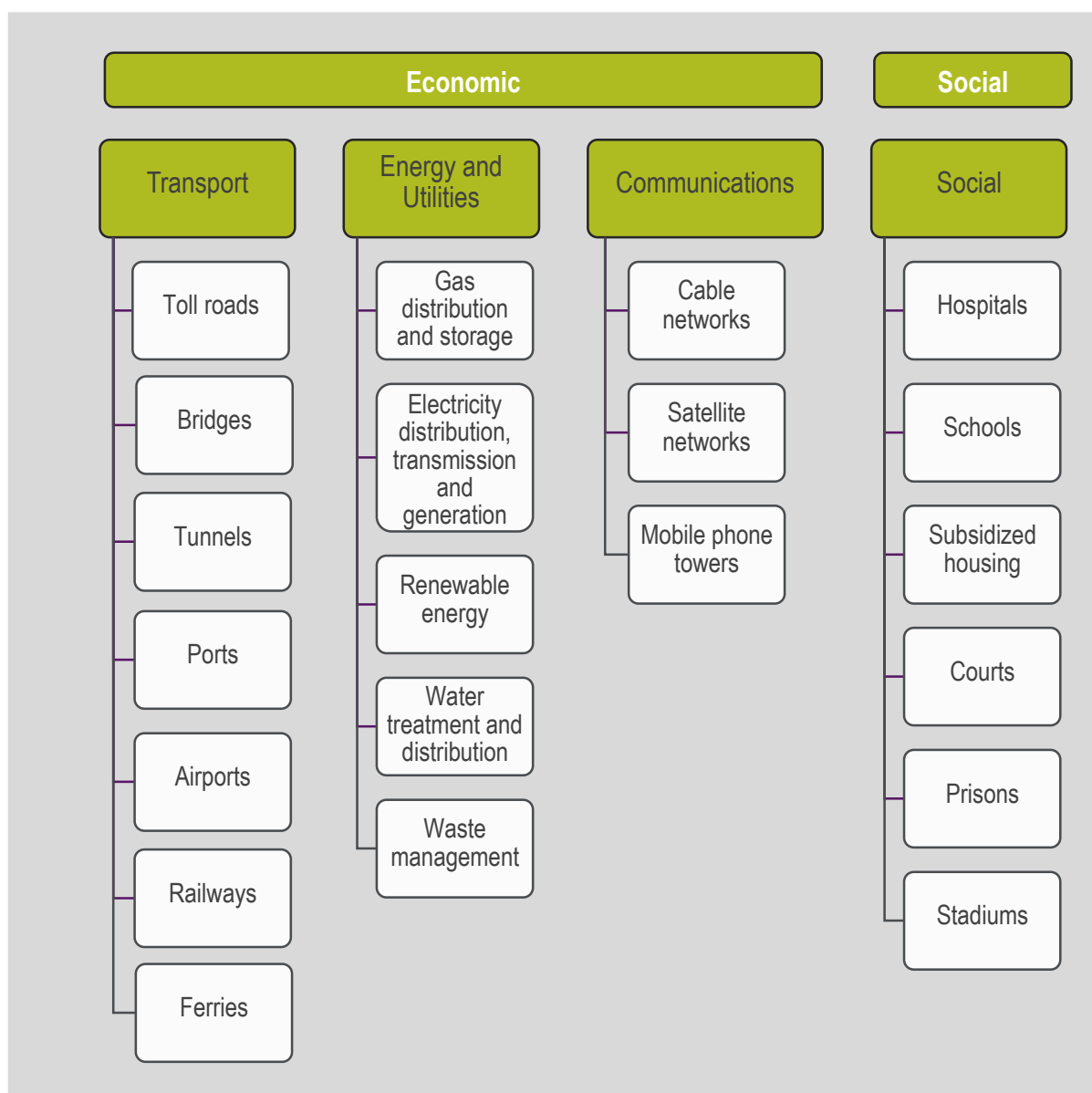
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1. See <<https://realassets.ipe.com/top-100-and-surveys/top-100-infrastructure-investors/realassets.ipe.com/top-100-and-surveys/top-100-infrastructure-investors/10026765.fullarticle>>.

## 2. Characteristics of infrastructure investment: Definition, type, characteristics and key risks

The infrastructure universe is diverse. Infrastructure assets provide essential services to society, such as the movement and storage of goods, data or resources as well as services for people such as health care, housing or transportation. In many instances, these assets operate on a monopolistic basis, defined either by regulatory structure or long-term contracts.

**Figure 1.** Examples of infrastructure assets (economic and social)



Source: Authors.

## 2.1. Characteristics

Infrastructure investments tend to exhibit a number of differentiating characteristics, often stemming from their essential nature and quasi-monopolistic status, which in many instances is granted or protected by virtue of a government mandate or other long-term contract or concession (Figure 2).

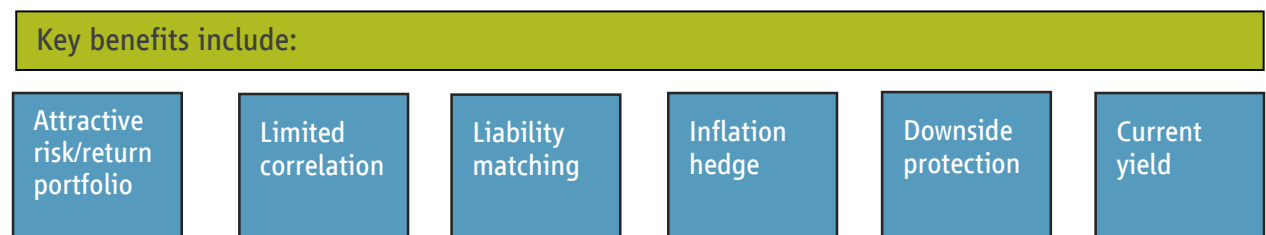
**Figure 2.** *Characteristics of infrastructure assets*



Source: Authors.

In addition, these differentiating characteristics can provide a number of key benefits for investors (Figure 3).

**Figure 3.** *Key benefits for investors*



Source: Authors.

## 2.2. Key risks

Investing in infrastructure can expose investors to a number of key risks (see Figure 4). A key challenge relates to construction risk, an area in which many social security institutions have limited experience in managing (Box 1).

### Box 1. Managing construction risk: Case study

An ISSA member institution that invests in infrastructure assets has, over an extended period, accepted limited construction risk directly. In one of the rare cases where this was not the case, it partnered with a local developer who had considerable development experience within that particular sector. It also transferred the completion (cost and time) and defect risk to the developer. The majority of construction/development projects to which it has exposure arise from companies within the existing portfolio taking on growth projects as part of corporate capital expenditure programmes (an exposure that should be assessed if possible to analyse appropriately the type and nature of risks faced by the reserve fund).



**Figure 4. Investing in infrastructure: Key risks**

<b>Interest rates</b>	<ul style="list-style-type: none"><li>• Valuations can be impacted by rising interest rates, due to higher discount rates used in valuing the assets.</li><li>• Infrastructure assets can also be exposed to significant re-financing risk due to their long-term nature and the high level of leverage often used in financing them.</li></ul>
<b>Patronage</b>	<ul style="list-style-type: none"><li>• Mature assets with demand-based revenue profiles have exposure to macroeconomic factors that impact the demand for their usage.</li><li>• Greenfield projects require returns modelled on assumed projected demand, which can be difficult to forecast.</li></ul>
<b>Regulatory / political</b>	<ul style="list-style-type: none"><li>• Revenue from regulated or government contracted payments are exposed to potential changes in government and policies.</li><li>• Infrastructure investments are also exposed to issues such as rejection of contracts, changing tax laws, currency risk, political instability, sovereign credit risk or potential civil strife.</li></ul>
<b>Credit</b>	<ul style="list-style-type: none"><li>• Credit risk should also be considered with revenues dependent on a variety of counterparties, from government and corporate entities for contracted assets to individual consumers of the services of an asset.</li></ul>
<b>Reputation</b>	<ul style="list-style-type: none"><li>• Infrastructure assets are important to society and are often in the public domain.</li><li>• There is a real risk that an investor may be viewed in a negative light in the event that the asset does not deliver adequate services.</li></ul>
<b>Event risk</b>	<ul style="list-style-type: none"><li>• Infrastructure portfolios can be quite concentrated in nature due to the size of the assets.</li><li>• Infrastructure can therefore be particularly exposed to single events.</li></ul>
<b>Development</b>	<ul style="list-style-type: none"><li>• Construction risk is more relevant to opportunistic managers investing in greenfield assets, however it will also apply to brownfield expansion projects.</li><li>• Given the scale of the projects, this is a substantial risk for investors in the bidding and construction ("growth") phases.</li></ul>

Source: Authors.

## 3. Governance and management requirements

### 3.1. Objectives and constraints of reserve fund investment

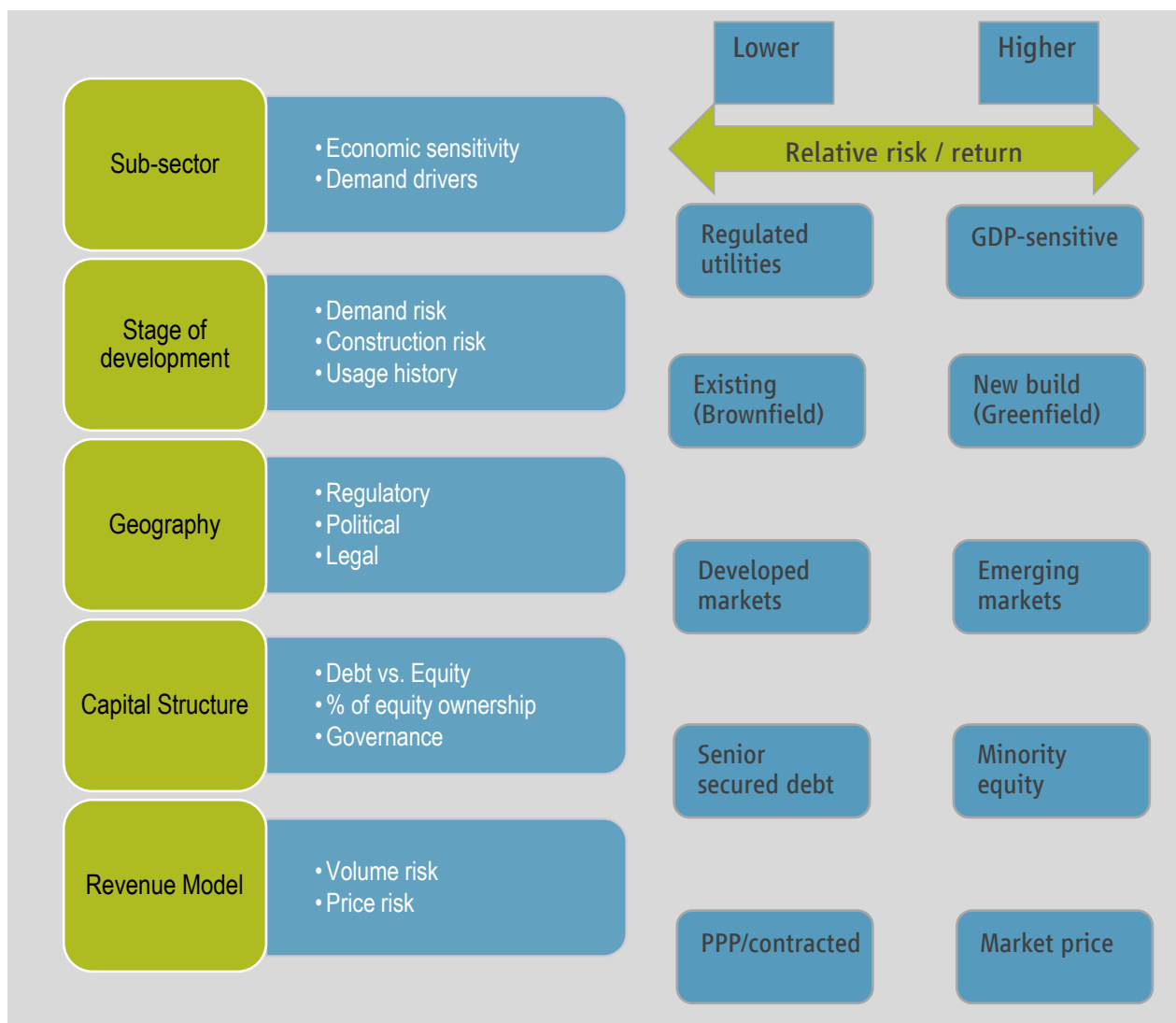
The *ISSA Guidelines on Investment of Social Security Funds* cover general governance issues relating to the investment of assets in different asset classes, including defining the mission, objectives and structure of investment management. As part of this set of *Guidelines*, Section C (Common Processes) also covers relevant issues to investment choices, including how the reserve fund should take into account liabilities, defining and setting the risk budget, building the portfolio and SRI considerations. Many of these governance issues should be taken into account when infrastructure investment is considered.

The *ISSA Guidelines on Investment of Social Security Funds* include a specific guideline on infrastructure investment (Guideline 18), which affirms that “investing directly or indirectly in infrastructure may be an appropriate option for social security funds”. This guideline usefully lays out the broad governance issues presented by this asset class. This section of the report covers specific issues related to the governance and management of infrastructure projects as part of an investment portfolio.

### 3.2. Infrastructure investment strategies

Infrastructure investing is influenced by several factors (Figure 5).

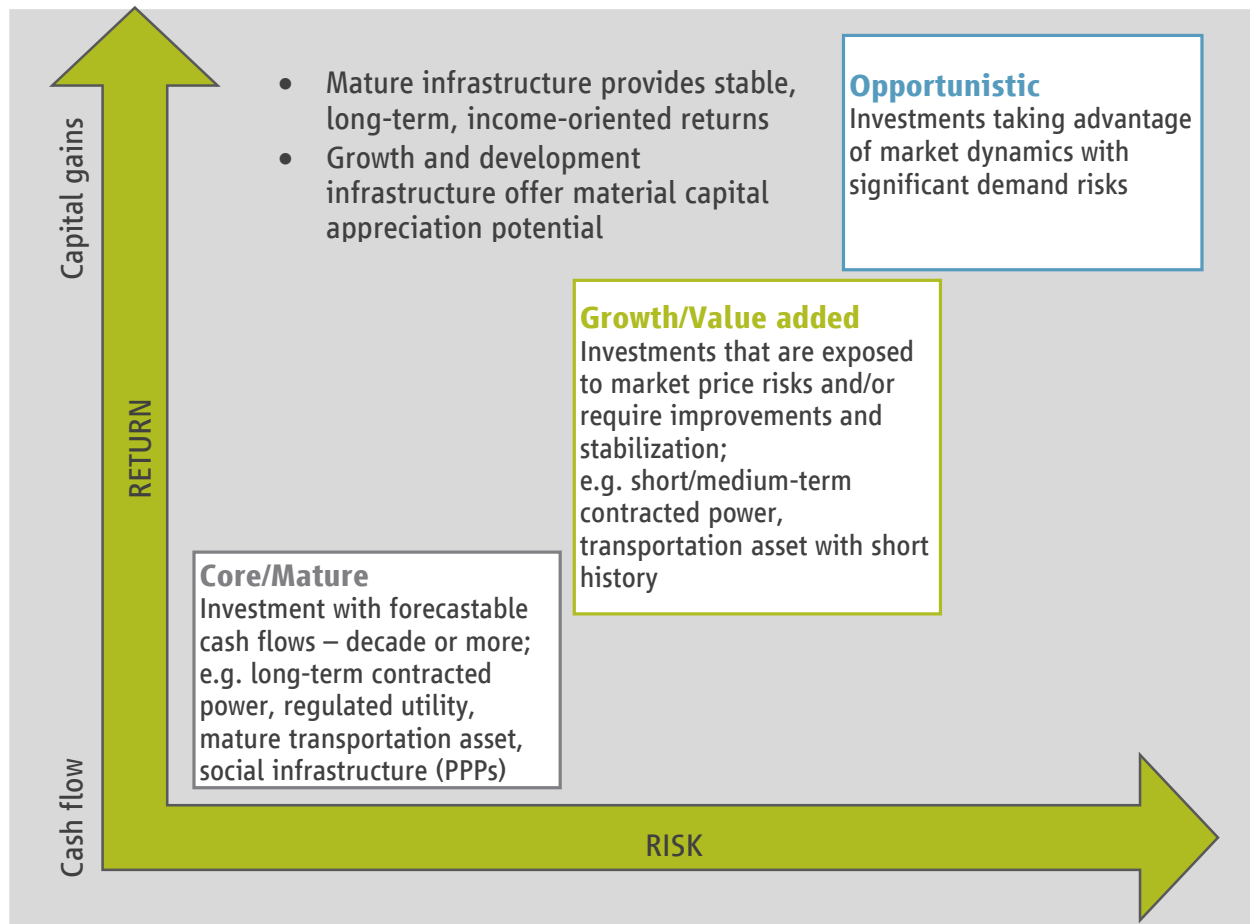
**Figure 5. Investing in infrastructure: Influencing factors**



Note: PPP = Public Private Partnerships.

Source: Authors.

The three broad categories of infrastructure investments (core/mature, growth/value-added, and opportunistic) provide differing risk and return characteristics as can be seen in Figure 6.

**Figure 6.** Three broad categories of infrastructure investments

Source: Authors.

### 3.3. How to invest: Different approaches and vehicles

The way in which assets are invested depends on a variety of factors, some inherent to the governance capacities of the institution and others that depend on the country's investment environment and financial sector development. A key distinction is between the use of an external manager and in-house/direct investment approach.

#### 3.3.1. External managers approach

External fund managers offer both open- and close-ended fund structures, the most common of these being the close-ended fund structure (see below). The close-ended structures are very similar to the private equity funds model. These funds have a finite life of usually 10–12 years with the investment period lasting for up to 4–5 years, and then with exits (phased withdrawal) taking place during the remainder of the fund's life. Managers tend to charge a management fee and also share the upside with a 10–20 per cent carry over an 8–10 per cent (usually) hurdle rate.

##### ▪ Advantages

- hands-off approach, allows the investor to get exposure to infrastructure assets without investing heavily in an in-house investing team;

- sourcing of quality infrastructure assets is becoming increasingly difficult. External fund managers have established relationships with existing owners of quality infrastructure assets and are able to source these for investors in their funds;
  - co-investing on a “no fee, no carry” basis with a fund manager allows direct exposure to the asset without having an in-house team necessary to source, buy and manage the asset.
- Disadvantages
- management and performance fees (known as carried interest or carry) negatively affect returns and limit the upside for the investor;
  - a shorter holding period goes against the long-term holding narrative of infrastructure investing;
  - blind pool risk – investors are unaware of what sort of assets they will acquire. Discretion resides fully with the fund manager. Consequently, no control over type of assets may result in sub-optimal portfolio construction;
  - agency issues with fund managers.

### 3.3.2. Direct investing approach

For the larger reserve funds, direct investment may be an attractive option and certain institutions, such as the Canada Pension Plan Investment Board (CPPIB), access the asset class exclusively by investing directly in (mostly) operating assets. Australian funds have been pioneers in this field since the early 1990s. Large Canadian pension funds have been making direct investments in infrastructure since the early 2000s. Today, these two countries have the highest asset allocation dedicated to infrastructure by pension funds in the world.

- Advantages
- lower cost than external infrastructure fund managers;
  - direct control over assets (including entry and exit decisions);
  - long-term investment horizon to optimize value and liability matching;
  - scaling of deployments is at the social security institution’s discretion.
- Disadvantages
- takes time to build a quality in-house team with the right capabilities and industry relationships;
  - reputational risks are high with direct ownership of assets;
  - legal issues when things go wrong;
  - need to offer staff market-based compensation in high-compensation labour pools.

- Factors driving decisions

Relevant aspects of the Canadian experience include the existence of a well-functioning domestic Public Private Partnership (PPP) model (for social infrastructure), a robust project bond market, and long-term involvement of the insurance sector. Even though Canada has a well-functioning PPP model, the large domestic pension funds are not major investors in it. The key reason for this is the high leverage embedded in many PPP projects, which leads to a lower equity stake, thus, not providing a large enough scale for larger funds. Small to mid-sized Canadian pension funds do actively invest in Canadian PPPs.

- Environmental, Social and Governance/Socially Responsible Investment considerations

An appropriate identification, management and potential exploitation of environmental, social and governance (ESG) factors is a key element of the investment process for infrastructure investments. According to the IPE *Real Assets Top 100 Institutional Infrastructure Investors Survey 2018*, renewable energy is currently seen as the sector with the best investment opportunities. At the same time, 85 per cent of respondents stated that the social impact and environmental sustainability of such investments was a critical or important factor.

- Thematic due diligence

Social, political and environmental issues can impact the longer-term sustainability of the cash flows that investors will receive. The sectors and assets that underpin infrastructure investment strategies are highly visible and are often crucial to the society and environments in which they operate. While this importance provides security, it does (and rightly so) increase the scrutiny placed on the sectors invested in. As such, it is important to identify the thematic trends that can impact an investment at a sector level.

These thematic trends can impact investments in two broad ways:

- They can increase the risk of impactful left tail events. While in the normal course of events we would expect the cash flows generated by infrastructure investments to be very stable, the key risks that investors should look to analyse and manage are those that are unlikely to occur but which could have a significant impact across entire sectors (such as a change of legislation/law). Such changes are more likely to occur when the sector is perceived negatively by the public. Being able to demonstrate the value these assets generate for stakeholders is a critical element of risk management. If this value cannot be demonstrated, this increases the risk of political or regulatory interference.
- A number of the sectors of infrastructure investments make demonstrably positive impacts on the society and environment in which they operate (See Figure 1). The key financial metrics (and the sustainability of those metrics) remain the most important element of the investment decision-making process. However, it is important to recognize the value that these “impact” investments have in providing legitimacy to the broader infrastructure investment universe.

- Manager due diligence

It is important to ensure that there is no element of complacency around investing in infrastructure assets. These assets tend to be more exposed to political or regulatory changes and demand for greater accountability and transparency in recent years means there is likely to be even more scrutiny on these investments going forward. How institutions interact in society is increasingly part of the political and social debate, and providers of visible and critical



infrastructure assets should expect to be inspected, and for this inspection to result in a degree of scrutiny that will increase as well as evolve in nature over time.

In this environment, selecting partners with strong sustainability and ESG credentials is critical. Longer-term, sustainable cash flows can only be delivered where providers of infrastructure assets can show they add demonstrable value to stakeholders and society more widely, and display a commitment to continue to provide this over time.

Key things investors should demand from their partners:

- that the fund manager is an active owner of the assets that they invest into;
- a commitment to focus on generating longer-term, sustainable investments over shorter-term profit taking;
- a recognition of the privileged position that investors hold in society as capital providers to critical assets, and an acknowledgement of how their management of those assets can have an impact (both positively and negatively) on the asset's stakeholders;
- transparency in reporting across both financial and non-financial metrics.

### 3.4. Building a portfolio

Figure 7 sets out a framework for investors to consider in order to build an infrastructure allocation.

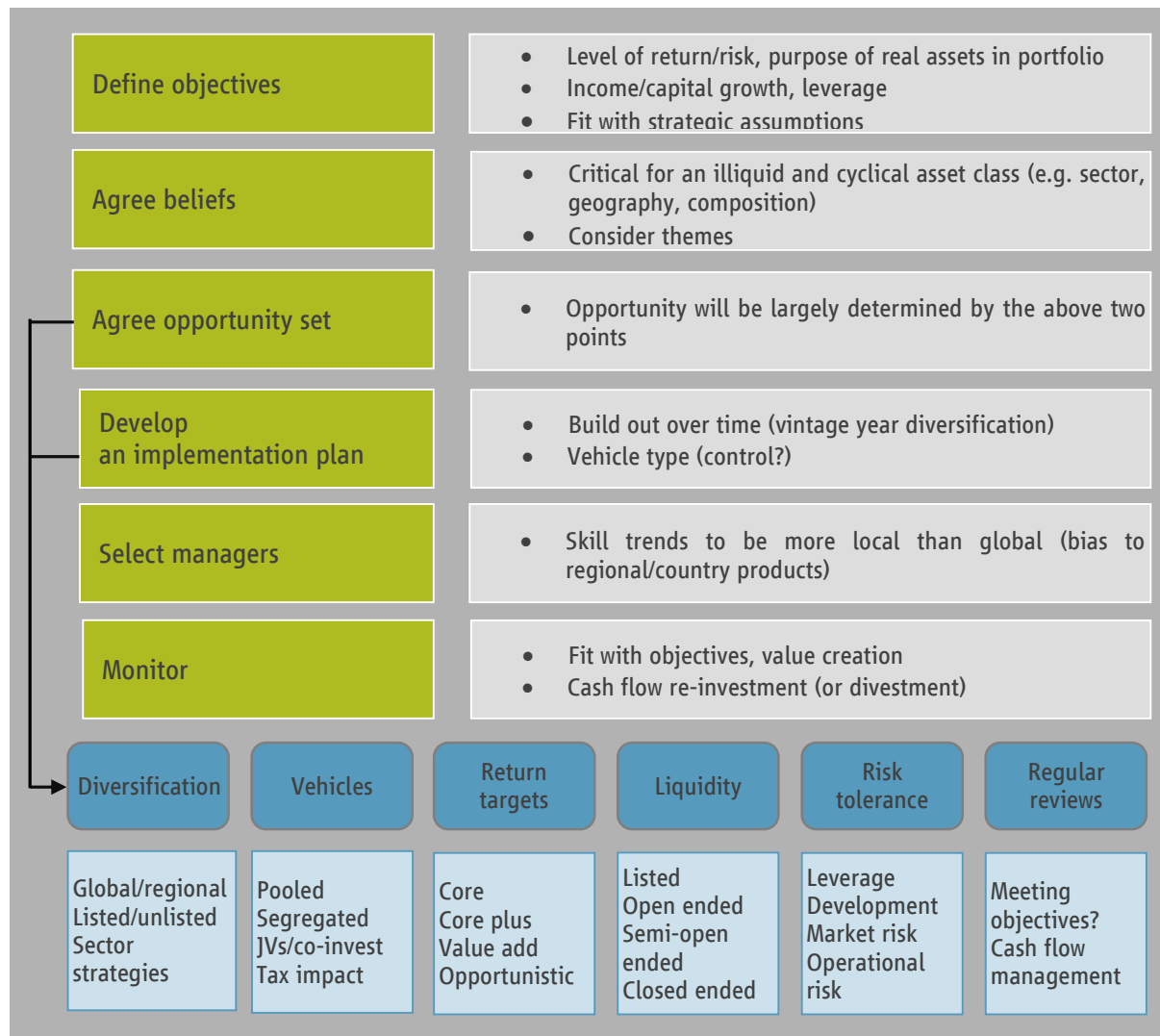
There are a number of routes to choose from when developing an implementation plan.

#### 3.4.1. Core/core plus unlisted infrastructure

Funds typically purchase and operate existing assets, with limited reliance on asset development as a source of expected return. Such funds are typically structured in one of two ways:

- open-ended funds typically focused on the core/core plus end of the risk/return spectrum. They may take some limited development risk and use moderate leverage. There is a limited universe of open-end infrastructure funds (<10), with even fewer well established/diversified funds. There are few global open-end funds with a handful of smaller regional funds;
- closed-ended funds focused on the core/core plus end of the risk/return spectrum. Closed-ended vehicles are more common than open-ended ones and may be more focused on adding value given that a realization of the investment is an explicit strategic goal. These funds typically pool around 7–12 assets usually with a 10+ year term. The universe consists of companies with large market capitalization (large “mega” cap funds) that tend to have a global focus (the national economies of Organisation for Economic Co-operation and Development (OECD) Member countries), large regional funds, as well as smaller/mid-sized funds that are typically regionally focused (majority in Europe) and diversified by sector.

**Figure 7. Building an infrastructure allocation**



Note: JVs = Joint ventures.

Source: Authors.

### 3.4.2. Value-add/opportunistic unlisted infrastructure

These are higher-return seeking funds of around 6–10 assets usually with 8–10 year terms that focus on higher-risk development projects or more complex situations. They could be structured as global regional funds with higher return ambitions of circa 15–20 per cent per annum.

### 3.4.3. Co-investments

A co-investment is a minority investment, made directly into an asset, alongside an infrastructure manager or other investor(s). This is sometimes offered to pooled fund investors on a “no fee, no carry” basis. The key advantages of investment into co-investment opportunities include increased capital deployment, tactical and strategic portfolio management and a reduced overall fee level. However, the disadvantages include adverse selection risk, sourcing and due diligence effort, reputational risk, risk if the timing of the exit is not in line with the manager’s objectives, potential addition of complexity to custody arrangements, and having to manage direct stakes.

### 3.4.4. Direct or investor club model

In this model, the investor establishes an Investment Management Agreement (IMA) with one or more highly preferred managers in a partnership to source, acquire and manage assets to meet its specific objectives. It could be implemented as a segregated mandate or a dedicated trust structure. Investors may be actively involved in deal selection, retain a veto right on each deal or simply specify the mandate terms. This approach can be more demanding from a governance perspective.

Ultimately, whether the ownership is direct, or whether it is through a club model with a manager involved, there is a requirement for active ownership. In the club model this role is played by the manager and the investor's responsibility is to ensure they monitor and manage the manager's skills and engagement in this area; under the scenario where the investor is managing these assets directly, they are responsible for this.

Investors can mitigate their exposure to construction risk by:

- working with developers or construction companies with a proven track record in that sector/geography;
- contract management – the construction company will bear the risk of budget overruns and time delays with conditions specified in a contract;
- regular updates and meetings with the contractors on site.

Generally, greenfield investments will include development and construction risks and will therefore fetch a higher premium in its target return. Once the asset is built and operational, it becomes a brownfield site producing yield.

### 3.4.5. Valuation

Direct investments can be valued through a discounted cash flow approach if the asset is likely to produce steady income through some form of subsidy or tariff scheme from a highly rated counterparty (e.g. local government). It is worth noting that the investor will have to add an additional risk premium for the construction assets at the discount rate they are willing to underwrite.

Valuing using the enterprise value/earnings before interest, taxes, depreciation, and amortization (EBITDA) multiple can be used for assets that have comparable transactions (e.g. airports and companies).

For illiquid asset classes such as infrastructure, interim valuations will be conducted by the manager with annual external audits, but the returns and losses are realized when the assets are sold, depending on how the market price differs from the book value.

The independent nature of the valuation is important; most social security institutions would seek to have an independent valuation by an auditing firm or a serious peer review process for internal valuation of assets.

### 3.4.6. Listed infrastructure

Typically, this will take the form of a managed fund of 15–30 stocks diversified by sector and region, drawn from a global universe of over 300 stocks and usually managed against a sub-set

of assets that exhibit “core” characteristics. Alternatively, an investor may elect to have a small number of strategic holdings.

The advantages of investing in infrastructure via a listed route include:

- greater liquidity for rebalancing, short-term portfolio re-positioning (thematic investing) or to increase or decrease the overall allocation (dynamic allocation);
- greater diversification;
- potential from alpha for stock selection skill.

The disadvantages of investing in infrastructure via a listed route include:

- typically much higher short-term volatility and equity beta risk (versus unlisted);
- no strategic or operational management control by the fund manager;
- limited manager universe (and typically high fees for listed stock portfolios).

### 3.4.7. Private open-end versus closed-end funds

Table 1 outlines the key considerations an investor should take into account when assessing the investment suitability of private open-end and closed-end funds.

### 3.4.8. Portfolio management challenges

It is important for an investor to note that investing USD 100 million in private markets is not as easy as investing USD 100 million in public markets. Closed-end fund investments are drawn down and are distributed over intermittent intervals, while open-end funds frequently have commitment queues and can take anywhere from 0–2 years to become invested. In order to maintain a stable exposure, an investor must make repeat investments to closed-end funds over a number of years.

Therefore, careful portfolio and cash management is needed. An appropriate balance between vintage year diversification and getting up to target allocation quickly needs to be considered. Layering commitments will allow an investor to get to a target investment level and builds diversity in the portfolio. Investors will commit capital that will be used by the fund manager; however, the manager will have several years to find the investment with the right risk/return profile. The length of this process is due to the identification, negotiation and transaction of these assets. This ensures that the Net Asset Value (NAV) will grow over time. As the assets are sold off, the NAV will decrease, and cash will be distributed to investors. As such, it is important to have a systematic way of building the private markets programme, which will allow the investor to reach the target exposure to that asset class over time through a layering effect through multiple fund commitments over a longer period of time. Otherwise investors will find themselves being under-exposed to the target allocation because of the cash flow profile of the asset class.

**Table 1.** *Open-end versus closed-end funds*

Key considerations	Open-end	Closed-end
<b>Term</b>	Evergreen or continuous	Typically 8 to 15-20 years
<b>Investment period or vintage</b>	Commitments are typically drawn in 0–2 years	Limited to commitment period, typically 3–5 years
	Ongoing; Immediate exposure upon capital drawdown No j-curve: quicker investment period, no fees on undrawn commitments and cash yield on drawn commitments on day one	Need for vintage year diversification so typically committing to multiple managers/funds over a number of years J-curve: fees typically on committed capital, although some can be found on invested capital
<b>Investment strategy</b>	Primarily core/core+ risk/return profiles Perpetual nature of the fund aligns with the underlying buy and hold strategy for core assets	Primarily higher risk strategies (value-add/opportunistic) although many core/core plus strategies invest via closed-end funds
<b>Diversification</b>	Typically buying into an existing pool of assets	Blind pool fund that provides no visibility into the ultimate make-up of the portfolio after the investment period
		Typically less diversified
<b>Liquidity</b>	Investors have control and optionality through redemption option, although redemption terms are various across funds	Limited liquidity available from distributions and asset divestments at discretion of manager
	Provides greater degree of liquidity, but underlying investments are still illiquid	Potential to sell on secondary market before end of fund life, but cost to do so can be significant

Source: Authors.

For this, a careful modelling of future projected cash flows is needed to determine appropriate commitment amounts for each closed-end fund. These commitment amounts will vary by size of the programme, current NAV of the programme, types of investments in the programme, and state of the economy.

In general, the profile of multiple commitments will take the form of the graph presented in Figure 8.

### 3.5. Global versus domestic investment

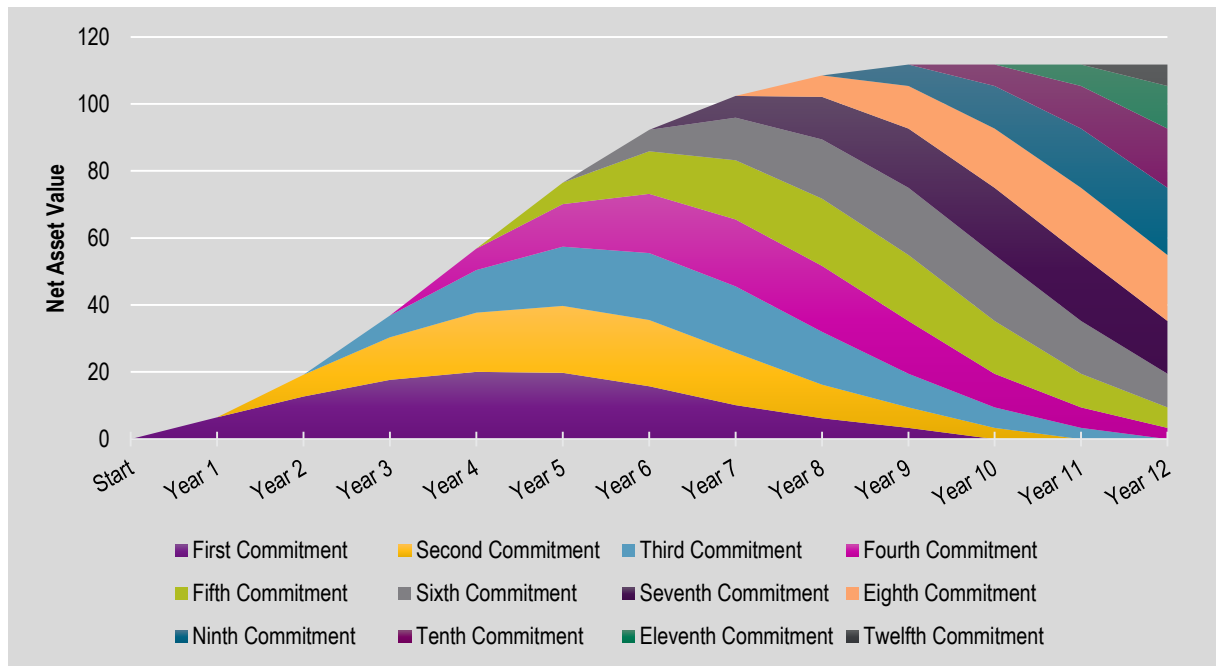
Investing globally can open up additional opportunities to access high quality investments in markets that are comparable in terms of size, transparency and liquidity. Different infrastructure markets are in different stages of maturity and offer a variety of opportunities.

Australia and the United Kingdom are established infrastructure markets dating back to the 1980s when their governments began to privatize public sector companies and to seek private sector funds for further investment. Additionally Australia, Canada and Europe have established and advanced Public Private Partnerships (PPPs), which present opportunities within social infrastructure. In the United States, the trend towards private investment in infrastructure has

grown more slowly than in other industrial countries as the state and local governments in the United States have typically tapped the municipal (tax-exempt) bond markets to finance infrastructure. As a result, the majority of activity in the United States is in the power and energy sector.

Investing globally has the potential to enhance diversification and dampen portfolio volatility. For example, a power or transport investment in Europe may have different characteristics than one in the same sector in the United States or a developing country. Conditions in the relevant local industries play a role as does the depth and experience of the local infrastructure finance market.

**Figure 8.** Profile of multiple commitments



Source: Authors.

Australia, an infrastructure trailblazer, has much in common with Europe, the largest arena for deals. It has less in common with the United States, where so much infrastructure is financed via municipal bonds, or with emerging markets. Global portfolios can also take advantage of relative value opportunities, however, objectives for domestic inflation-linkage for an infrastructure portfolio need to be considered.

### 3.6. Additional management and governance implications

There are additional operational requirements required in monitoring unlisted infrastructure investments due to the private and illiquid nature of the asset class:

- additional education or knowledge by staff/committees to select and monitor investments;
- number of managers/fund options that the client is comfortable monitoring:
  - open-end fund portfolios have lower operational requirements than closed-end;
  - closed-end fund portfolios may require additional resources depending on level of complexity;



- there are a lack of industry standard:
  - benchmarks for private infrastructure;
  - calculations and definitions for metrics.
- real asset portfolio risk monitoring may require customized/ad-hoc reporting from managers to receive desired information;
- additionally, complex cash-flow management and forecasting may be required due to illiquidity of infrastructure and the cash flow profile of closed-end funds;
- spending on overall strategy towards currency hedging, there may be a need to monitor currency exposures to ensure effective hedging.

### 3.6.1. Benchmarking listed infrastructure

To appropriately represent a core listed infrastructure portfolio, a listed infrastructure index should:

- show strong infrastructure “purity” i.e. monopolistic assets with inelastic demand producing low volatility cash flows;
- have a clear linkage to inflation;
- be representative of the median core listed infrastructure manager portfolio;
- be sufficiently diversified;
- be widely accepted by market participants.

Most of the available infrastructure indices in the market fail to meet these criteria. Preferred listed infrastructure managers tend to benchmark performance over the longer term to the Consumer Price Index (CPI) plus a margin while using a listed infrastructure index as shorter-term performance benchmark. Inflation linked benchmarks can provide a suitable long-term alignment.

The FTSE Global Core 50/50 Capped Index went live in March 2015 in response to the cessation of the UBS Global Infrastructure and Utilities 50/50 Index. This is a reputable listed infrastructure index to benchmark shorter-term performance of listed infrastructure portfolios.

### 3.6.2. Benchmarking unlisted infrastructure investments

There are a number of peer group indices available that provide performance data of a select number of unlisted infrastructure funds in the market. These include:

- The MSCI/IPD Australia Unlisted Infrastructure Index and the MSCI/IPD Global Unlisted Infrastructure Asset Index comprising a subset of core funds with performance dating back to 2001.
- The Preqin Infrastructure Index tracks performance of closed-end unlisted infrastructure funds across all vintage years. It captures, in index form, the average returns earned by investors from their infrastructure portfolios, based on the actual amount of capital invested in infrastructure partnerships.

- The Cambridge Associates Infrastructure Index represents a horizon calculation based on data compiled from 78 infrastructure funds, including fully liquidated partnerships, formed between 1993 and 2015.

As with all peer-relative benchmarks, the main issues to be aware of include survivorship bias and the relatively small universe of managers, as well as the discrepancies between funds regarding evaluation practices. Given the current universe of available indices for unlisted infrastructure, it may be wise to benchmark unlisted infrastructure portfolios to an absolute return target, preferably with an explicit linkage to inflation (e.g. Australian CPI +5 per cent). Investors may also choose to benchmark against an alternate risk free rate (e.g. 10-year government bond total return index +3.5 per cent per annum).

The structure of fee terms can have a significant impact on actual fees paid to the investment manager (Table 2). As such, close attention should be paid to the agreed terms to ensure the investor is paying what they would consider a fair exchange for investing and managing the assets. Although there may be exceptions, the general preferences are for:

- fees charged on invested capital, rather than committed capital;
- management fee only for core funds (i.e. with no performance fee) to ensure the manager is not incentivized to take on undue risk;
- if a core infrastructure fund includes a performance fee, the return hurdle should include suitable inflation linkage or be a cash plus target to ensure any performance fee paid is based on manager skill rather than market returns;
- for value-add/opportunistic strategies, performance fees should be calculated over a hard hurdle, rather than a preferred return. A preferred return incorporates a “catch-up” clause, thereby expediting the return to the General Partner prior to the Limited Partner;
- performance fees to be charged on a whole of fund basis, rather than deal by deal for closed-end funds, and with the inclusion of a high water mark in open-ended structures. If performance fees are paid prior to the end of a fund’s term, a claw-back mechanism should be included, preferably with escrow protection.

**Table 2.** Typical investment management fees

	Fees on committed capital	Fees on invested capital	Performance fees
Unlisted core infrastructure	0.0–0.8% pa	0.7–1.5% pa	10–20% over hurdle
Social infrastructure (PPP / PFI)	0.0–0.5% pa	1.0–1.5% pa	0–10% over hurdle
Opportunistic infrastructure	1.0–1.5% pa	1.5–2.0% pa	10–20% over hurdle

*Note:* PPP = Public Private Partnerships; PFI = Private Finance Initiative.

*Source:* Authors.

## 4. Trends in infrastructure investment

### 4.1. Market overview

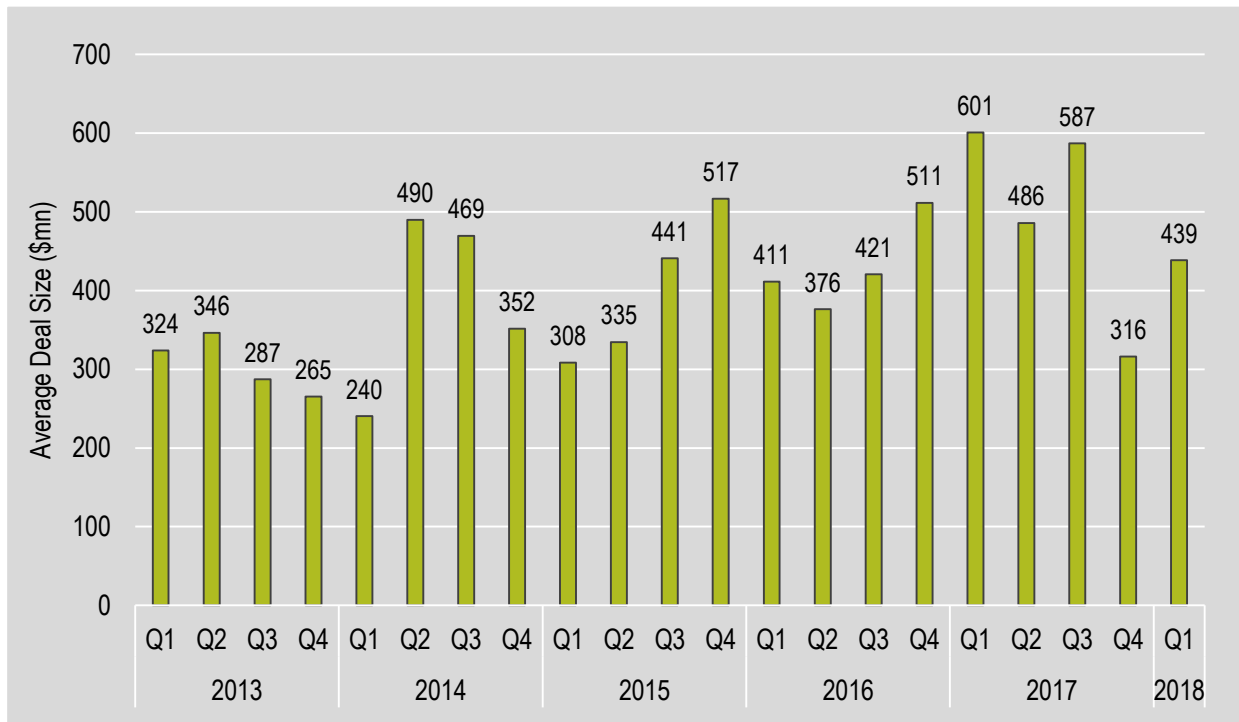
Five unlisted infrastructure funds reached a final close in Q1 2018 for an aggregate USD 5.7 billion. Following a record year of fundraising in 2017, this is not only the lowest amount of capital raised in a single quarter since Q3 2013, but also the smallest number of funds closed since Q3 2009. Funds closed in Q1 2018 secured an average of 120 per cent of their target, showing that investor demand is strong – particularly for established managers. At the start of Q2 2018, there were 178 unlisted infrastructure funds in market seeking an aggregate USD 133 billion; these funds raised USD 52 billion in interim closes, suggesting the possibility of a healthy fundraising environment across 2018.

The number and estimated aggregate value of infrastructure transactions in Q1 2018 were both down on Q4 2017 totals, standing at 564 transactions completed for an estimated USD 222 billion, compared with 825 transactions worth USD 230 billion. However, the average deal size increased by 39 per cent to reach USD 439 million. The combination of fewer deals with higher average values emphasizes the twin issues of finding attractive opportunities and high valuations facing infrastructure fund managers, both of which were highlighted as concerns by respondents to Preqin's fund manager survey at the end of 2017 (Figures 9 and 10).

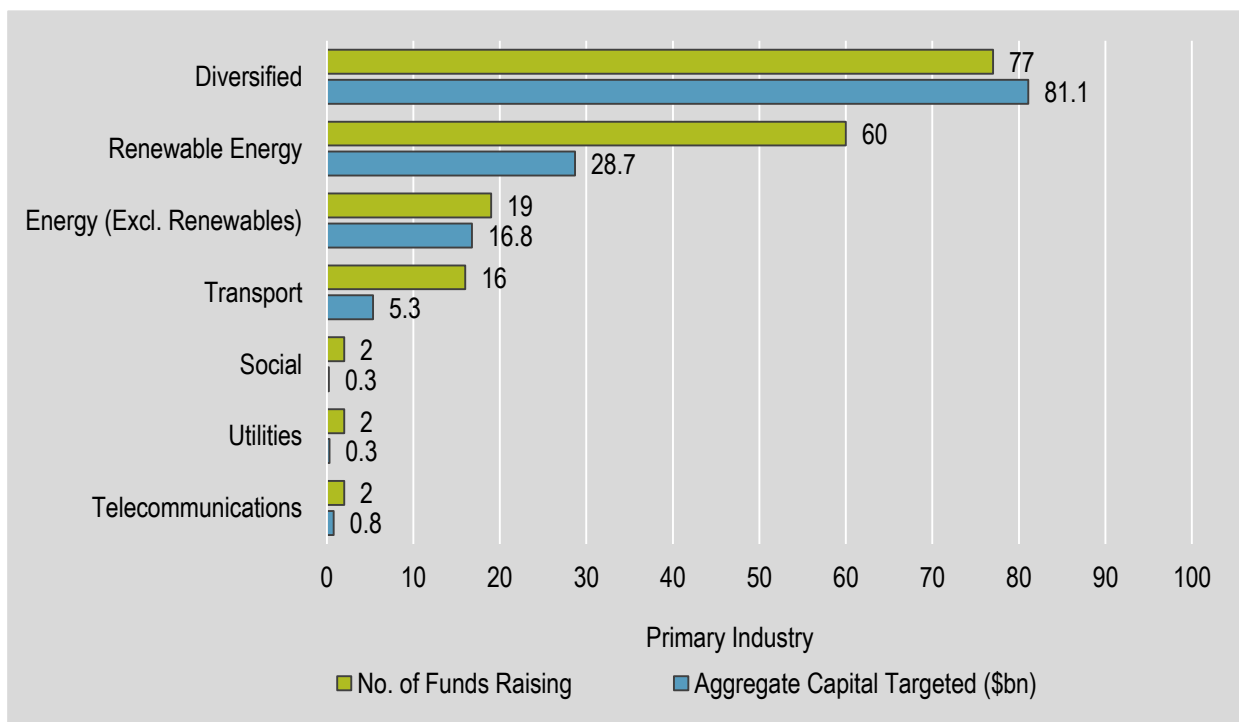
With regards to investment plans for 2019, institutional investors in infrastructure maintained a strong preference for domestic investment opportunities; however, North America-based investors were more interested in exposure to global infrastructure markets than investors in Europe and Asia. Showing more evidence of a continued strong appetite for the asset class, the proportion of investors looking to commit USD 100 million or more has increased from 39 per cent in Q1 2017 to 50 per cent in Q1 2018, and three-quarters of investors plan to invest in two or more funds in 2018.

According to the *IPE Real Assets Top 100 Institutional Infrastructure Investors Survey 2018*, the top 100 largest institutional infrastructure investors invest more than USD 440 billion in infrastructure assets, an increase of over 20 per cent compared to the year previously.

**Figure 9.** Average infrastructure deal size, Q1 2013–Q1 2018



**Figure 10.** Unlisted infrastructure funds in market by primary industry



Source: Preqin (2017).

## 4.2. Reserve fund investment in infrastructure

According to the *IPE Real Assets Top 100 Institutional Infrastructure Investors Survey 2018*, 68 per cent of institutional investors already invest in infrastructure with nearly half expecting to increase such investment in the near-term (compared to only 2 per cent who plan to reduce such investment). While 45 per cent invest directly, the vast majority invest some or all of the infrastructure allocation via Direct Funds (87 per cent) with a fifth also increasing exposure by investing in listed companies.

Some recent examples of reserve and pension fund investment:

- Macquarie Infrastructure & Real Assets (MIRA) in Australia raised EUR 2.5 billion for its new infrastructure fund, exceeding its minimum fundraising target by more than 65 per cent. Macquarie Super Core Infrastructure Fund (MSCIF) Series 1 received the commitments from global investors at final close exceeding the fund's initial minimum target of EUR 1.5 billion.
- Japan's Government Pension Investment Fund (GPIF) recorded a return of 5.25 per cent on its JPY 196.8 billion (EUR 1.51 billion) core infrastructure portfolio in the 12 months ending 31 March 2018. Its infrastructure investments were located mostly in the United Kingdom (57 per cent), Australia and Sweden (both 15 per cent), Spain (10 per cent) and Finland (3 per cent).
- As one of the largest pension funds in Europe, Denmark's ATP is a big investor in infrastructure with over EUR 5.8 billion in this asset class. For example, in September 2017, ATP took stake of 27 per cent in Copenhagen airports and has investment in other airports and infrastructure assets in Australia, Spain, the United Kingdom and the United States. While at the start, ATP invested through fund investments, once the pension fund gained in-house experience, it has also focused on direct investment deals.
- The Texas Teacher Retirement System (TRS), the largest public retirement system in the state of Texas, aims to invest 5 per cent of its USD 150 billion portfolio in infrastructure with a large proportion in energy assets.

## 5. Conclusion

With a relatively unfavourable environment for more “traditional” asset choices, social security reserve funds are increasingly looking to investing in infrastructure assets for a variety of reasons. At the same time, governments around the world are increasingly looking to the private sector to fund new infrastructure investment. Therefore, infrastructure presents an attractive investment opportunity for certain social security institutions. If managed efficiently, infrastructure investments have the possibility to generate long-term, sustainable returns.

However, there remain ongoing managerial challenges and governance implications, in addition to difficulties in sourcing such assets. It is important for investors to weigh up the key benefits and risks, while taking into account environmental and social considerations. Developing an efficient implementation plan is key to the foundation of any investment, and if successful will bring about a number of advantages including inflation linkage, diversification and downside protection.

The reality is that the experience of most investors with infrastructure investors is still relatively new. Some lessons have already been learned the hard way. Some critical areas that need to be addressed appropriately going forward for all investors, include:

- overly optimistic demand projections and overvaluation of assets (as witnessed in the mid-2000s, and which may still be the case in certain national markets);
- poor risk assessment (such as demand risk of transport assets – e.g. traffic forecasts have proven wrong for various toll roads acquisitions);
- excessive leverage exacerbated in a rising interest rate environment;
- proper pricing of regulatory/political risk (particularly in those emerging market (EM) countries where the markets remain nascent).

This report has sought to provide governance and management requirements to assist social security reserve funds in their asset investment choices.



## 6. Glossary

**Carried interest (or carry):** Carried interest, or carry, is a share of any profits that the general partners of private equity and hedge funds receive as compensation, regardless of whether they contributed any initial funds. This method of compensation seeks to motivate the general partner (fund manager) to work toward improving the fund's performance.

[www.investopedia.com/terms/c/carriedinterest.asp](http://www.investopedia.com/terms/c/carriedinterest.asp)

**Claw back:** A claw back is a contractual provision whereby money already paid to an employee must be returned to an employer or benefactor, sometimes with a penalty.

Many companies use claw back policies in employee contracts for incentive-based pay like bonuses. They are most often used in the financial industry. Most claw back provisions are non-negotiable. Claw backs are typically used in response to misconduct, scandals, poor performance, or a drop in company profits.

[www.investopedia.com/terms/c/clawback.asp](http://www.investopedia.com/terms/c/clawback.asp)

**Core:** Core refers to a relatively passive investment where assets are typically held for the income they generate with little management required.

[origininvestments.com/2018/02/21/what-are-core-core-plus-value-added-and-opportunistic-investments](http://origininvestments.com/2018/02/21/what-are-core-core-plus-value-added-and-opportunistic-investments)

**Core plus:** Core plus is a more active investment approach that attempts to improve yields, for example, through improvements to the asset or management efficiencies, thereby creating growth and income.

[origininvestments.com/2018/02/21/what-are-core-core-plus-value-added-and-opportunistic-investments](http://origininvestments.com/2018/02/21/what-are-core-core-plus-value-added-and-opportunistic-investments)

**Escrow:** Escrow is a legal concept in which a financial instrument or an asset is held by a third party on behalf of two other parties that are in the process of completing a transaction. The funds or assets are held by the escrow agent until it receives the appropriate instructions or until predetermined contractual obligations have been fulfilled. Money, securities, funds and other assets can all be held in escrow.

[www.investopedia.com/terms/e/escrow.asp](http://www.investopedia.com/terms/e/escrow.asp)

**General partner:** A partnership is a business entity formed when at least two or more people agree to go into business together. General partners typically create a partnership agreement to spell out the details of their partnership.

A general partner is an owner of a partnership who has unlimited liability. A general partner is also usually a managing partner and active in the day-to-day operations of the business. Because any partner in a general partnership can act on behalf of the entire business without the knowledge or permission of the other partners, being a general partner offers poor asset protection.

If a general partner is ever required to meet the partnership's financial obligations, his or her personal assets may be subject to liquidation. In the case of a limited partnership, only one of the partners will be the general partner and have unlimited liability. The other partners will have limited liability as long as they do not take an active role in managing the business, so their personal assets will not be at risk.

[www.investopedia.com/terms/g/generalpartner.asp](http://www.investopedia.com/terms/g/generalpartner.asp)

**Holding period:** A holding period is the amount of time the investment is held by an investor or the period between the purchase and sale of a security. In a long position, the holding period refers to the time between an asset's purchase and its sale. In a short options position, the holding period is the time between when a short seller buys back the securities and when the security is delivered to the lender to close the short position.

[www.investopedia.com/terms/h/holdingperiod.asp](http://www.investopedia.com/terms/h/holdingperiod.asp)

**Hurdle rate:** A hurdle rate is the minimum rate of return on a project or investment required by a manager or investor. The hurdle rate denotes appropriate compensation for the level of risk present; riskier projects generally have higher hurdle rates than those that are less risky.

[www.investopedia.com/terms/h/hurdlerate.asp](http://www.investopedia.com/terms/h/hurdlerate.asp)

**Left tail events (or risk):** Portfolio development and financial results can be impacted by the phenomenon known as tail risk. This occurs when the portfolio value can move more than three standard deviations from the mean. These events are usually triggered by a severe economic or financial crisis that seems to erupt unexpectedly. They tend to spread panic across markets, creating a downward spiral of declines affecting a broad spectrum of investments. Because they are so widespread and their magnitude so difficult to predict, left tail events (negatively impact on portfolios) can have a devastating result on portfolio returns. When tail risk appears, the distribution is not normal, but skewed, and has fatter tails. The fatter tails increase the probability that an investment will move beyond three standard deviations and create more risk which, when it is to the downside, is referred to as left tail risk.

[www.thebluecollarinvestor.com/what-is-left-tail-risk-and-how-is-it-impacting-our-stock-portfolios](http://www.thebluecollarinvestor.com/what-is-left-tail-risk-and-how-is-it-impacting-our-stock-portfolios)

**Limited partner:** See General partner.

**Off-take contract:** An off-take agreement is an agreement between a producer of a resource and a buyer of a resource to purchase or sell portions of the producer's future production. An off-take agreement is normally negotiated prior to the construction of a facility such as a mine, in order to secure a market for the future output of the facility. If lenders can see the company has a purchaser of its production, it makes it easier to obtain financing to construct a facility.

[www.investopedia.com/terms/o/offtake-agreement.asp](http://www.investopedia.com/terms/o/offtake-agreement.asp)

**Vintage:** Vintage is a term used by mortgage-backed securities (MBS) traders and investors to refer to an MBS that is seasoned over some time period. An MBS typically has a maturity of around 30 years, and a particular issue's "vintage" exposes the holder to less prepayment and default risk, although this decreased risk also limits price appreciation.

[www.investopedia.com/terms/v/vintage.asp](http://www.investopedia.com/terms/v/vintage.asp)

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