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Pension Fund Investment in Infrastructure

A COMPARISON BETWEEN AUSTRALIA AND CANADA

Georg Inderst, Raffaele Della Croce

JEL Classification: G15, G18, G23, G28, H54, J26

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Pension fund investment in infrastructure – A comparison between Australia and Canada

By Georg Inderst and Raffaele Della Croce

July 2013

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ABSTRACT / RÉSUMÉ

PENSION FUND INVESTMENT IN INFRASTRUCTURE – A COMPARISON BETWEEN AUSTRALIA AND CANADA

Australian and Canadian pension funds have been pioneers in infrastructure investing since the early 1990s. They also have the highest asset allocation to infrastructure around the globe today. This paper compares and contrasts the experience of institutional investors in the two countries looking at factors such as infrastructure policies, the pension system, investment strategies and governance of pension funds. The 'Canadian model' and the '(new) Australian model' of infrastructure pose a challenge to the 'private equity model', dominant in Europe and the USA. Important lessons can be learnt by both policy makers and investors.

JEL codes: G15, G18, G23, G28, H54, J26
Keywords: Canada, Australia, pension funds, institutional investors, asset allocation, pension regulation, infrastructure, infrastructure investment, infrastructure policy, private finance

INVESTISSEMENTS DES FONDS DE PENSION DANS LES INFRASTRUCTURES – COMPARAISON ENTRE L'AUSTRALIE ET LE CANADA

Les fonds de pension australiens et canadiens sont parmi les premiers à avoir investi en infrastructures, dans les années 1990. Aujourd'hui, la part des actifs qu'ils y consacrent est inégalée dans le monde. Le présent document met en lumière les similitudes et les différences du cadre de l'investissement institutionnel dans les deux pays, en s'intéressant à des facteurs tels que les politiques en matière d'infrastructures, les systèmes de retraite, les stratégies d'investissement et la gouvernance des fonds de pension. Le « modèle canadien » et le « (nouveau) modèle australien » d'infrastructures remettent en cause le « modèle du capital-investissement » prédominant en Europe et aux États-Unis. Les observer peut être riche d'enseignements pour les décideurs comme pour les investisseurs.

Codes JEL: G15, G18, G23, G28, H54, J26
Mots clés : Canada, Australie, fonds de pension, investisseurs institutionnels, allocation d'actifs, réglementation de pension, infrastructures, investissements dans les infrastructures, politique des infrastructures, financement privé

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EXECUTIVE SUMMARY

Many governments have decided to encourage private investment in infrastructure to bridge the infrastructure financing gap. At the same time, institutional investors such as insurance companies and pension funds are trying to diversify their portfolios better and enhance their long-term asset-liability management with infrastructure assets. "Huge infrastructure demands and hungry institutional funds – link them." (Heseltine 2012)

Australia and Canada have been the two leading countries in this respect. Australian pension funds have been pioneers in the field since the early 1990s, and their financial industry invented the label of 'infrastructure as an asset class'. Canadian pension funds, the 'maple revolutionaries' (Economist 2012), are often held up as some of the world's leading infrastructure investors, especially for their 'Canadian model' of *direct* investing.

This paper compares and contrasts the experience of pension funds in investing in infrastructure projects in Canada and Australia, looking at factors such as infrastructure policies, the pension system, investment strategies, asset allocation and governance of pension funds. In fact, the two countries have the highest asset allocation to infrastructure by pension funds (of roughly 5%) across the globe.

There are a number of similarities between the two countries, in particular a trust-based pension system, the absence of restrictive investment and solvency regulation, a mature PPP market and a relatively stable political environment. In line with international asset allocation trends, both countries have built up sizeable 'alternative asset' portfolios in recent years at the expense of public equities.

There are also some marked differences. Canada is largely abstaining from privatizations while Australia is considering further 'asset recycling' of public assets to finance new infrastructure projects. Canada has a well-functioning project bond market while Australia has not. The benefit systems are at the opposite ends of the spectrum with defined benefit (DB) in Canada and defined contribution (DC) in Australia. Canada's pension plans are widely underfunded while Australia's are growing fast.

Both countries have a highly fragmented pension scene but also a number of very large pension funds of global scale. A striking feature in both countries is the importance of the size of the pension schemes for investment in illiquid assets. The public attention is primarily on the behaviour of large funds but underneath there is little to no infrastructure investment activity by smaller funds.

Major 'export articles' from Australia are:

- strong appetite for privatized assets by pensions funds and other institutional investors;
- perhaps paradoxically, substantial infrastructure investing is possible in a DC pension system;

* This working paper was prepared by Georg Inderst, independent consultant, and Raffaele Della Croce from the OECD's Directorate for Financial and Enterprise Affair. This report is published under the responsibility of the OECD Secretary General. The views contained herein may not necessarily reflect those of the OECD Members. This research was made possible thanks to the financial support of Canada Pension Plan Investment Board, Guggenheim Partners and Oliver Wyman to the OECD long-term investment project (www.oecd.org/finance/lti).

- outsourced investing with open-ended infrastructure funds, or ‘aligned asset managers’, at comparatively low cost (the ‘new Australian model’);
- an experienced investment industry that has seen a few market cycles.

Other countries can take away from Canada:

- investment in illiquid assets by institutional investors is possible, even by underfunded pension plans;
- the ‘Canadian model’ of direct infrastructure investing by pension funds (aiming at better control and lower cost of investment);
- a well-working PPP market;
- a robust project bond market.

Among the lessons learnt the hard way, and other issues encountered:

- overly optimistic demand projections and overvaluation of assets;
- risk allocation (e.g. demand and patronage risk) and risk management (e.g. liquidity and leverage risk);
- volatility of listed infrastructure funds (the ‘old Australian model’);
- governance and fee issues of infrastructure funds;
- direct investing can be tricky, and requires adequate resources.

In terms of the actual performance figures, the data is still surprisingly poor. The experience, so far, appears mixed in both countries, and varies considerably across investors. Many projects and products more or less produce the expected income and return profile. However, there have been disappointments during and after the financial crisis, and these can weigh heavily in often highly concentrated portfolios. Circumstances are changing fast, and for most investments, it is simply too early to say.

Important lessons can be learnt not only by investors but also policy makers. Political and regulatory stability are paramount for long term investment strategies. From the outset, infrastructure has been a global asset class with surprisingly little home bias. Canada in particular faces the paradox of a mature PPP market at home while the large pension funds invest most of their equity capital abroad.

The comparatively loose investment and pensions regulation (under the prudent person principles) allows Canadian and Australian pension funds to invest in illiquid assets to a higher degree than in most other countries.

Governments are (sometimes desperately) trying to divert private investment flows into domestic infrastructure. At the same time, investors often bemoan the lack of a consistent project pipeline at home, and the shortage of suitable investment opportunities in general. There are obviously still intermediation issues to work on for both governments and the financial industry.

The combination of (perceived) supply side constraints and a rush of new capital committed to infrastructure, from all sorts of players on a global scale, may again lead to an unhealthy overvaluation of assets with subsequent disappointments.

Finally, a lot of lip service is being paid to ‘sustainable investing’ or similar themes in the investment community. Infrastructure could, almost by definition, be a core ingredient of any ‘long term investment’ policies by pension funds, and also play a major role, for example, in climate change mitigation and adaptation. However, the link is not very clear, and much more work needs to be done on these concepts and in practice.

INTRODUCTION

Many governments have decided to encourage private investment in infrastructure to bridge the infrastructure gap. Private sector participation can bring additional capital but also end-user benefits from a more competitive environment in the form of lower costs, as well as the use of the private sector's technological and managerial competences in the public interest.

Yet at the same time, a number of failed public-private partnerships in infrastructure sectors demonstrate the challenges facing policy makers. Infrastructure investment involves contracts and regulatory frameworks which are more complex and of longer duration than in most other parts of the economy, operated under the double imperative of ensuring financial sustainability and meeting user needs and social objectives.

The challenges are even more acute when governments bring in institutional investors, such as pension funds, whose first responsibility is to provide adequate retirement income for their members. Infrastructure investments will only be made if investors are able to earn adequate risk-adjusted returns and if appropriate market structures are in place to access this capital.

The purpose of this paper is to compare and contrast the experience of pension funds in investing in infrastructure projects in two countries: Canada and Australia.[1] Australian pension funds have been pioneers in this field since the early 1990s, and their financial industry invented the label 'infrastructure as an asset class'. The Canadian pension funds are often held up as some of the world's leading infrastructure investors, especially for their 'Canadian model' of direct investing.

This paper examines reasons for the varying experiences, looking at factors such as:

- Nature of the pension system (DB vs. DC/ public vs. private pension funds / in-house management vs. external funds/ size of funds, etc.);
- Government policy (privatization and PPP policies / pipeline of projects / regulation incentives or disincentives);
- Nature of the projects (home vs. international exposure, different sectors, comparison of financing structures and vehicles etc.).

[1] This paper builds on a number of interviews with policy makers, investors and industry experts in Australia and Canada (Appendix 1). We would like to thank all interviewees for their valuable time and contributions. For a general background on international pension fund investment in infrastructure see, e.g., OECD (2011), Della Croce (2011), Inderst (2009, 2010).

1. Australia

1.1 The Australian infrastructure market

Background

Australia's private infrastructure investment market began with a number of large-scale infrastructure asset privatisations in the early 1990s, primarily in the energy, transport and communication sectors. Landmark transactions included electricity assets in Victoria and airport privatizations by the Federal Government. Australia was also an early adopter of the PPP model. A vast proportion consisted of large transport items, in particular urban toll roads and tunnels.[2]

There are various estimates of the infrastructure investment gap. Infrastructure Australia sees the 'infrastructure task' at A$30bn per annum (Infrastructure Australia 2011). Other estimates for infrastructure investment needs range between A$300bn and A$700bn over a decade.

Australia is a federal country. The States are the most important entities in infrastructure planning and spending but the federal government has an important role in regulation, and in fostering and co-ordinating capital investment. The specific competencies vary across industries.

Recent developments

In recent years, infrastructure has moved high on the political agenda. In 2008, the Australian Government announced a new, national approach to planning, funding and implementing the nation's future infrastructure needs. Over the six years to 2013–14, the Australian Government committed $36 billion to Australia's transport infrastructure.

The *Building Australia Fund* was established to finance capital investment in transport, communications, energy and water infrastructure. The Australian Government also set up the A$6bn *Regional Infrastructure Fund* to invest some of the proceeds of the resources boom. A new government entity, *Infrastructure Australia*, was established to assist Australian governments to develop a strategic blueprint for unlocking infrastructure bottlenecks and to modernise the nation's economic infrastructure.

The Australian Government is also committed to establish a *Clean Energy Finance Corporation (CEFC)* that would invest around A$10 billion in renewable energy.

It should provide a new source of finance for renewable energy, energy efficiency and low emissions technologies. Furthermore, Australia introduced a *Carbon Trading Scheme* and a *Carbon Tax* in 2012.

PPP & Project Finance

In Australia, PPPs have been adopted as a key form of procurement for the delivery of major infrastructure projects. New South Wales and Victoria have made the greatest use of private provision of

[2] See, e.g., Ernst &Young (2011), IFWG (2012) for examples of privately financed infrastructure projects in Australia.

capital for public infrastructure.[3] In terms of volume the activity has been primarily based on toll roads even though in recent years social infrastructure projects such as schools, public housing or hospitals have become more common.

The scale of the Australian toll roads programme – typically urban motorways with a high construction cost and sophisticated operation – has been such that it has formed a base from which Australian investors have been able to play an active role in the later development of toll roads elsewhere in the world.

The Public-Private-Partnership (PPP) policy is evolving in Australia. The original model of the private sector taking demand risk for greenfield projects led to massive losses in some transport projects. Investors in toll roads have taken several losses as for example in projects such as the Cross City Tunnel or the Lane Cove Tunnel project. In both projects the winning consortium bidding for the projects overestimated traffic forecast and what drivers would ultimately pay.[4] In newer structures, the public sector takes on demand risk (AMP 2011). Most investors are willing to take brownfield risks after development.

Australian jurisdictions typically only commit to a PPP project following the allocation of its full capital cost within the relevant Government budgetary cycle. As a consequence, PPPs are released to the market in accordance to jurisdictional budget priorities, making it more difficult in the Australian Federal system to create a steady pipeline of projects (KPMG 2010).

Australia does not have a deep and liquid corporate bond market. The availability, cost and tenor of debt is likely to continue to be a challenge for the Australian economy generally, and infrastructure finance specifically (IFWG 2012).[5]

In the absence of a project bond market alternative, debt finance comes from local or international banks. The typical duration mismatch exposes investors to refinancing risks.

Barriers to pension fund investment in infrastructure

Many Australian pension funds were keen investors in infrastructure from the early 1990s, and can be considered as pioneers in this 'new asset class' in an international context. Nonetheless, there is an intense discussion in Australia about the role of pension funds in infrastructure investing, and what more they could do.

A range of barriers have been identified that (potentially) prevent the optimal investment in infrastructure assets. Issues include both supply and demand side factors, with different emphasis across the political and industry spectrum (Box 1).[6]

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[3] Establishment of Partnerships Victoria policy and guidelines in 2000, the Working with Government Guidelines for Privately Financed Projects in NSW and similar policies in other states defined the PPP model in the country.

[4] Traffic through the A$ 789 million Cross City Tunnel in Sydney never reached the levels forecast and after December 2006 just over one year of operations, the company was insolvent with debts of over A$ 500 million. The Lane Cove Tunnel, north-west of Sydney, opened in 2007 and collapsed after falling short of its original traffic target. It was placed into receivership in January 2010 with debts of more than A$ 1.1 billion.

[5] In the current reform discussions, the recommendation 13 by the IFWG in this respect is: 'The Australian Government should remove unnecessary regulatory barriers that currently impede retail corporate bond issuance in Australia as a way to diversify the sources of debt.'

Box 1. Barriers to pension funds investment in infrastructure in Australia

Project pipeline

A common call is for a greater supply of infrastructure projects and an integrated, co-ordinated pipeline across the State and Federal Governments.

Suitable structured projects

The current PPP framework encourages a transactional approach to infrastructure investment that is focused on 'short term interests'. Deals are structured principally through consortiums made up of constructors and banks that parcel up investments that are off-loaded to the final investors (ASFA 2011a).

Bidding process

The lack of consistent, clear and simple bidding processes is a general complaint. It may have led, among others, to unrealistic demand projections in the past. The ticket sizes (of $50-$100m) are also considered a problem, as are the high bidding costs typically 0.5-1.2% of project value – anywhere between 25/45% higher than in the comparable Canadian market (IFWG 2012). Moreover, unsuccessful bid costs need to be recouped from other investments and justified to pension fund members.

Political and regulatory risks

They include changes in State and Federal Governments, in infrastructure and tax policies, and uncertainties about carbon pricing and renewable energy initiatives.

Greenfield projects

Of particular concern are construction risks and patronage risks, and the disappointment with some toll road projects in the past.

Legacy of listed infrastructure funds

The 'old Australian model' of infrastructure finance, often linked to local investment ran into problems during the financial crisis. The model involved buying infrastructure assets that were highly leveraged, complicated with a variety of agency conflicts, and bundled into listed vehicles at high fees (Riskmetrics 2008, Lawrence and Stapledon 2007).

Short-termism

Some observers feel a tendency towards short-termism and 'retail behaviour' among superannuation funds as well. Short term peer group comparisons may not be very conducive to long-term investing. Some industry funds have opened business for other workers, and are often in competition with retail funds.

Liquidity and valuation issues

Infrastructure assets are by their nature highly illiquid. The pensions supervisor, APRA, remains cautious about the holding of illiquid assets. Greater member choice among super funds impedes more infrastructure investment as super funds must maintain sufficient liquidity to finance short-term redemptions.[7] Furthermore, there are valuation issues faced by 'open funds' at times of high market volatility with high volume flows in and out of the funds.

Alignment with investment strategies

Superannuation funds demand a variety of long-term products and investment profiles to facilitate access by investors of different sizes and risk preferences. Domestic infrastructure not only competes with international infrastructure investment opportunities but also with all other asset classes.

Scale, resources and investment expertise

Infrastructure is complex, and capital requirements are often high. Not many Australian superannuation funds are large enough to have sufficient governance, management and operational resources. Even with outsourcing there is still the need for in-house expertise.

[6] For a more detailed discussion, see, e.g., ASFA (2011a), Ernst &Young (2011), Infrastructure Australia (2012a), IPA (2010).

[7] Since 2005, members have a right to switch funds on 30 days' notice.

Reform proposals

An *Infrastructure Finance Working Group (IFWG)* was formed by the Government to identify options to reform infrastructure financing. In its report, IFWG (2012) found three areas of action needed: major reform of infrastructure funding, improved infrastructure planning to provide a deep pipeline of projects, and steps to encourage more flexible and efficient markets that attract private investment (see Appendix 2).

The IFWG recognizes the history of superannuation investing in privatized asses as well as greenfield and brownfield PPP assets. It sees the most meaningful opportunity for superannuation participation in established brownfield assets that could be divested by the public sector. This in turn would liberate public capital for new greenfield projects.[8]

The superannuation industry should find ways of aggregating resources, and the progress of the new UK Pension Infrastructure Platform (PIP) should be monitored. Furthermore, a reform of the retirement product market is recommended. Currently, retirees have three options available in the retirement period: lumps sum, pension or annuity. Retirement income products such as annuities could help reduce the liquidity issue. A significant question is whether individuals will continue to invest in growth assets through retirement.

1.2 The Australian pension system

In 1992, as part of a major overhaul of the Australian retirement policy, a compulsory occupational pension system was introduced. The so-called Superannuation system now has 11.6m members with a coverage rate of 71% of workers (ASFA 2012a). Total assets have grown to a level of A$1.4tn. The asset growth rate of 17% over 10 years has been well above the global average of 6.4%, in fact it is one of the highest in the world (Towers Watson 2012a). Estimates are that the Australian pensions system will have $7 trillion in assets by 2028 (Deloitte 2013).

Growth of pension assets

In the global context, Australia has now become a major player in the pensions market. It holds 6.7% of the total OECD pension assets of US$20.1tr, which puts it into rank 4 behind the USA, Japan, and UK. Its ratio of pension assets to GDP of 93%, too, is the fourth highest behind the Netherlands, Iceland and Switzerland (OECD 2012a). Total pensions assets already exceed the local stock market capitalisation (A$ 1.24tn in Aug 2012).

Australia also does relatively well in a qualitative assessment: it is ranked 3rd in Mercer's Global Pension Index, behind Denmark and the Netherlands (Mercer 2012).[9] The rating B+ indicates a "system that has a sound structure, with many good features, but has some areas for improvement that differentiates it from an A-grade system".

[8] The rather general, final recommendation 12 by the IFWG in relation to superannuation is: "To encourage financial institutions such as superannuation funds to further invest in long-term assets such as infrastructure, the Australian Government should examine the structure, regulation and taxation of retirement income products and the way in which they may impact on the demand for long-term investments."

[9] The index values a number of factors in terms of pension adequacy (including benefits, design, taxation), sustainability (including coverage, demography) and integrity (including, e.g., regulation, governance, communication, costs).

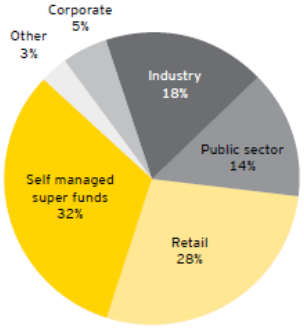
The majority of Australian pension funds are defined contribution (DC) schemes, and nearly 90% of pension fund assets are in DC funds. Average contribution rates are now 13% of salary. The Superannuation system is expected to be cash flow-positive for some decades because of favourable demographic and economic growth projections. Some forecasts see Australian pension fund assets to grow to over A$3 trillion over the next 10 years.

Types and sizes of DC funds

It is important to note that the superannuation system consists of a range of different vehicles: industry, public sector, corporate, retail and very small funds (including the strongly growing 'self-managed funds'. Retail funds are often referred to as for-profit, the other groups as profit-for-members. 85% of Australian pension assets are in private sector pension funds. Table 1 gives a breakdown of fund types:

Table 1. Breakdown of Australian Superannuation funds

Type of Fund	Total Assets ($billion)	No. of Funds (at June 2012)
Corporate	55.8	122
Industry	266.1	56
Public Sector	222.2	39
Retail (a)	372.1	135
Funds with less than 5 members	441.0	481,538
Balance of Statutory Funds	43.0	
Total	**1,400.3**	**481,957**



Source: ASFA (2012a), Ernst & Young (2011)

The Australian superannuation industry looks quite fragmented with many very small funds. However, there has been some consolidation among other funds over the years. For example, the number of corporate funds has been falling strongly, and the number of industry funds is down from 106 in 2004 to 56 in 2011.

Given the relatively short history of the Australian DC superannuation system, funds are often considered as relatively small in international comparison. However, many of them have grown into considerable size. In a global context, Australia now has four pension funds in the global top 100 and 15 in the top 300, twice as many as five years ago (Towers Watson 2012b). The combined assets under management of these 15 funds are about US$390bn.

Australia's largest, the Future Fund, a sovereign wealth fund, is ranked in 33rd position, with assets of US$74bn (Table 2). The number 15 in Australia, and global number 280, still has assets of over US$11bn. Australia's 'market share' among big (top global 300) funds has grown to 3.1%.

Table 2. Largest Australian superannuation funds

	Fund name	*Type of fund*	*US$ Millions*	*Top 300 ranking*
1	*Future Fund*	*Sovereign wealth fund*	*74,349*	*33*
2	*AustralianSuper*	*Industry fund*	*43,448*	*68*
3	*QSuper*	*Government fund*	*34,079*	*89*
4	*First State Superannuation Scheme*	*Industry fund*	*31,388*	*97*
5	*State Super (NSW)*	*Government fund*	*30,364*	*102*
6	*UniSuper*	*Industry fund*	*28,592*	*111*
7	*Commonwealth Superannuation Corporation*	*Government fund*	*23,606*	*137*
8	*Retail Employees Superannuation Trust*	*Industry fund*	*20,690*	*161*
9	*HESTA Super Fund*	*Industry fund*	*18,470*	*174*
10	*Sunsuper*	*Industry fund*	*18.189*	*179*

Source: Towers Watson (2012b)

Reform process and consolidation

In 2009, the government established a committee to examine the governance, efficiency, structure and operations of the superannuation system. The Super System Review (2010), also called the 'Cooper Review', recommended fewer and larger pension funds. The superannuation sector is expected to consolidate further.

The Government will introduce a low-cost default superannuation product called MySuper from 1 July 2013. Other recommendations aimed at reducing fees and costs as well as increasing the efficiency, transparency and governance of pension funds. However, for some observers, the reform proposals are not sufficient (e.g. Gray and Bird 2011).

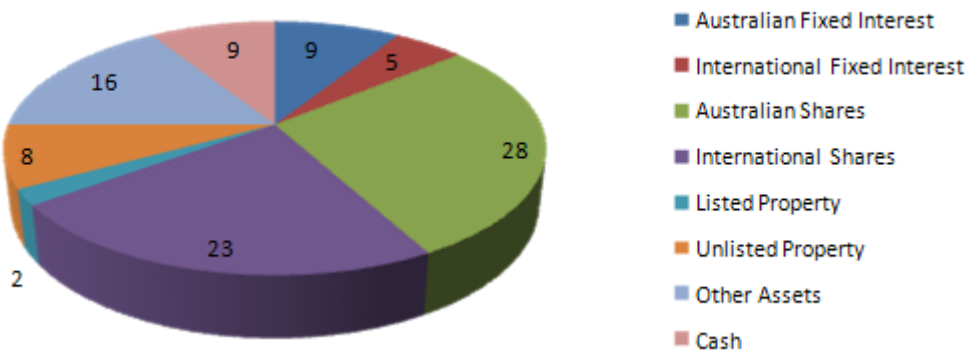
In August 2012, the Australian Parliament introduced increased duties and accountability for trustees of superannuation funds. This includes the consideration of the sufficiency of scale, costs of investment and risk/return targets. Industry voices express concerns about possible 'unintended consequences' such as increasing rather than reducing the reluctance to invest in assets such as infrastructure (see, e.g., Heape 2012).

1.3 Asset allocation of Australian pension funds

The asset allocation of superannuation funds varies across the type of funds and the investment options provided. For example, profit-for-members funds have an average allocation of 11 investment choices (Gray and Bird 2011).

APRA statistics show that less than half of superannuation assets (42%) are in the default funds. However, the figure is depressed by the low number in retail funds (21%), but it is higher for industry (64%), corporate (53%) and public sector funds (52%) (APRA 2011). The average asset allocation of the default options is given in Figure 1. Infrastructure is included in the percentage of 14% for 'other assets'.

Figure 1. Asset allocation of default strategies (in %)



Source: APRA Annual Statistics, June 2012

In the international context, Australia is the country with the highest allocation to equities, but also the country with the lowest home bias in fixed interest investments, according to Towers Watson (2012a). The asset allocation to 'other assets', i.e. other than the traditional equities, bonds and cash, rose from 14% in 2001 to 26% in 2012. That portion includes real estate, infrastructure, private equity, hedge funds, commodities, timber and land, and other assets and strategies.

Sustainability and green investments

Many superannuation funds integrate environmental, social and governance (ESG) considerations into their investment process, especially for listed assets and real estate (ASFA 2012b). Some funds have discussed climate change considerations. A number of 'green investments', e.g. into renewable energy projects, have been made, that are often also considered infrastructure investments. Pension funds generally express their intention to progress further in this respect in the infrastructure space.[10]

1.4 Pension funds investment in infrastructure

There are no exact figures on the asset allocation to infrastructure by Australian superannuation funds. There are domestic estimates of an average allocation of 5% to 6%, having risen from 2% in 2002 (IPA 2010, ASFA 2011a, Allen Consulting 2011). This would translate into a value of approximately A$70bn to A$85bn of Australian pension funds investment in infrastructure. Given the growth projections for Australian pension assets, a constant allocation to infrastructure would still imply an additional demand of about A$6bn per annum in the coming years (IPA 2010).

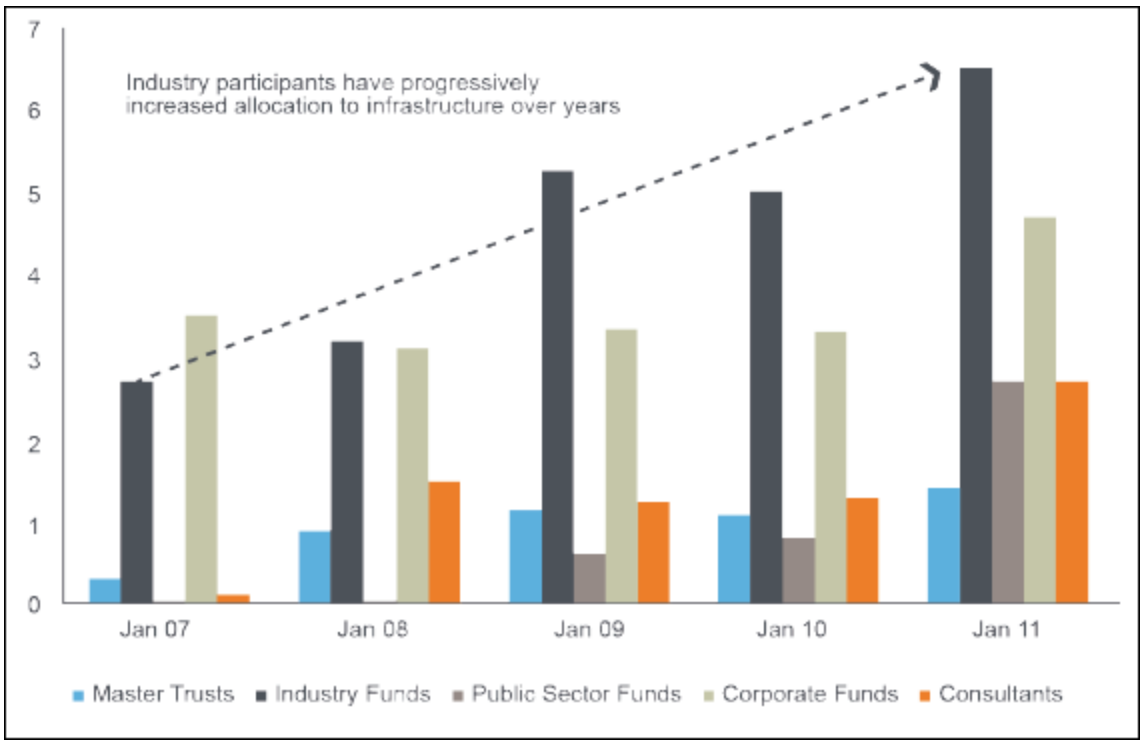
Another source, Preqin (2011a) tracks 94 active infrastructure investors located in Australia, putting the country into third place behind the USA and the UK. 70 of these are superannuation schemes: their average assets under management are A$2.9bn, and their current allocation to infrastructure is 6.4% (simple average), with a target allocation of 9%.

There are substantial differences across the range of superannuation funds. Industry funds were early investors in privatized assets and PPP assets since the beginning. They still lead the way with an average

[10] PRI (2011) presents eight case studies for responsible investment in infrastructure, five of them by Australian investors (AustralianSuper, IFM, AMP, CFS, Rare Infrastructure).

allocation of about 7% to unlisted infrastructure, followed by corporate funds (4%). The other categories only show small allocations of 1-2% (Russell Investment 2012) (see Figure 2).

Figure 2. Asset allocation by fund type



Source: Russell Investment (2012)

Larger funds tend to have higher allocations to infrastructure than small and medium sized funds. Some individual funds report percentages in the double-digits. Table 3 shows the infrastructure allocation figures under the default and/or conservative investment options of the top 10 Australian pension funds. On a simple calculation, these large funds have an average allocation of roughly 8% to infrastructure in their default option.

Table 3. Top 10 Australian Funds: Infrastructure Allocation

	Fund	Market Segment	Fund Size (USD$b)	Conservative Option (30/70)	Default Option ** (70/30)
1	Future Fund	Sovereign	73.0	5.2% ^	n/a
2	AustralianSuper	Industry Fund	43.0	9.0%	14.0%
3	QSuper	Government	32.4	3.1%	6.2%
4	State Super (NSW)	Government	32.0	5.1%*	13.8%*
5	First State Superannuation Scheme	Industry Fund	31.2	17.0%	3.5%*
6	UniSuper	Industry	29.0	0.0%	5.0%
7	Retail Employees Superannuation Trust	Industry Fund	20.4	4.0%	6.0%
8	Australian Reward Investment Alliance	Government	19.8	not available	13.8%*
9	HESTA Super Fund	Industry Fund	18.3	6.0%	10.0%
10	Sunsuper	Industry Fund	18.3	4.0%	5.0%

Source: AMP Capital

According to Preqin, 70% of the Australian superannuation funds have a separate infrastructure-specific allocation, while 6% subsume infrastructure in private equity and in real assets respectively. For the remaining 18%, infrastructure is part of a more general 'alternative' or 'opportunistic' asset allocation.

In terms of infrastructure investment vehicles, only a few pension funds make such data publicly available. Anecdotal evidence suggests that unlisted vehicles are more popular but there are still significant investments in listed instruments. AustralianSuper is an Australian pioneer in direct investing, with a current allocation of 0.7% and a target allocation of 2% (this against a total allocation of 11.3% for all infrastructure).

1.5 Performance

Historical returns and yields

Russell Investments (2012) put together performance figures for Australian infrastructure funds over 15 years (see Table 4). The calculation is based on equally-weighted quarterly figures of 8 wholesale infrastructure funds, although with varying inception dates (only 2 funds were available 15 years ago, 7 funds 7 years ago). Particular caveats apply due to the very small sample and the short time in existence of many funds.

Table 4. Returns of unlisted infrastructure funds

	Gross Return (% p.a.)	Net Return (% p.a.)	Capital (% p.a.)	Income (% p.a.)
1 Year	13%	12%	6%	5%
3 Years	8%	7%	2%	5%
5 Years	8%	7%	2%	5%
7 Years	10%	8%	3%	5%
10 Years	11%	10%	4%	5%
15 Years	12%	11%	5%	5%

Source: Russell Investments (2012)

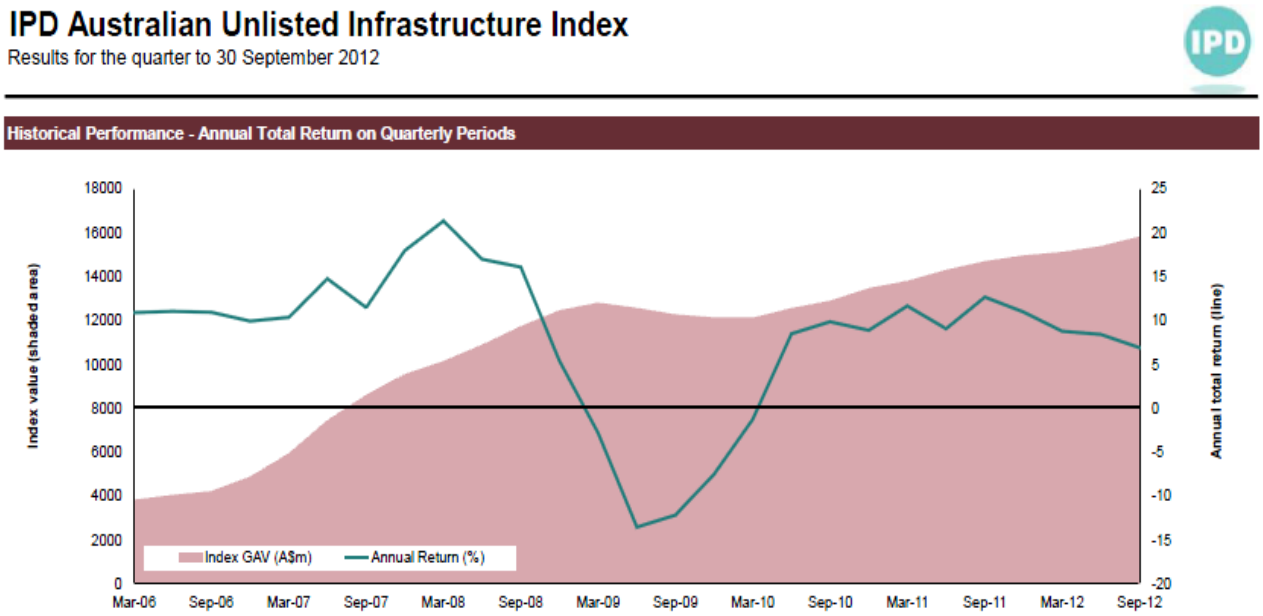
Nonetheless, there are some interesting features in this table:

- Calculation of net returns, roughly 1-2% below gross returns (rounded figures).
- Breakdown of returns into an income and a capital appreciation element: income is a stable 5% over all time periods.
- Capital growth is more volatile, with lower figures of 2% over 3 and 5 years.
- Funds achieved a total net return of around 10% over the longer term despite the setback in the financial crisis.

IPD (2012) put together a new index of Australian unlisted infrastructure. It is based on a small number of infrastructure funds (6 domestic and 6 international funds), building on earlier indexing work by CFS (e.g. CFS 2009, 2010).

Over 5 years, the post fee total return is 5.3% for the average and 7.6% for the median fund.[11] Figure 3 shows the temporary setback during the financial crisis. The distributed income is 4.6% over 5 years. (The full set of IPD figures is shown in the Appendix 3.)

Figure 3. IPD Australian Unlisted Infrastructure Index



Source: IPD (2012)

Comparison with other asset classes

A comparison with the returns of other asset classes is given in Table 5. Unlisted infrastructure (and property), produced relatively stable return figures over time. They also performed relatively well over 5 and 7 years, a period that does include the global financial crisis and economic slowdown.

Table 5 shows the performance of all the main asset sectors - Australian and international share markets. We have used market indices for all sectors other than for private equity and unlisted infrastructure. For thos categories, we have used the returns of a major jund in our survey that are representative of those sectors.

[11] The difference between the two figures exemplifies the sampling issues with a small number of funds available.

Table 5. Infrastructure returns against other asset classes

	3 Mths (%)	6 Mths (%)	1 Yr (%)	3 Yrs (% pa)	5 Yrs (% pa)	7 Yrs (% pa)	10 Yrs (% pa)
Australian Shares	-5.0	3.1	-7.0	5.6	-4.2	3.8	6.9
International Shares (Hedged)	-4.3	6.6	-2.1	10.1	-3.7	2.1	3.6
International Shares (Unhedged)	-4.1	6.0	-0.5	2.4	-6.7	-1.2	-1.1
Private Equity	1.0	3.1	8.2	9.0	1.9	7.1	-
Australian Listed Property (REITs)	8.6	16.4	11.0	12.2	-12.6	-3.8	1.7
Global Listed Property (REITs)	4.0	16.5	8.3	26.8	-1.7	4.3	n.a.
Australian Unlisted Property	1.9	4.4	9.6	7.8	4.7	8.4	9.5
Global Listed Infrastructure (Hedged)	1.8	4.9	5.0	10.3	-0.3	-	-
Unlisted Infrastructure	3.6	4.3	6.9	9.3	4.9	7.6	-
Australian Bonds	4.6	5.4	12.4	8.6	8.2	6.9	6.8
International Bonds (Hedged)	2.6	4.9	11.6	10.0	9.6	7.8	8.2
Hedge Funds	-1.8	2.2	-2.0	8.6	3.2	5.3	-
Cash	1.0	2.2	4.7	4.5	5.3	5.5	5.4

Source: Chant West (2012)

Scale, efficiency and illiquidity premium

The *size and resources* of pension funds is a much discussed topic in Australia, also in relation to the investment performance. ASFA (2011b) undertook research on the performance differentials across the broad range of super funds.

The best performing funds within the overall universe were large funds with a high exposure to unlisted assets (mainly unlisted property, infrastructure, private equity and hedge funds). Other research seems to confirm the existence of an illiquidity premium in general, not specific to infrastructure, at least for the period in question in Australia (e.g. Cummings and Ellis 2011, Cummings 2012). [12]

Furthermore, industry funds have beaten retail funds by about 1.2% pa over the long term (after fees and tax). ASFA attribute this not only to scale but also to the "more stable memberships and relatively stronger cash flows compared to retail funds" (p. 1).

Diversification

Another argument in favour of infrastructure investments often used is the diversification of risk across asset classes. Looking at the Australian experience over 10 years, Russell Investments (2012) finds a correlation of 0.33 of Australian unlisted infrastructure with domestic equities (Table 6). Interestingly, the correlation figure between Australian unlisted and global listed infrastructure is at a similar level of

[12] Cummings and Ellis (2011) find that not-for-profit funds with more illiquid investments experienced higher risk-adjusted returns. Those with larger size, greater net cash inflows, younger memberships and internal management allocate more to illiquid assets. In contrast, these factors do not seem to be at work with retail funds that are often an aggregation of individual member choices. Cummings (2012) finds that fund size has a positive impact on the performance of not-for –profit superannuation funds (again, not for retail funds), both in gross returns and in expenses. Larger funds realise substantial operational cost savings and are able to negotiate better fees with external managers.

0.29. On the other hand, the two unlisted asset classes in the analysis, unlisted property and infrastructure, move more closely together (0.64).

Table 6. Correlation of asset classes

	Aus Unlisted Infrastructure	Global Listed Infrastructure	Aus Equity	Aus Bonds	Aus CPI Bonds	Commodities	Global Listed Property	Aus Unlisted Property
Aus Unlisted Infrastructure	1.00							
Global Listed Infrastructure	0.29	1.00						
Aus Equity	0.33	0.49	1.00					
Aus Bonds	-0.34	-0.51	-0.55	1.00				
Aus CPI Bonds	0.17	-0.28	-0.14	0.48	1.00			
Commodities	0.40	0.44	0.37	-0.72	-0.17	1.00		
Global Listed Property	0.06	0.34	0.71	-0.47	-0.03	0.35	1.00	
Aus Unlisted Property	0.54	0.57	0.33	-0.37	0.07	0.49	0.10	1.00

Source: Datastream, Russell Investments, Mercer. Data frequency is quarterly

Aus Unlisted infrastructure = Average return of eight Australian Unlisted Infrastructure Funds;
Global Listed Infrastructure = S&P Global Listed Infrastructure Hedged A$;
Aus Equity = S&P/ASX 300;
Aus Bonds = UBS Australia Composite (All Maturities);
Aus CPI Bonds = UBS Australia Inflation (All Maturities);
Commodities = DJ UBS- Commodity Ind TR Index;
Global Listed Property = FTSE EPRA/NAREIT Developed Index;
Aus Unlisted Property = Average return of Mercer Australian Direct Property Universe

Academic studies

A number of academic studies tried to analyze the virtues of unlisted infrastructure, and found that Australian data are the only ones available of any significant length (e.g. Peng and Newell (2007), Newell et al. (2011), Finkenzeller et al. (2010)).

In summary (Inderst 2010), the risk and return analyses of unlisted Australian funds find relatively high risk-adjusted returns, low correlations to other asset classes and relatively strong resilience in the recent market downturn. However, strong *caveats* are necessary:

- small and incomplete sample of funds, short history of most funds
- data gathering from different sources
- results depend on the specific period analyzed
- appraisal-based valuation of unlisted infrastructure and direct property, which tends to underestimate volatility and correlations with listed instruments, and overestimate their diversification potential.

1.6 Australian infrastructure fund managers

The majority of infrastructure investment by Australian pension funds is outsourced to external fund managers. Australian investment firms, most prominently Macquarie and Babcock & Brown, were pioneers in packaging privatized and other infrastructure assets into fund vehicles. Despite problems with listed funds during the financial crisis, Australian managers accumulated substantial expertise in this field. Given the limits of the Australian market, many managers operate on a global scale.

Russell Investments (2012) estimates there is approximately A$15bn of infrastructure assets represented in unlisted closed-end Australian wholesale funds, managed by about 12-15 managers. Two managers, IFM and Hastings, dominate the unlisted space, representing approximately 75% of volume.

Preqin lists 16 Australia-based infrastructure fund managers. So far, 61 infrastructure funds have been launched: 50% are open-end vehicles, 31% closed-end, 13% semi-open-end, and 6% evergreen funds. Closed-end funds have raised A$ 25bn. Nine more funds are looking to raise a further A$11bn. The largest fund managers are Macquarie Infrastructure and Real Assets (MIRA), AMP Capital Investors and Hastings Funds Management (see Box 2).

The Towers Watson Alternatives Survey (2012c) gives a perspective on the global importance of Australia-based managers. 8 (!) out of the top 20 top infrastructure fund managers globally are Australia-based. Their assets under management of US$92bn constitute around two thirds of the top 20 funds' assets (Table 7).

Clearly, these figures are primarily determined by the number one in the table, Macquarie Group, which in itself is reported to have market share of well over 40%. It should be noted that these figures relate to the base of the fund managers and not the infrastructure assets. A major portion is invested abroad.

Box 2. The new Australian model - open-ended vehicles

Queensland Investment Corporation (QIC)

QIC is an open-ended fund owned by the State of Queensland. QIC commenced operations in 1989 and was formally established in 1991. Since then, it has grown to be one of the largest institutional investment managers in Australia, with more than 80 institutional clients and A$ 64 billion in funds under management.

QIC is an active investor in infrastructure assets with a long term horizon of 30/40 years and lower fees compared to other fund managers. The infrastructure team established in 2006 aims to gain exposure to a diverse portfolio of infrastructure investments across lifecycles, sectors and geographies. QIC prefers to invest directly in the Australian infrastructure market and via externally managed funds featuring strong co-investment opportunities for its global investments. QIC's investments to date include an array of infrastructure industries including transport social infrastructure and utilities.

Industry Funds Management (IFM)

IFM is an open ended fund with over AUD$36 billion in funds under management (as of September 2012) across infrastructure, listed equities, private equity and debt via a global team based in Australia, North America and Europe. The fund is wholly owned by 35 major Australian "not for profit" superannuation funds (i.e. member owned pension funds) who are also major clients.

IFM's track record dates back to 1990 with the formation of Development Australia Fund, a fund created by Australian superannuation funds to invest in growing Australian private and public companies and infrastructure. In 1995, Industry Fund Services Pty Ltd ("IFS") assumed management of this fund with Development Australia Fund Management Limited as trustee.

Table 7. Australian Infrastructure Fund Managers

Global ranking	Manager	Pension AuM in US$bn	in %	Total AuM in US$bn	in %
1	Macquarie Group	59.1	43%	101.6	46%
2	Industry Funds Mgmt IFM	10.2		10.2	
6	QIC	6.0		10.5	
8	AMP	5.4		7.2	
9	Hastings	3.7		6.3	
11	Access Capital Advisers	3.2		3.2	
12	Colonial First State	2.9		4.1	
20	RARE Infrastructure	1.6		4.5	
	Total Australian in top 20	92.1	67.6%	147.6	66.9%
	Total global top 20	136.3	100%	220.5	100%

Source: Towers Watson (2012c)

1.7 Conclusion

Australian pension funds have the longest experience in infrastructure investing. They also invest arguably the highest proportion of their assets, about 5-6% on average, in infrastructure. This may appear paradoxical given the DC nature of Australian pensions. Key factors contributing to Australia's growth story are:

- The coincident privatization of public assets by the Government and the introduction of a compulsory superannuation system in the early 1990s.
- The continued growth of pension assets on the back of economic growth and favourable demographic trends.
- The emergence of financial intermediaries, such as investment banks and asset managers that fuelled the private investment boom in infrastructure.
- The belief of trustee boards, especially of industry-wide pension plans, in infrastructure as a useful asset class for a core range of DC (default and other) investment options.

Investment activities are traditionally outsourced to external fund managers. The favoured investment vehicles were listed companies and funds initially (the 'old Australian model'). After a number of disappointments, the preferred route has become unlisted, open-ended funds ('the new Australian model'). Only a very small number of bigger funds are now trying to venture into direct investing.

The focus has changed towards international assets over the years in order to find more and perhaps better opportunities than at home. Infrastructure investing is concentrated almost exclusively on the equity side although the interest in debt is growing. However, there is no project bond market to tap from in Australia.

The experience with infrastructure investing can be described as mixed to fairly positive so far. On the positive side, unlisted infrastructure funds have produced relatively high risk-adjusted returns, low correlations to other asset classes and steady yield of ca. 5%.

Longer term returns tend to be in the higher single-digits but below the high projections often made by the financial intermediaries. Returns have also been considerably lower in the last 5 years or so. There have been notable disappointments with some cyclical assets, and listed infrastructure funds.

It should be noted that underneath the average figures there is a great amount of diversity across pension funds. Industry and large funds with stable memberships and relatively stronger cash flows than retail funds are the most active infrastructure investors while two thirds of pension funds do not invest in infrastructure at all. Two key limiting factors have been identified on the demand side in a fragmented DC system:

- lack of scale and resources of pension funds
- the preference for liquid assets in face of members' easy switching options.

On the supply side, a longer and clearer project pipeline should provide appropriate investment opportunities at home, in particular in brownfield projects. The expansion of international investments will depend, of course, on the development of other infrastructure markets and regulatory regimes, and the intensifying global competition for infrastructure assets.

The current reform discussions for both infrastructure and the pensions system seem to recognize the issues. Given the projected growth of the superannuation funds and their net cash inflows, infrastructure investments are likely to keep growing in absolute terms but not necessarily much in percentage terms.

In summary, major 'export articles' from Australia are:

- strong appetite for privatized assets by pensions funds and other institutional investors (similar to the UK and other places)
- substantial infrastructure investing is possible in a DC pension system, under certain conditions
- outsourced investing with open-ended infrastructure funds, or 'aligned asset managers', at comparatively low cost (the 'new Australian model')
- experienced investment industry that has seen a few market cycles.

Among the lessons learnt the hard way:

- overly optimistic demand projections and overvaluation of assets
- risk allocation (e.g. demand and patronage risk) and risk management (e.g. liquidity and leverage risk)
- volatility of listed infrastructure funds (the 'old Australian model)
- governance and fee issues of infrastructure funds.

2. Canada

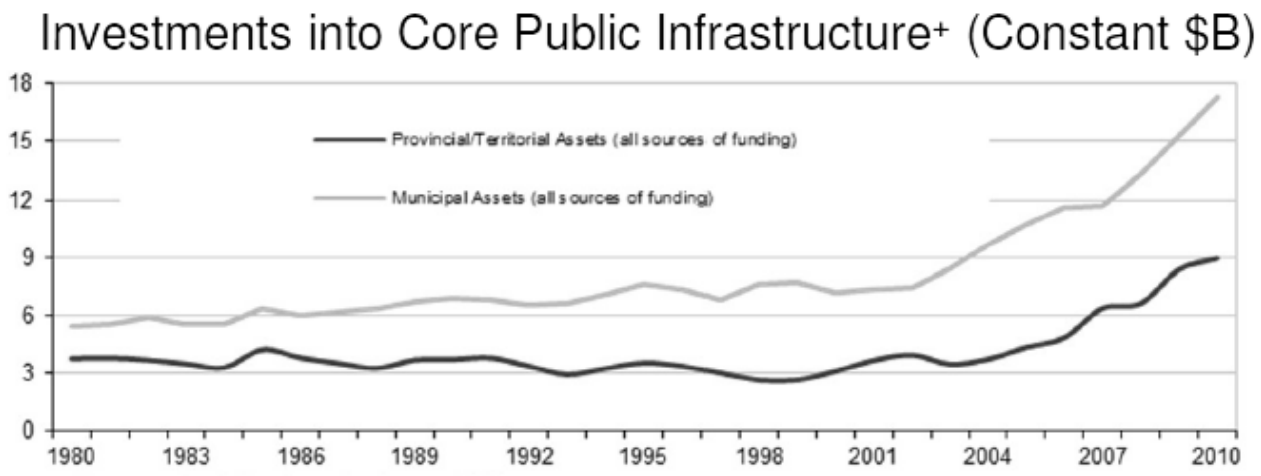
2.1 The Canadian infrastructure market

Background

Historically, Canada's infrastructure has been predominantly built and maintained with public money. Following the 'Golden Age' of the 1950s and 1960s, public infrastructure spending declined in the 1970s and 1980s.

There has been a renewed focus on infrastructure over the last decade. Public fixed capital spending climbed from 2.5% to nearly 4%. (Infrastructure Canada 2012) and consisted mainly in refurbishment and maintenance expenditure of existing assets. Figure 4 shows the increased spending, especially by municipalities.

Figure 4. Public Infrastructure Investment



+ Includes bridges, roads, water, wastewater, transit, plus cultural and recreational facilities

Source: Infrastructure Canada (2012)

Canada is a federal state, and the responsibility for infrastructure investment is shared between the different levels of government. The federal government maintains a strong interest in projects of national significance, such as major ports and borders, and provides financial support to provinces and territories.

In general, provinces have responsibility for hospitals, large intercity highways and schools while municipalities have responsibility for local infrastructure such as roads, water and sewage services. They own nearly two-thirds of the infrastructure capital stock, provinces and territories nearly one-third, and the central government only 3%. There are marked differences in procurement and financing methods across provinces and local governments (Blain 2012).

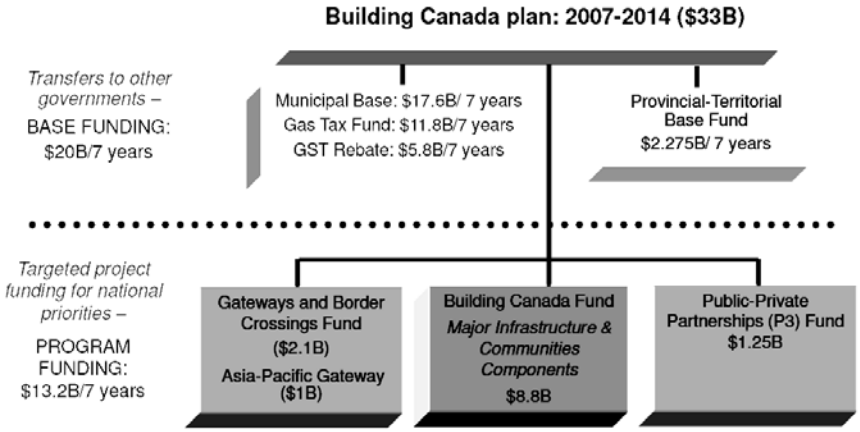
There are varying estimates of Canada's infrastructure gap. Citi (2008) gives an estimate of C$50bn to C$125bn per annum. There is also an estimated requirement of $400 billion in infrastructure upgrades over the next decade (PPP Canada 2012).

Recent developments

In 2006, the Government of Canada launched a C$33bn infrastructure plan, *Building Canada*. The plan is to provide flexible and predictable funding to provinces, territories and municipalities for the period between 2007 and 2014. Recently, the Government has committed to working on a long-term plan for public infrastructure beyond 2014.

Over half of the total C$33bn funding under the Building Canada plan will be provided as base funding for municipalities. In total, C$17.6bn over seven years will be provided through the Gas Tax Fund and the GST Rebate (see Figure 5).

Figure 5. Building Canada Plan 2007-2014



Source: Infrastructure Canada (2011)

In response to the global economic downturn, C$12bn in short-term funding was committed to infrastructure under the *Economic Action Plan* in 2009, including the Infrastructure Stimulus Fund and the Building Canada Fund-Communities Component Top-Up.

Also in 2009, the federal government established the *Green Infrastructure Fund* (C$1bn) through Canada's Economic Action Plan. The program specifically targets projects that promote cleaner air, reduced greenhouse gas emissions and cleaner water over the years 2009 to 2014.

Since the 2009 Budget, *Infrastructure Canada*[13] has committed more than C$10.6bn toward approximately 6,400 infrastructure projects. Combined with contributions from the provinces, territories, municipalities and other funding partners, the figure rises to approximately C$30bn.

[13] *Infrastructure Canada* was established as a department of the Transport, Infrastructure and Communities (TIC) portfolio in August 2002. It delivers a broad range of infrastructure programs, providing flexible and effective funding support to provincial, territorial, municipal, private sector and not-for-profit infrastructure projects. Some provinces, e.g. Ontario or British Columbia, have set up their own infrastructure government bodies.

PPP in Canada

Pure privatization of public assets is politically not very popular in Canada. Opinions have also been soured by the 407ETR toll road and the Hydro One deals[14]. Large transport items such as ports and airports have been 'commercialized' and run as not-for-profit enterprises. However, they do raise finance on the markets, e.g. with bond issues. Energy networks, too, remain in public hands.

Despite closing some high profile projects in the early 1990s (including the Confederation Bridge linking Prince Edward Island and New Brunswick), Canada generally has lagged behind in the past in the use of PPPs when measured against comparable Western jurisdictions such as the United Kingdom or Australia. In recent years, however, there have been signs of a strong pick-up of the PPP market in the healthcare, road and justice systems sectors which are now considered mature and benefiting from strong competition from equity and debt participants. Opportunities in new sectors such as water, waste water and rapid transit, are also likely to increase in the coming years.

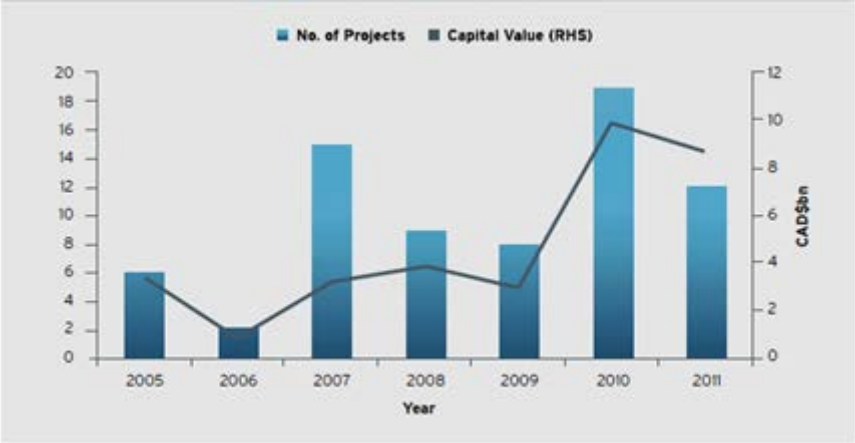
PPP Canada, launched in 2008, works with provincial, territorial, municipal, First Nations, federal and private partners to support greater adoption of public-private partnerships in infrastructure procurement. The C$1.25bn Public Private Partnerships Fund provides up to 25% of the value of a project's direct capital costs.

PPP projects have been procured at provincial or municipal level, but the federal government is also a procurer in its own right. The main sectors are transport (e.g. toll roads, bridges), social infrastructure (e.g. healthcare, schools, prisons), but now also water, sewage and waste projects. Ontario, British Columbia and, more recently, Quebec and Alberta, have been most active, but other provinces are following. Most PPP projects are availability-based.

Since the early 1990s, there have been about one hundred P3 (PPP) projects. Deal flow has been rising recently: during the 2009-2011 period, 39 P3 deals reached financial close with a combined capital investment of C$ 21.7bn (Figure 6). It should be noted, however, that the P3 market is only a small slice of the total infrastructure market.

[14] In 1999 the ETR consortium (including Concesiones de Infraestructuras de Transporte (CINTRA), SNC Lavalin and Grupo Ferrovial) paid C$ 3.1 billion for a 99-year lease on the 108 km highway, called 407, that runs north of the urban region of Toronto. The road's construction cost totalled C$ 1.5 billion. The contract lacked terms to provide the government with adequate control of toll road increases, allowing the 407 ETR full discretion in this area.High profile privatizations such as the 407ETR or the attempted Hydro One transaction received significant amounts of negative publicity, souring opinions of privatizations in Ontario and Canada. According to industry experts the press coverage has not always fairly represented the transaction and its benefits.

Figure 6. Canada P3 projects



Source: PPP Canada (2012)

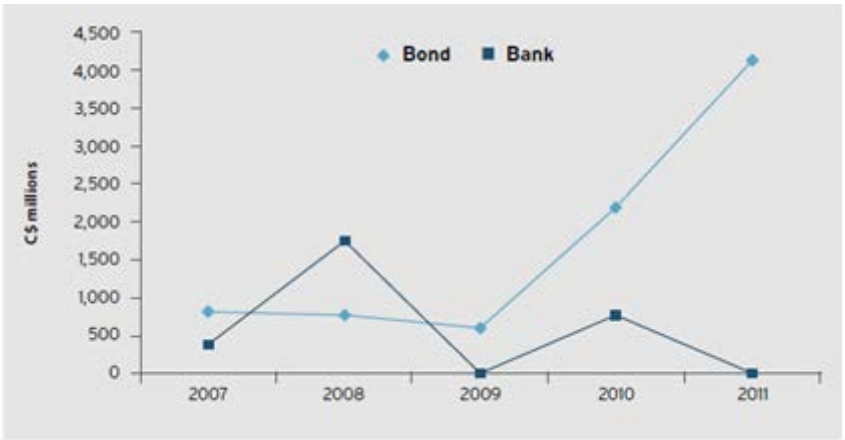
Project Finance

Canadian banks and foreign banks continue to be active in financing Canadian infrastructure. Canadian banks are more conservatively managed than their European counterparts, and also take a more cautious approach to infrastructure lending (typically only shorter term loans). Furthermore, Canada is less reliant on bank finance than, e.g., Europe, as there is a robust project finance bond market. PPP bonds are growing constituents of Canadian bond indices. Canada never adopted the monoline bond insurance model (Bridgecourt 2010). The insurance industry has traditionally been playing an important role in providing longer-term finance (Kranc 2012).

The financing package of PPP projects is typically highly leveraged to around 90% (A-rated) with funding provided by the long-term (30 year) bond market plus bank financing to cover the construction period. This results in small equity requirements.

Bonds have become a growing source of long-term funding for P3 projects as an alternative to bank financing, as demonstrated by Figure 7. Analysts believe that bonds will continue to play an increasingly important role in the financing of P3 projects in Canada.

Figure 7. P3 Debt Financing



Source: PPP Canada (2012)

Barriers to pension fund investment in infrastructure

A range of barriers have been identified that (potentially) prevent the optimal investment in infrastructure assets. Clearly, the emphasis differs across the industry and political spectrum. Issues include:

- Shortage of investment opportunities at home; only few privatizations.
- Small 'ticket size', especially for municipal projects (with leverage up to 90%, Canadian PPP projects are too small for significant equity allocations of large pension funds).
- Preference for brownfield projects; aversion to construction risk and other greenfield risks.
- Political and regulatory risks, especially overseas.
- Increasing global competition for assets, with various players entering the market.
- Limited internal resources, even for larger investors.
- High fees and lack of control over assets in infrastructure funds.
- Infrastructure transactions are lengthy and assets are large and complicated to acquire and to operate.

2.2 The Canadian pensions system

Total Canadian pension fund assets are estimated at a level of C$1.1tr. The asset growth rate of 10.5% over 10 years has been above the global average of 6.4% (Towers Watson 2012a).

In the global context, Canada has remained a major player in the pensions market. It holds 5.6% of the total OECD pension assets of US$20.1tr, which puts it into rank 6 behind the USA, Japan, UK, Australia and the Netherlands. In terms of the ratio of pension assets to GDP of 64%, Canada's ranking is number 8 (OECD 2012a). Total pensions assets are roughly half the size of the Toronto stock market capitalisation (A$ 2.1tn in October 2012).

Canada also does relatively well in a qualitative assessment: it ranks 6th in Mercer's Global Pension Index (2012), behind Denmark, the Netherlands, Australia, Sweden and Switzerland. The rating B indicates a "system that has a sound structure, with many good features, but has some areas for improvement that differentiates it from an A-grade system" (see footnote 9).

DB, maturing, underfunded

The majority of pension funds are defined benefit (DB) schemes, and about 95% of pension assets are in DB funds. Canada and Japan are the only two major markets where the public sector (61%) holds more pension assets than the private sector (39%).

The pension fund scene in Canada is spread very widely. There are said to be over 5000 corporate pension schemes ranging in size from a few million to over $100bn in size (assets under management) (Aegon 2012, Archer 2011).

The employment-based mandatory pension plans, the Canada and Quebec Pension Plans, continue to see growing contributions. In contrast, in the voluntary schemes, the situation has become more difficult. Most DB plans are maturing, with negative net cash contributions, more than half have been closed.

In line with many other DB systems in the world, Canada's pension plans are these days widely underfunded. Mercer's Pension Health Index showed that a typical pension plan was only 80% funded at the end of September 2012. The remedial actions taken include changes to benefit design, governance and 'de-risking' of the investment portfolio.

Canadian pension funds are often considered as 'big' in international comparison. In fact, there are a number of 'super-large' public or para-public funds. In a global context, Canada currently has 7 pension funds in the global top 100 and 19 in the top 300, with combined assets under management of about U$ 670bn. Canada's 'market share' among the big global 300 funds is 5.3% (Table 8).

Table 8. Largest Canadian pension funds

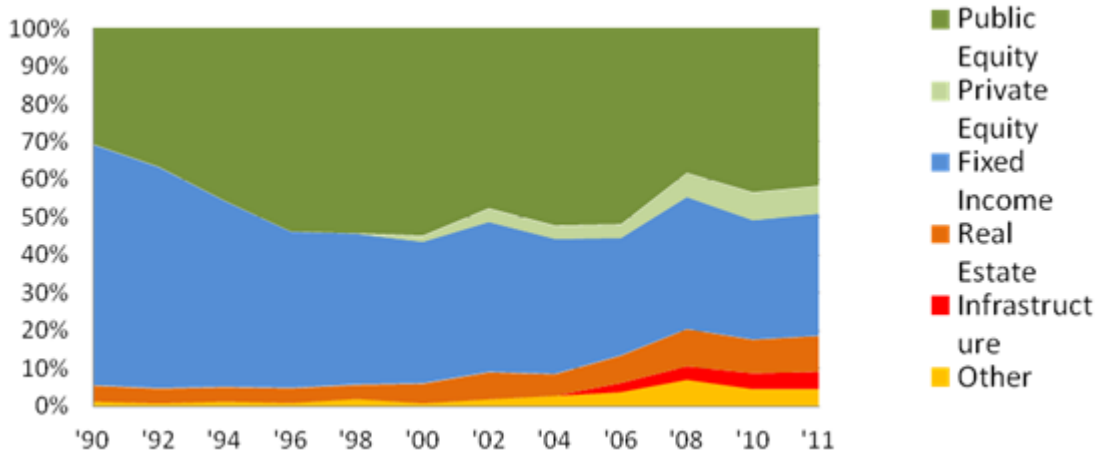
	Fund	*Type of fund*	*Assets (US$bn)*	*Top 300 ranking*	
1	*CPP*	*Public*	*159*	*9*	
2	*OTPP*	*Public*	*115*	*19*	
3	*Omers*	*Public*	*54*	*47*	
4	*PSP*	*Public*	*41*	*71*	
5	*QGP*	*Sovereign*	*41*	*72*	
6	*Healthcare of Ontario*	*Industry*	*40*	*74*	
7	*Quebec Pension*	*Public*	*35*	*86*	

Source: Towers Watson (2012b)

2.3 Asset allocation of Canadian pension funds

At the end of 2011, Canadian pension schemes held 41.7% in equities, 32.5% in fixed income, 9.4% in real estate, 7.2% in private equity, 4.6% in infrastructure and 4.6% in other assets. The changes in the asset allocation of Canadian pension funds are shown in Figure 8.

Figure 8. Asset mix of Canadian pension funds



Source: PIAC (asset mix of plans of sponsor organizations represented by members)

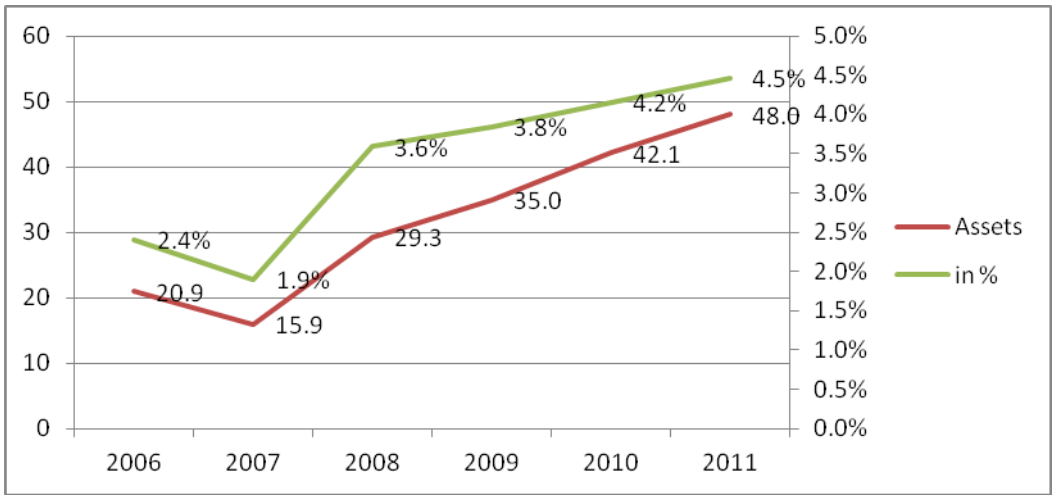
According to Towers Watson (2012a), Canada's allocation to equities is broadly in line with the international average. Interestingly, on the equity side, Canada has one of the lowest home biases while on the fixed bond side it has one of the highest across countries. In their database, the asset allocation to alternative assets, other than the traditional equities, bonds and cash, rose from 10% in 2001 to 20% in 2011.

2.4 Pension funds investment in infrastructure

Some Canadian pension funds, notably OTPP and OMERS, were early investors in infrastructure in the late 1990s and early 2000s, second only to Australian superannuation funds.

The allocation to infrastructure by Canadian pension plans can be traced in the industry statistics from the mid-2000s, and it has been growing steadily since. By the end of 2011, PIAC figures show a level of C$ 48bn, i.e. 4.6% of assets (Figure 9).

Figure 9. Infrastructure allocation



Source: PIAC (asset mix of plans of sponsor organizations represented by members)

However, there are substantial differences across the range of pension funds. Bigger pension plans have made substantial in-roads into infrastructure assets in recent years. For example, CPP shows infrastructure assets of C$ 11.2bn, followed by OMERS (C$ 9.8bn), OTPP (C$ 9.6bn) and CDPQ (C$ 5.8bn). In terms of percentage allocations, OMERS leads the pack with 14.8%, followed by OTPP (7.4%) and CPP (6.1%) (Table 9).

The average allocation of larger pension funds is in the region of 7-8%. In contrast, smaller and medium-sized pension funds have much smaller allocations to infrastructure, often nil. Lack of scale and expertise, and costs are mentioned as major barriers. Nonetheless, 34% of small Canadian pension funds are reported to aim for more infrastructure investments over the next 12 months (RBC 2012).

Table 9. Large pension funds allocation to infrastructure

			Assets	Infrastructure	
Fund	**Fiscal year**		**Total**	**Assets**	**In %**
OTPP	*31/12/2012*	*C$*	*129.5*	*9.6*	*7.4*
PSP	*31/03/2012*	*C$*	*64.5*	*3.6*	*5.6*
CPP	*31/03/2013*	*C$*	*183.3*	*11.2*	*6.1*
Omers	*31/12/2012*	*C$*	*61.5*	*9.8*	*14.8*
Alberta	*31/03/2012*	*C$*	*69.7*	*3.1*	*4.4*
Total			*508.5*	*37.3*	*7.3%*

Source: Annual Reports, Latest Available

Preqin (2011b), as another source of information, tracks 65 active institutional infrastructure investors located in Canada, putting the country into 4th place behind the USA, UK and Australia. Their average assets under management is US$5.5bn, and their current allocation to infrastructure is 5.2% (simple average), with a target allocation 9.2%.

The vast majority of investments are in infrastructure equity. However, there is a growing interest also in fixed interest. There are no hard data on infrastructure bond investments. They are typically part of the fixed interest investment process and portfolio.

Box 3. The 'Canadian model' of direct investing

According to Preqin, 80% of the Canadian investors gain exposure to infrastructure through unlisted funds and only 15% through listed funds. In addition, 51% are making direct investments, the highest figure in a global comparison. In fact, the 'Canadian model' of infrastructure investing, i.e. directly by large pension plans, has attracted considerable attention in recent times across the globe. In terms of volume, there is an estimate of roughly three quarters of direct and one quarter in indirect vehicles.

The key reasons given for direct investing can be summed up as follows:

- *lower cost than external infrastructure funds[15];*
- *direct control over the assets (instead of a very limited role as LP), including control over the time horizon and exit decision;*
- *agency issues with fund managers (e.g., conflicts of interest, less-than-preferential treatment, asymmetric information and skill set);*
- *longer term focus of direct investing allows for optimization of long term value and better matches the fund's liability profile.*

Canadian pension funds such as Ontario Teachers, Caisse de Dépôt et Placement du Quebec ("CDP"), OMERS, the Canadian Pension Plan Investment Board ("CPPIB"), Alberta Management, British Columbia and OPTrust are active investors in the infrastructure market. Over the years, these investors have been able to acquire the knowledge, expertise and resources to invest directly in infrastructure. Not only they are able to co-invest but also to take leading roles in consortia, competing with other funds and financial sponsors when bidding for projects. This also means these investors have in-house resources to produce their own research and risk assessment of infrastructure projects without being dependent on external consultants (see Appendix 4 for more detail on CPP's investment approach).

Some of the characteristics common to these group of Canadian pension funds include:

- *Defined benefit (DB) plans with long-term liabilities that in turn promote long-term investing.*
- *Large funds, particularly important in large scale infrastructure projects.*
- *Strong governance models, based on independent and professional boards able to understand sophisticated, complex and direct investment programs.*
- *Internal capabilities based on large and sophisticated internal investment teams built over the years, able to assess and make investment decisions.*
- *Market-based compensation allowing to attract top investment talent.*

Potential issues with direct investing, mentioned by investors, include:

- *lack of scale and internal capacity (governance, management, operational resources), including remunerations issues;*
- *reputational and legal issues when things go wrong;*
- *portfolio concentration risks with a small number of direct holdings.*

[15] Fund fees tend to be around 2%. In contrast, expenses for direct investing are reported at a much lower level, e.g. a mean figure of 0.44% (Dyck and Viriani 2012) or 0.39% (CPP IB Annual Report 2012). Such a gap raises a lot of questions, not the least about the appropriate long-term costing and risk assessment by pension plans.

2.5 Performance

There are no industry-wide performance figures available for Canadian infrastructure investments. Individual pension funds report figures in their annual accounts.

Table 10 shows some examples of performance figures of larger pension funds taken from annual reports. Figures over the last available fiscal year vary widely, with a range from 2.7% to 12.7%. The variation also appears high over longer periods. A number of funds report actual returns below benchmark returns.

Table 10. Infrastructure Investment Returns

Fund	*Fiscal Year*		*Fund*	*Benchmark*		*Fund*	*Benchmark*
in %			*1y*	*1y*	*Years*		
OTTP	*31/12/2012*	*C$*	*8.4*	*8.0*	*4*	*6.6*	*5.3*
PSP	*31/03/2012*	*C$*	*2.7*	*9.6*	*5*	*3.5*	*5.6*
CPP	*31/03/2013*	*C$*	*8.8*	*NA*	*2011*	*13.3*	*12.8*
Omers	*31/12/2012*	*C$*	*12.7*	*8.6*	*2011* *2010* *2009*	*8.8* *10.1* *10.9*	*8.0* *8.5* *9.0*
Alberta	*31/03/2012*	*C$*	*5.6*	*9.6*	*2*	*6.9*	*9.9*
Simple average			*7.6*	*8.95*		*8.6*	*8.4*

Source: Annual Reports, latest available

Several caveats are required in the interpretation of any performance figures from annual reports, including:

- different measurement periods
- the still relatively short life of most infrastructure investments
- the difficult valuation of unlisted assets
- the very different mix of exposure across pension funds, in terms of countries, infrastructure sectors, developments stages etc.

2.6 Canadian infrastructure fund managers

The Towers Watson Alternatives Survey (2012c) presents a list of the 20 top infrastructure fund managers globally. Only one of them, Brookfield, is Canada-based. It is in 2nd position with assets under management of US$ 30.4bn (i.e. 13.8% among the top 20). In terms of pension funds capital, it is ranked 7th with assets under management of US$ 5.7bn (share of 4.2%).

It should be noted that these figures relate to the base of the fund managers and not the infrastructure assets. A major proportion is invested abroad.

Box 4. Alternatives ways to access infrastructure in Canada

The Infrastructure Coalition Program: led by University of Ottawa Pension Fund and Teachers' Retirement Allowances Fund

The Infrastructure Coalition Program is a partnership with small and medium size Canadian institutional investors that came together to pool their resources and engage an experienced manager to establish a customized infrastructure investment program. This investor led group assembled an allocation of $105 million and then selected Aquila Infrastructure Management as manager.

The Program mandate is to invest in core infrastructure assets in OECD countries globally and has a 20-year term. The manager will aim to build a portfolio of assets that is diversified by geography, subsector and maturity of the underlying assets. It will seek to invest in assets that provide stable returns, including predictable cash yield. Aquila is an independent manager, which minimizes the potential for conflict and in addition, provides considerable advantages with regards to deal sourcing The Program is structured as an infrastructure fund with co-investment rights, however, it features a competitive fee structure which promotes alignment between investors and the manager in addition to a significantly improved governance structure. More specifically, the management fee was structured using a budget-based approach that ratchets down as commitments increase, with the corresponding benefit accruing to all investors irrespective of size. Secondly, the performance fee structure is designed to incentivize the manager to hold the assets for the long-term and to provide stable yield.

"Pre-packaged" (Advised) Consortium: Kindle Capital

Kindle Capital ("Kindle") provides independent financial advisory services to a network of standing small size institutional investors –no formal obligation- who will work with Kindle on a deal-by-deal basis to act as co-investors. This consortium would invest alongside other lead investors in this way providing an opportunity to:

- *Establish a direct infrastructure investing program through a proven execution platform;*
- *Invest in OECD and brownfield infrastructure assets;*
- *Participate in global acquisitions of leading infrastructure assets;*
- *Access world class investment teams and capabilities;*
- *Minimize fund management expenses;*
- *Realize the benefits of economies of scales (knowledge, resources, expenses);*
- *Gain valuable financial advisory and asset management services from Kindle.*

For example during the 407 toll road project Kindle managed to combine investment commitments from 8-10 funds for a total of over $200 million, meeting the required minimum $100 million capital to participate in the investor group along CPPIB. The investment was completely discretionary and took place on an individual asset basis. Kindle's fee base was substantially less than other equity investment models discussed in this report and did not attract carry. In addition, in order to promote a strong interest of alignment with the investment consortium, Kindle had a policy to use over half the amount of fees collected to invest in the asset themselves. Following the closing of the transaction, Kindle was retained as the manager to provide traditional asset management services associated with investing in long term private direct infrastructure investments.

The Debt Fund : Stonebridge Capital

Stonebridge Financial Corporation developed an Infrastructure Debt Fund in close cooperation with PBI Actuarial Consultants Ltd., and with support from PPP Canada and the engagement of the Business Development Bank of Canada, who invested in the Infrastructure Debt Fund to address the shortage of financing available for smaller infrastructure projects.

The Stonebridge Infrastructure Debt Fund was launched in November 2011 and the first tranche of approximately $150m closed in April 2012. A second close is planned for end 2012 with a target volume of $200m. The Debt Fund will take the form of long-term, fixed rate, senior debt financing for the construction and operation of infrastructure and energy assets, including the emerging municipal infrastructure project sector. Initial investments are underway in social infrastructure and renewable energy. The 40 year fund is aimed for small pension fund investors with a buy-and-hold investment philosophy, similarly to a life insurer's approach.

2.7 Conclusion

Canadian pension funds, the 'maple revolutionaries' (Economist 2012), are among the most expert investors in infrastructure in the world. The experience of some funds goes back to the late 1990s and early 2000s. The average asset allocation of roughly 5% to infrastructure is second only to Australia.

Canada's infrastructure growth story has some distinguishing features:

- it has been driven by the larger public pension funds with unusually high target allocations to infrastructure, in some cases in double-digits
- most of the capital is invested in overseas infrastructure projects
- the preference for *direct* investments by pension funds' in-house expert teams, i.e. inventing the 'Canadian model' of infrastructure investing.

Canada's pension system is predominately DB with maturing and currently underfunded pension plans. The main driver for infrastructure investing appears to be the wish to diversify pension funds' assets beyond the traditional asset classes. Moreover, the characteristics of infrastructure assets, especially brownfield, are considered very suitable for matching DB fund liabilities.

However, underneath the headline news on the 'Canadian model' of infrastructure investing there is a great amount of diversity across pension funds. Smaller and medium-sized plans tend to invest in (mostly unlisted) infrastructure funds, if at all.

The main focus of infrastructure investing has been on the equity side although the interest in debt is growing. However, it should not be overlooked that the fixed income departments of Canadian pension funds do often invest in bonds of infrastructure companies. This includes domestic debt as well, given the fact that there is a mature market for infrastructure bonds in Canada.

The experience with infrastructure investing can be described as fairly good to mixed so far. Some infrastructure assets, mainly regulated and PPPs, have produced steady returns. Anecdotal evidence suggests figures of, in some cases, near 10% p.a. over the long term but nearer 5% over 3-5 years. On the other hand, assets more exposed to cyclical demand factors, e.g. in transport, have often suffered in the financial crisis.

Proponents of direct investing also mention performance problems of some infrastructure funds, on top of issues with control, fee and agency conflicts. Generally, it is too early for a strong verdict given the short life of most infrastructure investments.

Limiting factors for Canadian pension fund investment in infrastructure could be, on the demand side, the lack of resources of smaller and medium-sized pension funds, especially for direct investments. There will also be higher liquidity needs of maturing DB funds.

On the supply side, pension funds bemoan the lack of investment opportunities at home, uncertainties over regulatory and political uncertainty in foreign countries, and the intensifying competitions for assets from all sides.

The country's infrastructure story could be summed up by two paradoxes. First, Canada's pension funds are major infrastructure investors in the global context, but most of the capital goes overseas, given the near abstinence of the country from large-scale privatizations of public infrastructure assets.

Second, Canada has a well-functioning PPP model and yet, pension funds are not major investors in it. A key reason for this is the small 'ticket size' because PPP projects often are too small, highly leveraged with an equity share of less than 20%.

Major 'export articles' from Canada are:

- investment in illiquid assets by institutional investors (even by underfunded pension funds)
- the 'Canadian model' of direct infrastructure investing by pension funds
- a well-working PPP market
- a robust project bond market.

Among the lessons learnt the hard way:

- importance of political acceptance of private sector involvement in infrastructure
- direct investing can be tricky, and requires adequate resources
- hurdles and pitfalls in investing in overseas jurisdictions.

3. Comparison between Australia and Canada

It is worth highlighting commonalties and differences of the two countries in a number of key areas.

Privatizations

Australia has a history of privatization over the last two decades, especially in large transport items such as airports, ports, toll roads and tunnels. In contrast, only very few privatizations of public infrastructure assets have occurred in Canada. According to observers, there is no widespread political will to do so in the foreseeable future. Investors need to find large ticket-items in the UK, Europe and other places.

Public-private-partnerships (PPP)

Both countries are, with the UK, early adopters of PPP since the early 1990s. In Australia, a vast proportion consisted of large transport items, in particular urban toll roads and tunnels. Despite closing some high profile projects in the early 1990s), Canada generally has lagged behind in the past in the use of PPPs when measured against comparable western jurisdictions such as the United Kingdom or Australia. In recent years, however, there have been signs of a strong pick-up of the PPP market in the healthcare, road and justice systems sectors which are now considered mature and benefiting from strong competition from equity and debt participants In addition, there is a growing pipeline of transport and water projects.

In recent years, both countries have tried to increase the efforts in infrastructure spending and in private financing. In Canada, the PPP pipeline has been steadily growing since the mid-2000s. The Canadian PPP process is characterized as comparatively clear and competitive. In Australia, a reform process is underway to identify weaknesses and to 'retune' the PPP model.

Project finance

In Europe, the shortage of bank debt has become a major issue since the financial crisis, the Euro crisis and Basel III. In contrast, both in Canada and Australia, bank debt appears to be more easily available for infrastructure projects, both from domestic and international (e.g. Asian) banks.

Canadian banks provide infrastructure loans relatively short term, up to a maximum of 7 years or so. Life insurance companies also provide longer term debt. A major difference between Canada and Australia is the infrastructure bond market. Canada has one of the most developed project bond markets while it is rather underdeveloped in Australia. Canadian infrastructure bonds tend to be investment grade. Monoline insurers never played a role in Canada.

Pension system

Both countries share a similar legal system and operate pension funds 'under trust'. However, there is a striking difference: the occupational retirement system in Canada is predominately DB, the one in Australia predominately DC (OECD 2012b). This has a direct impact on the way investment decisions are made, on the asset allocation of pension funds, and on the way decision-makers can and do invest in infrastructure. In a DC system, the ultimate investment decision is not with pension boards and executives but remains with the individual members. However, they can somehow be 'steered' by the availability of investment options and default funds.

Similar to the UK, Canada's pension system looks fragmented, with thousands of pension schemes governed independently by a Board of Trustees. However, roughly half of pension assets are managed by public funds, with about 20 'super-large' funds (i.e. with assets over US$10bn).

Australia pension system, too, has a broad range of funds, but in a different way. Excluding the hundreds of thousands of super-small funds, there are still over 300 superannuation funds spread over four other categories: industry, corporate, public sector and retail. However, a consolidation process is underway.

Pension assets

The pension markets of Canada and Australia are of similar size, both exceeding US$ 1tr of assets. However, Australia's pension system is growing faster than Canada, the main causes being a compulsory second pillar and favourable demographics. It is expected to be cash-flow positive for some decades.

Canadian pension funds are often said to be of much larger scale than those in other countries, and therefore more suitable to in-house fund management and direct infrastructure investing. In fact, Canada's pension assets are quite heavily concentrated in bigger funds. The 19 Canadian pension schemes in the global 300 own almost twice as many assets as the 15 Australian funds on that list.

It should be noted, however, that a number of Australian pension funds are experiencing strong growth rates, and that Australia's number of funds in the 'super league' of the global 300 has doubled only in the last 5 years.

Asset allocation

As an international trend, in particular in Anglo-American markets, the allocation to equities has been declining over the last decade. This process has been more pronounced in Canada than in Australia. Australia also kept the proportion of fixed income broadly constant while Canada saw an increase. This has to be seen against the background of underfunded DB schemes and the introduction of liability-driven investment strategies (LDI).

The asset allocation to 'other assets', i.e. other than the traditional equities, bonds and cash, doubled or nearly doubled in both countries, to a proportion of 20% in Canada and 24% in Australia. 'Real assets' such as property, infrastructure, timber and land are often used as means of long-term asset liability matching.

Infrastructure allocation

Australia has the longest history in (dedicated) infrastructure investing, going back to the 1990s. In Canada, the experience is somewhat shorter, with most (big) pension funds starting during the 2000s. Investment volumes have risen strongly in recent years.

Interestingly, the current average asset allocation percentage of pension funds is quite similar: estimated at nearly 5% in Canada and 5-6% in Australia. The two countries are clearly top of international league in this respect.[16]

They also have in common a wide dispersion in the infrastructure allocation across investors, a few of them with levels above 10% and many at 0%. In Australia, only one third of pension funds are said to be invested in infrastructure at all.

Limiting factors

For the future, there are limiting factors at work. Some of them are global, especially the intensifying competition against a (real or perceived) shortage of suitable investment opportunities. The political and regulatory risks in different foreign countries are widely seen as increasing rather than receding.

On the demand side, the lack of scale and resources of smaller pension funds is also a common issue in all countries. Liquidity issues, or potential issues, are present, although in a very different form, in both a DC system (with easy switching options, as in Australia) and DB system (with maturing and underfunded plans as in Canada).

The supervisory and regulatory pressures appear to be lower in both countries than in many European places. In Canada, pension supervisors tend not to get involved in investment strategy. In Australia, views differ to what extent the fund switching option does or should affect the allocation to illiquid assets.

Infrastructure vehicles

There are major differences in the way pension funds invest in infrastructure. Australia has a tradition of listed infrastructure investing, both in individual companies (including privatized ones) and in listed funds ('the old Australian model'). There has been a shift towards private or unlisted assets over the years. However, and contrary to Europe and the USA, there is a clear preference for open-ended funds ('the new Australian model').

In contrast, Canadian infrastructure investing is primarily undertaken via unlisted closed-end funds, direct investments and co-investments. Typically, smaller pension funds concentrate on indirect routes into infrastructure.

Direct investing

A number of large Canadian pension funds started off with indirect vehicles but have over time increasingly taken the direct route. The 'Canadian model' of infrastructure investing requires the build-up of internal management and operational resources, in some cases specialist teams of over 20 people, or even specialist subsidiaries such as Borealis for OMERS.

[16] The OECD (2012c) Large Pension Fund Survey finds an average of 2.9% across 28 reporting big pension funds. For all pension funds, the global average can be estimated at around 1%.

Direct investing is a new development in Australia, and this so only for a very small number of large sovereign and superannuation funds (e.g. Future Fund, QIC, AustraliaSuper).

Co-investing and collaborative investing

Recently, there has been much talk about collaborative investing. This can include different things such as co-investing along-side other investors, infrastructure investor platforms, pension fund clubs and alliances.[17]

Co-investing is a common practice. There have been a number of high-profile co-investments involving, e.g. big Canadian pension schemes, with other pension plans, insurance companies, fund managers, banks, construction or other infrastructure companies.[18] It should be noted that there are different forms of co-investing, e.g. as majority or minority shareholder, or with an equal partner; acting actively or passively; board representation; etc.

There are some collaborative investment initiatives via a pension fund alliance or platform. OMERS started the Global Strategic Investment Alliance (GSIA).[19] A particular government-initiated form is the UK PIP.[20] Industry experts stress the difficulties of such alliances with larger number of players, often with low experience and resources. Decision time is also a critical factor.

Finally, there is Australian IFM model of an 'aligned' fund manager owned by pension plans.[21] One of the rationales is to make infrastructure assets available at lower fees, i.e. below 1%.

Infrastructure debt

The focus of infrastructure investing has been traditionally on the equity side, public or private, in all developed countries. Institutional investors such as insurance companies are increasingly interested in infrastructure debt for a number of reasons that have to do both with 'debt' and 'infrastructure' characteristics. Some Australian and Canadian pension funds report an increasing interest, and some activity.

It should be noted that infrastructure bond investing is not necessarily a new thing. For example, the fixed income departments of many pension funds would have invested in bonds of (privatized) utility or transport companies for a long time. Furthermore, the mega-sized, US$ 3tr US municipal bond market is a core ingredient of US bond portfolios. PPP bonds are a part of mainstream Canadian bond indices.

New-style infrastructure debt investing tends to involve either specialist debt funds (with a mix of infrastructure bonds, loans or mezzanine debt), or direct investment in infrastructure loans, e.g. of new greenfield projects or by taking over an existing loan portfolio from a bank.

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[17] For a discussion of pension fund collaboration in Australia, see, e.g. Brown and Davis 2009).

[18] For example, OTTP and Borealis in the UK HS1 railway, Alberta and OTTP in Chile.

[19] GSIA aims to build a US$ 20bn world-wide alliance for infrastructure investment led by OMERS. The economies of scale should allow for a relatively low cost of investments.

[20] The UK Pensions Infrastructure Platform (PIP), launched in 2011), seeks to facilitate infrastructure investments by UK pension funds, with an initial target of £ 2bn of assets.

[21] IFM is owned by 32 Australian 'not-for-profit' superannuation funds who are also clients, alongside other Australian and international institutional investors, Its roots go back to 1990, and there are now A$ 36bn managed in 2 open-ended funds: 1 for Australian and 1 for global infrastructure.

Performance

Unfortunately, data on historic returns and risk are still rather sketchy. Performance data used in analysis often relate to listed infrastructure indices that are not representative for most infrastructure investments as intended by pension funds. Actual figures need to be interpreted carefully as they often mix local and global funds, listed and unlisted, direct and indirect investments, equity and debt, gross and net-of-fee figures, etc.

In both Australia and Canada, the experience with infrastructure investments can be described as mixed to fairly positive so far. On the positive side, Australian unlisted infrastructure funds have produced relatively high risk-adjusted returns, low correlations to other asset classes and steady yield of ca. 5%.

Longer term returns tend to be in the higher single-digits but below the high projections often made, and returns have also been considerably lower (nearer 5%) in the last 5 years or so, feeling the effects of the financial crisis and the global economic slowdown. There have been notable disappointments with some cyclical assets, and listed infrastructure funds. Anecdotal evidence suggests a picture not dissimilar for Canada.

In terms of comparing the performance of direct and indirect investments, individual investors may have strong views either way, but overall it would be way too early to come to conclusions, given the current data situation.

Benchmarks

One major difference is the specific benchmark for comparing infrastructure investments. In Australia, superannuation funds typically use an absolute benchmark such as CPI + 3%/4% or a nominal target of, e.g., 10%.

In Canada, pension funds use a broad variety of benchmarks: absolute benchmarks (e.g., a nominal 8%, or CPI, cash or bond yields plus margin, or capital cost plus margin), as well as relative benchmarks (e.g. mix of equity and bond indices).

4. Main lessons

Infrastructure policy and regulatory certainty

An essential factor in infrastructure investing, according to experts, is the stability of the Government's infrastructure, tax and other government policies and the stability of the regulatory environment, both at home and overseas.

Investors appreciate the increased Government efforts in both Australia and Canada. Co-ordination between the various level of governments can be improved, a factor particularly important in federal states.

Domestic project pipeline

A surprisingly strong choir of investor voices bemoans the shortage of suitable infrastructure assets to invest in. In the eyes of many investors, there is a supply-side problem, not a demand-side problem, especially on the equity side.

Pension funds typically have a preference for brownfield assets, seeking stable, often inflation-linked income streams, at moderate risk. However, some investors can and do afford a certain amount of greenfield risks at significantly higher return prospects.

In this context, the '*asset recycling'* idea as currently discussed in Australia deserves attention also in other countries. Thereby, the public sector sells existing infrastructure assets to the private sector, and the funds are being used for new infrastructure.[22]

Project bond market

A main lesson to be taken from Canada is the importance of a working project bond market. Other Governments may consider setting up the appropriate institutional structures for the development of such a market but, of course, that does take time.

Global market and global competition

While Canadian pension funds have undertaken most of their infrastructure investments abroad, in Australia it is roughly half overseas and half at home. There are some examples of pension funds of both countries that venture into emerging markets, e.g. Chile, Brazil and India (Stewart and Yermo 2012). While capital export enlarges the opportunity set manifold it also increases the risks, including sovereign and currency risks. Currently, uncertainties are perceived as high in areas such as:

- Euro crisis; Southern European economic crisis
- Varying commitment to privatizations
- Reform of PPP/PFI models (e.g. UK)
- Energy policy (e.g. Germany, Spain, Japan, among others)
- Other regulatory and political changes (e.g. Chile, other emerging markets).

Direct pension fund investors find increasing global competition for assets from all sides: investment managers, construction and industrial companies, insurance companies, sovereign wealth funds, and other players. This can result in yet another period of overvaluation of infrastructure assets with subsequent disappointments, as seen in the mid and late 2000s.

Financial intermediation

For smaller and medium-sized pension funds, it is still difficult to find suitable investment vehicles. Australian pension funds had disappointments with listed infrastructure funds (performance, agency issues, etc.). They now favour open-ended, unlisted vehicles.

North America and Europe is dominated by the closed-end, private equity-style funds, managed by General Partners (GP), with pension funds playing the role as Limited Partners (LP). Many investors have expressed concerns about, or avoid, such vehicles for reasons including lack of control, short tenure (e.g. 10 years), governance, fees, etc. However, the closed-end model is often seen as suitable for riskier ventures in smaller and greenfield projects, or emerging markets.

At the same time, direct investing is not an option for most pension funds, for the reasons of scale, management resources, unknown risks, etc. Co-investing is sometimes an option. There are investor initiatives for more wide-spread collaborative investing. Governments in some countries are now trying to facilitate new forms of infrastructure investment platforms.

[22] A conservative estimate of commercial infrastructure assets held by Australian Governments is over A$ 100bn (Infrastructure Australia 2012b).

Pension and investment regulation

There are potential constraining factors also on the demand side of pension fund investing in infrastructure. One of them is investment regulation, e.g. by limiting the investment in illiquid asset classes. Pension regulation can also have effects.

In a DB system, solvency and funding regulation can make long-term investing more difficult, as requirements for illiquid assets are typically tighter than for liquid assets. In periods of crisis, regulators and supervisors may call for fast 'de-risking' which is then practically impossible for infrastructure assets, except at massive discounts and transaction costs. However, regulators and supervisors are increasingly aware of the contra-posing forces of pension regulation and long-term investing.

Canada and Australia both follow the 'prudent person principles' of investing. In Canada, supervisors hardly get involved in investment matters. Pension plan actions against underfunding tend to concentrate more on the contribution and benefit side of pensions than on the investment side.

In a DC system, investment in illiquid asset classes, such as unlisted infrastructure, can be difficult, especially when individuals have the option to switch funds easily, as in Australia. This creates issues with the interim valuation of illiquid assets and potential liquidity bottlenecks. The drive towards low-cost, default DC funds can also be a detriment to investing in more complex asset classes such as infrastructure. Some of these issues have emerged in Australia during the financial crisis but the effects there were very limited and compensated by new cash flows into the system.

Scale and resources of pension funds

Another factor constraining the demand-side is the capacity of pensions funds at all levels: governance, management, operational resources. This is not only a question of numbers but also of skills and experience with new asset classes.

Indirect investors may outsource the operations but still face demanding tasks of governance and overseeing of illiquid assets. Direct investors need to compete with other financial operators for expensive staff. Due diligence can be tedious, losing battles can be frustrating other than costly. A number of Canadian pension fund find that their own estimates in terms of time and resources required, including legal, were too optimistic at the outset.

In Australia, a consolidation process is underway in the pensions industry. In an increasingly global and competitive world, governments and sponsors need to face the question of scale and resources of pension funds as a matter of priority.

Last, but not least, regulators should tackle the difficult issue of fiduciary duty of pension trustees, managers and other parties involved. Trustees are often not clear about what such duty involves when it comes to long-term investment, with often complex and illiquid assets, and even more so with ESG, green or climate change investing.

Fees

The standard, global fee model offered to most investors in private equity type funds used to be broadly '2+20', i.e. 2% management fee plus 20% performance above a certain hurdle of, e.g., 8%. Since the financial crisis, some pension funds have negotiated somewhat lower fees.

Again, Australia and Canada provide interesting developments. In Australia, the fee level of open-ended funds has fallen to much lower levels. Reasons may be the long-running heavy competition in that

market place and the success of IFM. In Canada, fees were one of the reasons for large pension funds to go direct, and to seek co-investment opportunities. The reported investment costs are reported to be much lower, at least so far. Investors also in other countries are closely looking, or seek to copy such attempts to reduce management costs.

Sustainable investing

Infrastructure is generally considered a long term investment, and therefore often, almost by definition, a core ingredient of 'long term investment' policies by pension funds. Many investors in Australia and Canada have developed an ESG policy. Some pension plans are signatories of, e.g., UN PRI or other international initiatives in the field of sustainable, green or climate change investing.

However, it is often less clear, what the specific ESG investment process for infrastructure is, if any. Nor does this necessarily mean that all infrastructure investments are particularly environmentally friendly. Some investors have started to think about this (see some examples in PRI 2011).

Australian and Canadian investors have undertaken investments in, e.g., renewable energy projects, although specific numbers are not available. More work needs to be done on these concepts and practice. For example, infrastructure has a major role to play not only in climate change mitigation but also – and especially so – in climate change adaptation (e.g. resistance against storms and floods).

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APPENDICES

Appendix 1: List of organizations and companies interviewed for the report

AUSTRALIA:

- Association of Superannuation Funds of Australia
- Challenger Ltd
- Colonial First State Global Asset Management
- Industry Fund Management
- Infrastructure Australia
- Infrastructure Partnerships Australia
- Macquarie Capital Limited
- Plenary Group
- SunSuper
- UniSuper Management Pty Ltd

CANADA:

- Alberta Investment Management Corp.
- Aquila Infrastructure Management
- Association of Canadian Pension Management (ACPM)
- CAAT Pension Plan
- Canada Pension Plan Investment (CPPIB)
- Infrastructure Canada
- Kindle Capital
- Ontario Teachers' Pension Plan
- Pension Investment Association of Canada (PIAC)
- PPP Canada
- Stonebridge Infrastructure Debt Fund
- Teachers' Retirement Allowances Fund

Appendix 2: Recommendations of the Infrastructure Finance Working Group

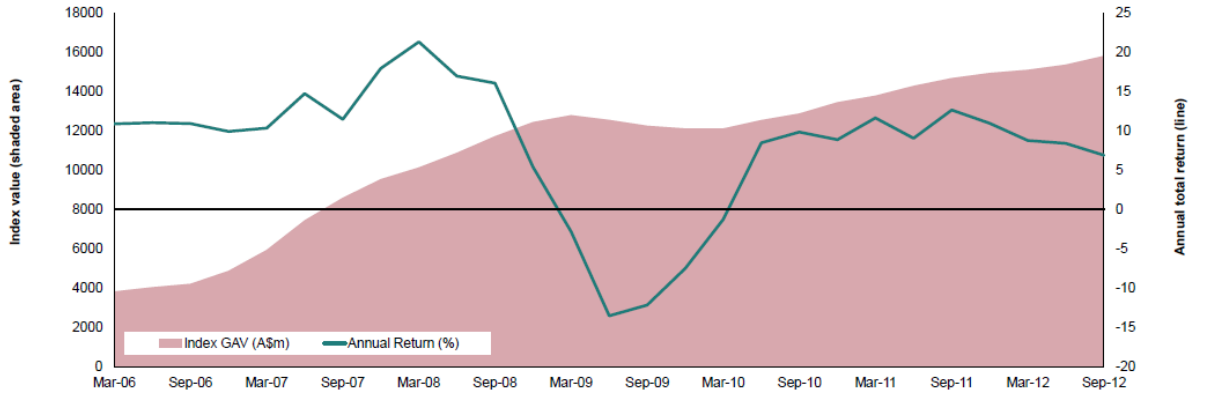
Source: IFWG (2012)

Appendix 3: IPD Australian Unlisted Infrastructure Index

IPD Australian Unlisted Infrastructure Index

Results for the quarter to 30 September 2012

Historical Performance - Annual Total Return on Quarterly Periods



IPD Australian Unlisted Infrastructure Index - Post Fee Total Return Performance

	Total Return Index to Sep-12 Mar 2007 = 100	Total return (%) for 3M	6M	FYTD	12M	3Y*	5Y*	Distributed Income ^ (%) for year to Sep-12	Capital growth (%) for year to Sep-12
All Pooled Funds	148.9	2.2	5.3	2.2	6.9	9.8	6.2	4.0	3.2
Domestic Funds **	162.9	2.5	5.8	2.5	6.8	10.8	8.7	4.4	2.7
Other Funds **	137.6	1.8	4.8	1.8	7.0	8.9	4.1	3.7	3.5

*Annualised
** Domestic Funds with <20% offshore exposure. Other Funds with 20+% offshore exposure.
^ Distributed income return is exclusive of franking credits.

Index Profile

	Number of Funds	Number of Investments	Value GAV $m	Value NAV $m	Value NAV in Index $m	Distribution Yield	Fund Gearing (Debt/GAV)	Revaluation ^^ (%)
All Pooled Funds	11	119	16,461.9	16,358.6	16,326.2	4.0	1.0	61.8
Domestic Funds	6	74	8,121.5	8,077.9	8,045.5	4.2	1.7	67.3
Other Funds	5	45	8,340.4	8,280.7	8,280.7	3.8	0.4	56.4

^^ % of index revalued during the quarter.

IPD Australian Unlisted Infrastructure Index - Post Fee Index Total Return Performance

All Pooled Fund	3M	6M	FYTD	12M	2Y*	3Y*	5Y*
Weighted average	2.2	5.3	2.2	6.9	9.7	9.8	6.2
Upper quartile	2.2	6.6	2.2	11.7	11.1	11.0	9.7
Median	1.4	5.2	1.4	7.9	10.1	9.9	8.4
Lower quartile	0.8	3.7	0.8	4.9	9.4	7.3	3.2

*Annualised

Comparative Asset Class Performance - (Pre-Fee Total Return)

	Total Return Index to Sep-12 Mar 2007 = 100	Total return (%) for 3M	6M	FYTD	12M	3Y*	5Y*	7Y*	
Equities (a)	93.6	8.8	3.7	8.8	14.8	1.8	-3.5	3.7	
Aust Listed Infra (b)	98.4	5.5	3.7	5.5	17.3	17.1	0.1	2.7	
Global Listed Infra (c)	81.1	4.1	4.3	4.1	2.5	4.7	-3.8	2.1	
Bonds (d)	170.9	1.7	12.0	1.7	16.6	12.7	11.2	8.6	
UWPFs - Core (e)	134.5	1.7	3.6	1.7	9.0	8.5	4.1	8.1	
Unlisted Infrastructure (f)	156.1	2.3	5.7	2.3	7.7	10.6	7.1	8.5	

Data sources: (a) S&P ASX 200 via Ecowin, (b) Australian Listed Infrastructure (UBS), (c) Global Listed Infrastructure (UBS), (d) CBA Greater than 10yr Bonds, (e) MUPFI/PPFI Core, includes unlisted wholesale core property funds only, (f) Unlisted infrastructure index.

*Annualised

Appendix 4: CPPIB Approach to Infrastructure Investment

The Canadian Pension Plan Investment Board (CPPIB)

- CPPIB is a leading global, professional and active investment management organization with $170.1B assets under management (at September 30, 2012).

- The CPP Fund has become one of the fastest-growing and largest single-purpose pools of capital in the world, forecast to grow to more than $300B within the next decade and then to more than half a trillion by 2031. CPPIB is expected to operate with a funding surplus – where contributions exceed annual benefits – for the next 9 years, through 2021.

- The Fund is expected to attain an annualized 4.0% real rate of return. At September 2012, CPPIB 10 year annualized rate of return was 6.7%.

- CPPIB has adopted a strategy to broadly diversify the portfolio to enhance long-term returns. Investments in real estate, infrastructure and other inflation-sensitive assets play an important role in its portfolio composition because underlying value tends to rise with inflation, making them a good match for net liabilities – given that CPP benefits are indexed to inflation.

CPPIB's Approach to Infrastructure Investing

With respect to CPPIB's equity investments in infrastructure assets

- CPPIB has about $10.6 B of its $170B – or about 6% of the fund – invested in infrastructure across geographies – including the UK, Europe, US, Canada, Australia and Chile. In particular $5.2B or about 3.2% of the total fund is invested in Australia.

- CPPIB has a team of over 30 infrastructure investment professionals with extensive experience investing internationally, actively managing the portfolio

- The fund is generally interested in directly investing in large, high-quality, long-term, core infrastructure assets that (1) provide relatively stable long-term returns; (2) operates in strong regulatory and concession environments; (3) have relatively low technology replacement risk; and (4) possess minimum substitution risks.

- This includes: electricity and gas transmission/distribution, water and sewage companies, certain transportation assets – such as toll roads, bridges, tunnels , airports and ports. The fund does not invest in the renewable sector due to the sector dependence on governmental subsidies and technical risk.

- As examples:
  - in Australia, through the acquisition of the Intoll Group [at a total cost of A$3.4 B], CPPIB acquired a significant stake (25%) in the **Westlink M7** toll road in Sydney (with QIC at 25% and Trasurban at 50%).
  - CPPIB acquired 100% of the Macquarie Communications Infrastructure Group [for A$1.64B] which resulted CPPIB owning 100% of **Broadcast Australia** – the leading broadcast provider. (CPPIB now owns about 86%)
  - In Canada, CPPIB purchased a 30% interest in the **407 ETR Toll Road** from Intoll and an additional 10% stake from Cintra for C$890M. (CPPIB and other 40%; Cintra 43%; SNC 16.8%)

- Investment Strategy

- CPPIB invests in brownfield assets based on their risk and return profile, and the preferred investment strategy is a sponsor or co-sponsor model with strong governance rights. CPPIB is prepared to act as the principal lead investor, typically as part of a larger consortium of investors whose interests align with theirs

- CPPIB's target investment guide for infrastructure is in the range of $500mn to $2bn equity participation per transaction, but with the ability to invest in up to $4B in a single investment for select assets. Hence the funds generally do not seek investments in social infrastructure – such as hospitals or schools – because they tend to be too small in equity investment terms.

- Because of CPPIB size, scale and certainty of assets, the fund can take a long-term view – often holding the asset for 20, 30 years and beyond and have the ability to invest additional follow-on capital to foster growth and expansion.

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WP 29 Trends in Large Pension Fund Investment in Infrastructure

WP 28: Communicating Pension Risk to DC Plan Members: The Chilean Case of a Pension Risk Simulator

WP 27: The Role of Funded Pensions in Retirement Income Systems: Issues for the Russian Federation

WP 26: Infrastructure Investment in New Markets: Challenges and Opportunities for Pension Funds

WP 25: The Status of Financial Education in Africa

WP 24: Defining and Measuring Green Investments: Implications for Institutional Investors' Asset Allocations

WP23: The Role of Institutional Investors in Financing Clean Energy

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