



THE UNIVERSITY OF
SYDNEY

—
**John Grill Centre
for Project
Leadership**

Re-establishing Australia's Global Infrastructure Leadership

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Better Infrastructure Initiative

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Of course, the responsibility for views expressed and the accuracy of the content of this paper remains with myself.

Garry Bowditch

Welcome

It is our pleasure to present the first public paper of the Better Infrastructure Initiative at the John Grill Centre for Project Leadership.



Garry Bowditch

Executive Director, Better Infrastructure Initiative,
John Grill Centre for Project Leadership

Critical thinking and the need to challenge the status quo are important ingredients for success not only for institutions, but also nations. We deliver this thought leadership contribution in the spirit of injecting critical thought towards a deeper, more strategic and insightful collaborative dialogue with governments, industry and the community concerning the future of Australia and its place in the world.

Infrastructure must serve a nation well. As Australia rises to the dynamic economic and social challenges ahead, so must the nation’s energy, transport, water, telecommunications and extensive social infrastructure networks also adapt.

The Better Infrastructure Initiative is proud to announce its inaugural Leadership Partner, National Australia Bank (NAB). During the next four years, we will share a commitment to deliver a program of leadership, ideas, and data analysis that accelerates better governance practices.

At the core of this partnership is ensuring Australia is enriched and challenged by the big ideas that can transform a nation, coupled with well-grounded, scaled and feasible reform suggestions that, step-by-step, make our nation even greater.

I congratulate NAB on its vision for a better Australia and warmly welcome them as our foundation leadership partner.



Steve Lambert

Executive General Manager, Capital Financing
Product & Markets, National Australia Bank

The role infrastructure plays in ensuring the wellbeing of the Australian people is well recognised by governments, by the private sector, and in the broader community. We see this in the prominence of infrastructure in public conversation. However, the conversation often begins from the perspective of what we don’t yet have, what doesn’t work well, and how much more money we need to deliver better outcomes. NAB believes we are better served by reframing that conversation into one which first acknowledges the wealth of the existing infrastructure framework – but also calls for a lifting in the quality of services our infrastructure delivers to a new level.

NAB is committed to raising the level of dialogue and challenging some of the accepted norms with a view to greater and richer outcomes for Australia’s communities.

We are delighted to be an inaugural partner and invite others to join us in this important initiative.



Introducing the Better Infrastructure Initiative

The Better Infrastructure Initiative is a recent strategic expansion of the highly respected John Grill Centre for Project Leadership at the University of Sydney.

Australia has a proud history of infrastructure development: iconic projects such as the overland telegraph, the Sydney Harbour Bridge and the Snowy Mountains Hydro-Electric scheme have all helped define a ‘can do’ national character.

The Better Infrastructure Initiative is a call to action for Australia and the world to maintain momentum for infrastructure development, while adapting to a more connected, congested and contestable world.

Private capital and ingenuity are vital to further public infrastructure. They have the potential to transform it for the better; but this will depend on accelerating and committing to better public governance standards that invite innovation and value for money consistent with community standards.

People and customers matter in infrastructure and will be our mark of distinction. The Initiative is a unique knowledge partnership with governments, business, academia and the community to ensure infrastructure delivers its benefits sooner and with greater effect.

Our team will draw on research talent across the University of Sydney and tap into an extensive international network to ensure the initiative contributes constructive, timely and highly relevant thinking to the infrastructure dialogue, both in Australia and around the world.

The Better Infrastructure Initiative is guided by 10 key propositions:

1. **Better infrastructure requires better long-term planning.**
2. **All infrastructure interventions should be scaled, targeted and feasible.**
3. **The biggest impediment to better infrastructure is lack of transparency.**
4. **Infrastructure businesses are better than infrastructure projects.**
5. **Land-use planning and infrastructure planning are the same thing.**
6. **Good project selection is paramount; financing is secondary.**
7. **Infrastructure is primarily about service outcomes to people and business.**
8. **Risk is a catalyst for more innovation.**
9. **Better infrastructure relies on strong institutional memory.**
10. **Leadership matters.**

“This important initiative will support the University of Sydney’s John Grill Centre vision to offer unique education and applied research to achieve greater social wellbeing and economic prosperity through projects.”

Marc Vogts
Chief Executive
John Grill Centre for Project Leadership

Executive Summary

There is a consensus in Australia that is both enduring and rare. It concerns a strongly held perception that infrastructure is good for the community and the economy. This consensus, evident since at least the end of World War II, has transcended many other economic and social issues where divided opinion has prevailed.

Australia must not only preserve this consensus but also extend it. When nations invest astutely in infrastructure they help to secure the long-term economic and social wellbeing of their people.

Re-establishing Australia's global infrastructure leadership can help, provided that means embracing better infrastructure for the nation, not just more infrastructure.

Australia must shift its mindset. The constant refrain of the burgeoning 'infrastructure dollar deficit' is not serving the nation well. It creates in the mind of the community and their elected representatives a sense that there is a financial crisis in Australia's infrastructure sector and more money will fix it.

However, in the past decade over half a trillion dollars has been invested in infrastructure, which is double the size of the previous decade. Exercising the option of spending more money may not be prudent as Australians are concerned that these massive investments are having little practical impact on their lives.

For example, escalating congestion, higher emissions, greater service costs, lower service quality, and lost business and investment opportunities in both cities and regional Australia are at risk of becoming our new and unacceptable norm.

Further, this crisis mentality has led to serious consideration of government sponsored concessional financing through to the creation of new infrastructure banks. All of this inevitably concentrates on building big things, not on providing quality services that the community needs and values.

From a global perspective Australia is not alone. The message for policymakers is that there remains an unacceptably wide margin for error, as high as 30 percent, where projects fail to lift economic output. In the case of the last decade with Australia's roads alone it is estimated up to \$63 billion of projects may have had no impact on economic output.

Clearly such a situation demands change. This paper explores policy reforms and procurement practices that reduce the possibilities for wastage and ineffective investment, and ensure every infrastructure dollar works hard for the community.

The starting point for Australia's shift in mindset is for policymakers to focus on what concerns the community: a widening 'infrastructure services deficit'. This is a call to action for governance reform from 'asset building' to 'service delivery' to better translate the nation's massive infrastructure spending into tangible benefits for the community and business.

A significant proportion of the services deficit could be addressed by the better use of existing infrastructure and through more scaled, targeted and feasible investments.

Australia is a continent of grand contrasts, through its flora, fauna and magnificent landscapes. This contrast is true of its infrastructure as well, where the nation has a mix of best and least in its governance of assets and networks.

Global leadership in infrastructure was proudly in Australian hands, particularly from the mid-1980s to early 2000s. This stemmed from a cocktail of key government reforms at state and federal levels. Financial market reform, the Hilmer reforms

to competition policy and government business enterprises and superannuation, coupled with privatisation and corporatisation initiatives in NSW and Victoria and by the federal government. Together these unleashed a wave of innovation and new opportunities.

But this reform agenda is unfinished, resulting in a patchy performance where some sectors like roads and urban rail remain mostly untouched, and others like airports and telecommunications have thrived under a light-handed regulatory structure and private ownership. The vital signs for infrastructure overall indicate a combination of low innovation, falling productivity and failure to adapt and positively engage with customers. **Chapter 1** sets out the nation's innovation and productivity challenges.

Astute public sector decision-making is critical to Australia's future. Giving greater priority to improving existing infrastructure, particularly removing and decongesting strategic pinch points, is one of the most potent and cost-effective means of securing better network service performance, especially for roads and rail. **Chapter 2** makes the case for these types of interventions. It highlights that common sense infrastructure struggles to be considered because of a political bias for 'ribbon cutting' aided by an absence of evidence-based decision-making. Infrastructure is unusually data poor, its previous reform successes and failures are too easily forgotten and as a result policymakers are neither as well informed nor accountable as they should be.

By reframing Australia's infrastructure challenges as the services deficit, it is argued governments are motivated to sharpen their buying power for service outcomes (instead of building assets) and to place the infrastructure customer at the centre of decision-making. **Chapter 3** examines the challenges and opportunities of customer-led infrastructure and calls for the establishment of an 'infrastructure services market' to inject greater innovation and reward more solutions that are capital-saving and customer service rich.

Chapter 4 examines the propositions concerning the increasingly loud call from industry and government about how to unlock public and private capital to increase the level infrastructure spending in Australia.

User fees are an important source of funding for infrastructure, as they help to validate benefits customers gain from the services they use. However, in critical parts of infrastructure, like roads and passenger rail, there is a systemic disconnect between price and service quality that limits user charges from contributing more to funding. For example, no motorway PPP in Australia links the toll charge to a service outcome like minimum speed guarantee. Without a service commitment to customers, tolls are at risk of being perceived as a tax rather than fee for service.

The solution is to shift the mindset to the customer and the services infrastructure delivers.

Beyond all else, it is concluded that governments must improve the quality of their involvement in infrastructure markets, both in governance and processes, so that infrastructure businesses interact with customers wherever possible. Where markets are not possible, governments must reform infrastructure procurement practices, where they are the buyer of infrastructure services (not assets), and pay on the basis of performance and outcomes.

In conclusion, Australia has a unique opportunity to push the better practice frontier outward. Instead of more money, the solution is to shift the nation's mindset to the customer and the services infrastructure delivers. Together pricing reform, new technology and a commitment to explicit service outcomes can help to unleash the innovation and ingenuity of Australians to doing more infrastructures with less.

Done well, customer-led infrastructure focused on services could drive much needed better value for money and in doing so propel Australia back to global leadership.



Recommendations

1. Better infrastructure service provision for all Australians, rather than just more infrastructure, is the key to more community acceptance, value for money and in turn help to re-establish Australia's global infrastructure leadership.
2. Governments should rebalance their infrastructure priorities by assessing a full suite of options; especially capital-saving and service outcome focused projects, wherever it is more efficient to do so.
3. All three levels of government in Australia should commit to actively facilitating market development opportunities with pricing for quality service outcomes that see infrastructure businesses engaging with customers, not policymakers lobbying voters.
4. Where markets are not possible, governments must reform infrastructure procurement practices so they become the buyer of infrastructure services (not assets), and pay on the basis of performance and outcomes.
5. All infrastructure development should be an opportunity for innovation and productivity growth through a dynamic supplier community centered on customers and risk management.
6. Government's must commit to developing effective market design capabilities that champion collaboration, systems thinking and contestability in resolving infrastructure priorities. Enabling a customer-led infrastructure services market that openly tests whole of government and network considerations should form a critical element of project approval.
7. Every government is responsible for evidence-based policy development and decision-making; however, calls to address this in infrastructure have been inadequate and urgent action is required to ensure these principles are applied.
8. Enhanced community engagement is a pressing infrastructure priority; an infrastructure services market focused on customers (and stakeholders) is a direct and practical means of seeking community input.
9. Infrastructure Australia, state equivalents (plus G20 Global Infrastructure Hub) should be directed to establish a national/global infrastructure performance information network – a repository to inform current and future policymakers on past projects and infrastructure-related reforms.
10. Governments must continuously invest in the next generation of political and bureaucratic leadership, to enhance their experience, understanding and collaborative skills needed for integrated long-term planning, project execution and whole of life management of infrastructure networks.

Chapter 1

The case for 'better' infrastructure

The Australian community understands the importance of infrastructure not only to their economic wellbeing, but also the critical role it plays in connecting and keeping safe its people.

While it is easy to think of infrastructure from the perspective of transportation: roads, rail and ports, it extends well beyond these to water, waste, gas, electricity and telecommunications. In addition, the social infrastructure of buildings, particularly schools, universities, hospitals and convention centres, highlights how these assets and the services they deliver to business and the community are critically important to Australia's modern way of life.

The Better Infrastructure Initiative is a call to action to better activate the economic and social contribution infrastructure investments make, and to shift the focus of policy and the incentive for business towards extracting more benefits sooner and for longer, not just to spend more.

Investment and productivity trends

Over the last decade, more than half a trillion dollars has been invested in Australian infrastructure (excluding the sale of assets from the public to private sectors), almost double the investment over the previous decade.¹ As shown in Figure 1, the strongest growth has been in private investment, which now exceeds public investment, although that has also grown significantly.

Infrastructure investment has been dominated by transport, followed by energy. In recent years, public and private investment in transport, energy and water, have fallen from their peaks.

Makin (2003, 2007)^{3, 4} shows that public investment in infrastructure could make a potent contribution to economic performance, providing the infrastructure stock is productive upon commissioning. However, the longer it takes for new assets to contribute towards lowering input costs for business, and thereby promote new jobs in related industries, then the greater risk the asset will be a drag on economic growth and productivity.

The global record for translating infrastructure investment into aggregate economic activity has attracted considerable analysis; however, the magnitude of the impact, the causation and timing vary considerably, and this analysis provides no definitive answers.

Straub (2008)⁵ summarises the results of 80 model specifications of the most cited macroeconomic investigations of infrastructure impacts on economic output. Table 1 outlines the high level statistically significant results as to the effect of infrastructure as positive, neutral or negative. The key observations were:

Developed nations (such as members of the OECD including Australia) are:

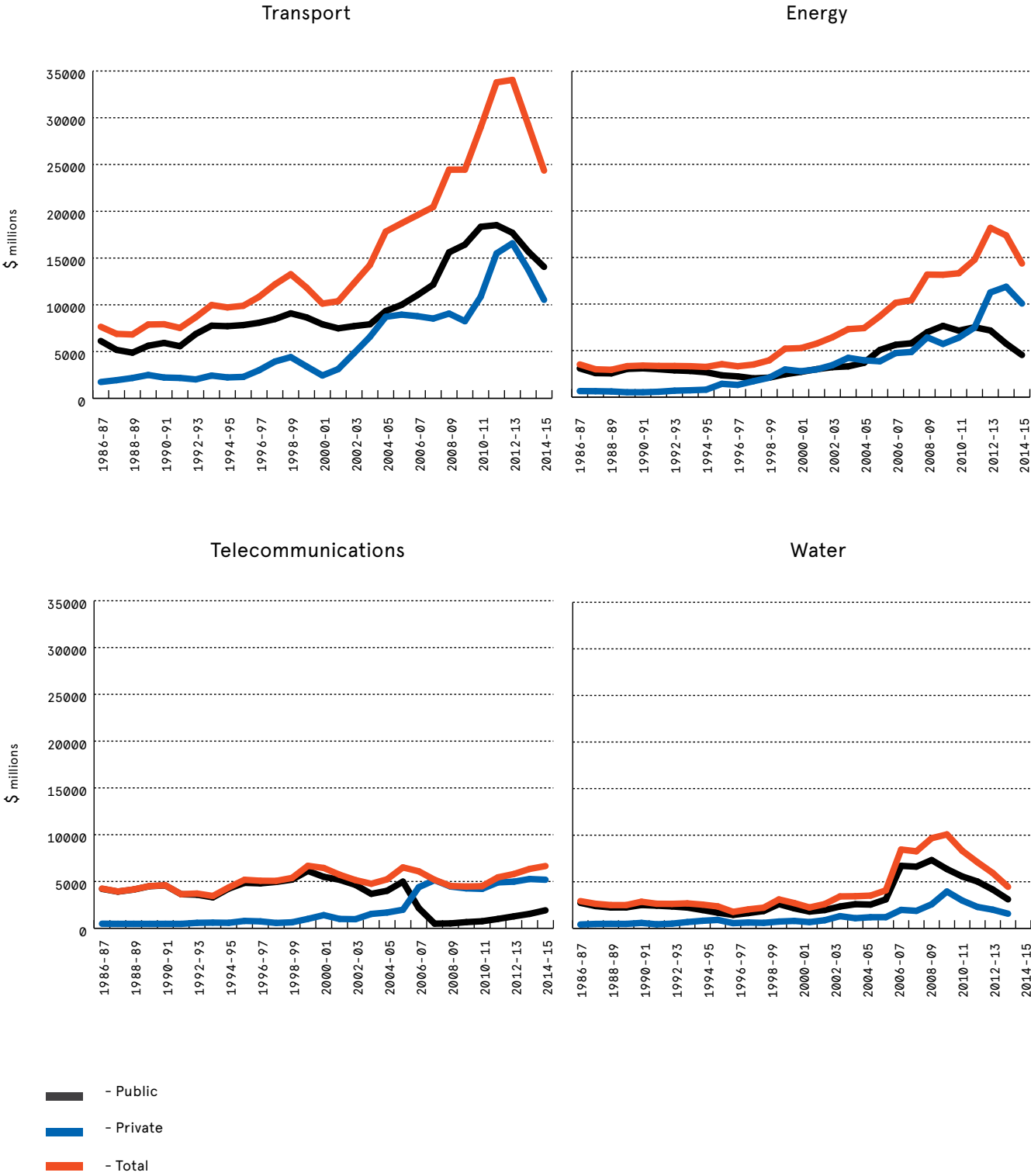
- more likely to have a positive effect than developing nations
- however, the likelihood of having no effect was high at about 22 percent and 9 percent for negative impact.

Developing nations face the prospect of having more than half (55 percent) of their infrastructure having no effect on economic output, and 36 percent having a positive effect.

While Straub makes the point that the analysis is not conclusive about the effect infrastructure has on economic activity, the compelling message for policymakers is there appears to be a high likelihood of a continuing 'hit and miss' environment. Straub's global analysis did not single out Australia specific estimates, nonetheless there is no reason to expect Australia would be immune to the problems he has detailed for developed nations.

Despite the limitations of extrapolating Straub's global estimates to Australia, for the purposes of simple illustration up to \$63 billion worth of projects could have had no impact on economic output, including \$49 billion of state and local road investment and \$14 billion of federal government road investment. This is discussed further in Chapters 3 and 4.

Figure 1: Investment in infrastructure, \$million (2012-13 prices)



Source: Bureau of Infrastructure, Transport and Regional Economics (BITRE). 2015. Yearbook 2015: Australian Infrastructure Statistical Report. BITRE, Canberra ACT.²

Up to \$63 billion worth of projects could have had no impact on economic output.

Clearly such a situation where there is the potential for up to a third of infrastructure investment being ineffective, and at worst negative, to economic output is an unacceptably wide margin for error. Reducing the possibility for ineffective infrastructure spending through governance reform is a high priority. Overhauling pricing, project selection and prioritisation processes to give complete transparency to the public could help considerably towards ensuring more targeted, scaled and feasible interventions that hit their objective sooner.

This paper explores policy reforms and procurement practices that reduce the possibility for wastage and ineffective investment, and ensure every infrastructure dollar works hard for the community.

Doing more with less is an important precondition for productivity growth.

Doing more with less is an important precondition for productivity growth in both infrastructure and the general economy. However, doing so without a market mechanism is problematic – especially when investors do not receive appropriate price signals for new capacity and customer demand is not properly informed by prices that reflect the costs of delivering services.

Table 1: Overview of high citation empirical studies on effects of infrastructure and economic output

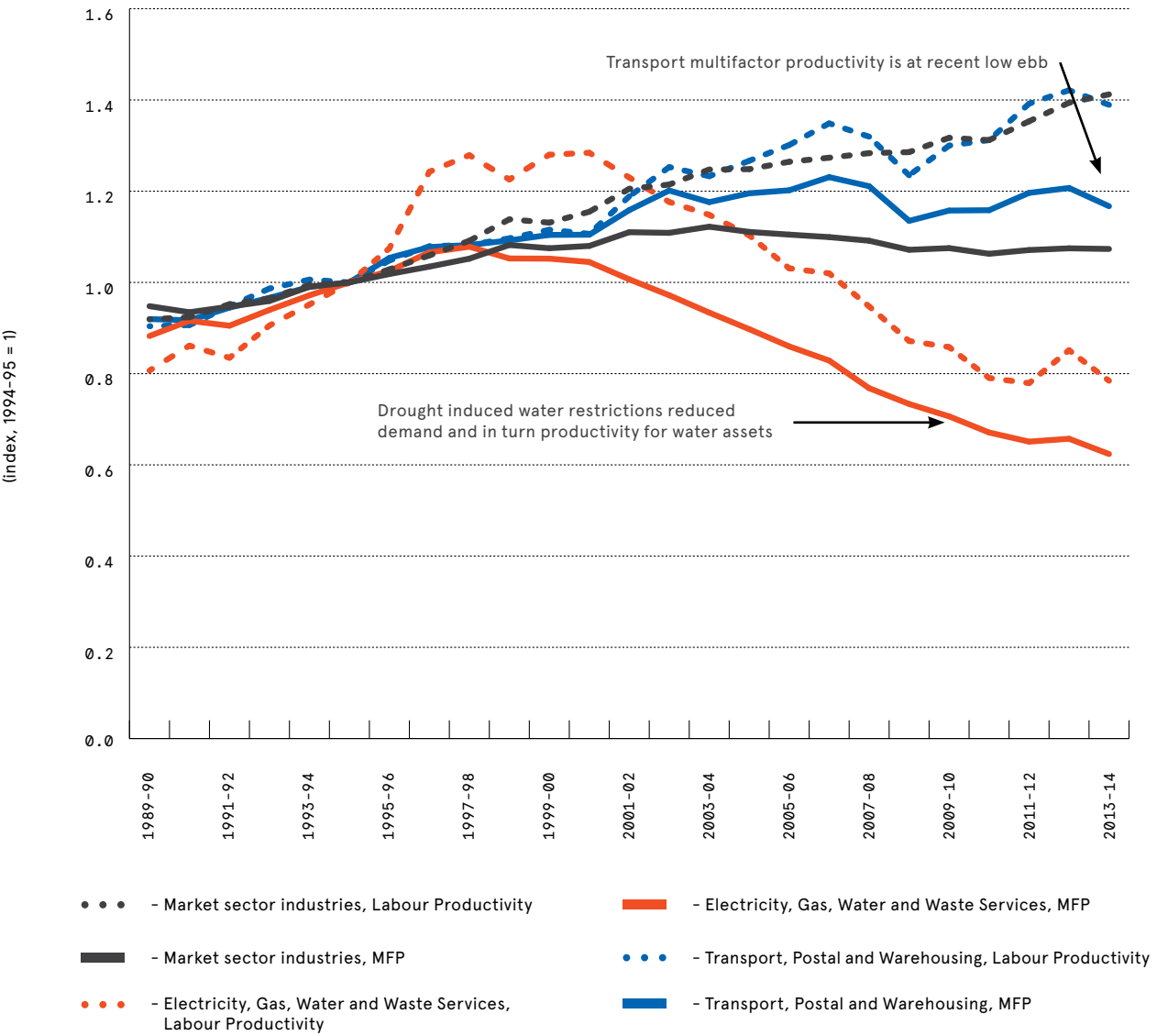
Study focus (number of studies)	Significant negative effect (percent)	No effect (percent)	Significant positive effect (percent)
Country type			
Developed countries (23)	9	22	70
Developing countries (22)	9	55	36
Mixed countries (32)	3	38	60
Type of effect studied			
Aggregate output (GNP, 48)	0	44	56
Aggregate output growth (GNP growth, 24)	17	29	54
Productivity (4)	25	25	50

Notes: The analysis draws on high citation infrastructure-related studies.
Source: Adapted from Straub (2008).

Figure 2 shows productivity in the transport and storage sector has grown below its long-term trend: labour productivity in the Transport, Postal and Warehousing sector was lower in 2013-14 than in 2011-12, and has grown slowly since ten years ago, consistent with the broader sector.⁶ Multifactor productivity is lower than in 2007-08. This highlights that rapidly increasing the infrastructure stock can lower the intensity of use over the short to medium term. Technology and innovation can enable increased utilisation of capital, which raises a question as to whether the expansion of the infrastructure stock was the most efficient use of resources to meet the demands of infrastructure users.

The decline in the electricity, gas and water sector has been more marked, with labour productivity declining as well as multifactor productivity. Each sector is likely to have performed differently, the measure overall for the three sectors would have been affected in part by investment response to poor regulatory standards. Lower demand for water in particular was brought about by drought-induced water restrictions and consumer investment in water-saving technologies.

Figure 2: Productivity indices for infrastructure-related sectors, 1989-90 to 2012-13



Source: Australian Bureau of Statistics 5260.0.55.002.

Infrastructure investment should boost productivity more broadly, particularly in industries using transport and energy as inputs. The period since 2007-08 has also seen a slowdown or decline in multifactor productivity across most of the economy, as shown in Figure 3. In some sectors, such as mining, declining productivity is driven by falling output prices rather than lower physical utilisation of assets.

Table 2 details a broad range of transport-related sectors where performance has differed markedly based on physical productivity measurements, such as kilometres per tonne, containers/passengers per hour. The reasons for this require further analysis; however, public private partnerships appear to produce better results when implemented in the context of strong governance frameworks compared with traditional public sector procurement.

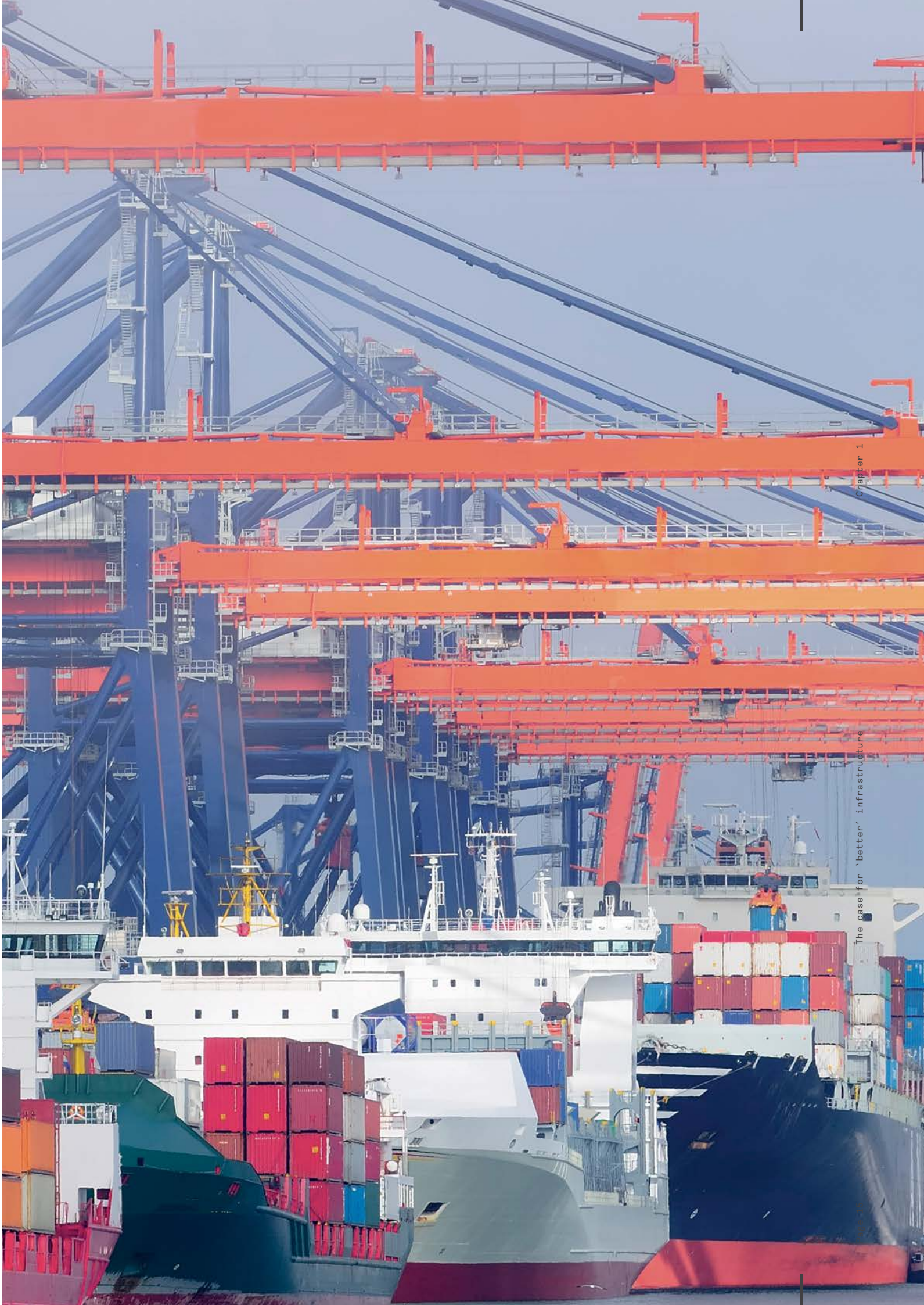
Figure 3: Industry multifactor productivity growth rates

	1993-94 to 1998-99	1998-99 to 2003-04	2003-04 to 2007-08	2007-08 to 2013-14
Electricity, Gas, Water and Waste Services	1.6%	-2.4%	-4.8%	-3.4%
Construction	2.6%	0.9%	0.8%	1.2%
Transport, Postal and Warehousing	2.0%	1.5%	0.7%	-0.6%
Agriculture, Forestry and Fishing	3.7%	3.4%	-1.0%	3.0%
Mining	0.3%	-0.3%	-3.5%	-5.7%
Manufacturing	0.6%	0.7%	-1.4%	-0.2%
Wholesale Trade	5.4%	2.8%	-0.4%	0.7%
Retail Trade	2.1%	1.8%	0.2%	1.9%
Accommodation and Food Services	2.0%	0.9%	0.6%	-0.1%
Information, Media and Telecommunications	2.9%	-1.4%	-0.1%	-0.4%
Financial and Insurance Services	1.9%	0.4%	3.4%	0.8%
Rental, Hiring and Real Estate Services			-7.9%	2.1%
Professional, Scientific and Technical Services			-3.4%	1.0%
Administrative and Support Services			3.4%	-2.7%
Arts and Recreation Services	-1.9%	0.7%	-1.7%	1.0%
Other Services			-2.5%	-0.5%
Market Sector industries			-0.7%	-0.3%

Source: Australian Bureau of Statistics (ABS). 2014. Estimates of Industry Multifactor Productivity 2013-14 (Cat. no. 5260.0.55.002), adapted from Zhou, S. 2012. An overview of Australia's productivity performance. PC-ABS Productivity Perspective Conference. 2012. Canberra.

Table 2: Summary of productivity-related performance for transport

Transport sub-sector	Performance	Ownership/incentive structure
Resource supply chains	Bulk rail in Australia, serving the mining sector, has seen a large increase in freight over the past decade, doubling between 2007–08 and 2013–14. ^{7, 8} This has largely been achieved by greater utilisation of existing assets, with the mining rail network only increasing slightly. Natural gas capacity has also benefited from significant private infrastructure investment, with gas output expected to triple between 2013 and 2018. ⁹	Bulk rail is typically operated by private companies. In many cases the track is also owned privately. An exception is the Hunter Valley Coal Chain, where private companies using the publicly owned track share information on needs, and schedule optimisation is prioritised over infrastructure expansion.
Interstate rail	In contrast to railways serving the resource sector, investment in interstate freight rail has been a disappointment. Starting in 2005, the Australian Government invested \$1.3 billion in the interstate rail line linking Melbourne, Sydney and Brisbane. ¹⁰ The investment was intended to bring about an increase in rail's mode share through increased speed and reliability. However, while speeds have increased, intermodal rail freight on the line has fallen by around a quarter since 2007–08. ^{11, 12}	In this market there is little connection between users and infrastructure investment decisions. Prices are designed to cover the marginal cost of infrastructure use, but there is limited opportunity for users to signal their value of capital investments.
Road freight	Over the last four decades, heavy vehicle productivity has increased six-fold, facilitating a four-fold increase in road freight. ¹³ This has been driven by the adoption of larger vehicles, such as B-doubles.	This has been driven by private incentives within the freight industry; adopting innovations to reduce costs include fuel and labour. While this has been facilitated in part by infrastructure investment (particularly realignments and duplications of roads to allow use by larger vehicles), adjusting regulation on the existing road network has also been important.
Airports	Over the past 20 years the number of passengers through Australian airports has more than doubled, growing at 4.4 percent a year. ¹⁴	The federal government began to privatise airports in 1997. The Productivity Commission ¹⁵ concluded that “under the light-handed monitoring regime that replaced price cap regulation, there has been a marked increase in aeronautical investment and airports have not experienced the bottlenecks that have beset other infrastructure areas”. The Tourism and Transport Forum, analysing airports privatised at different times, concluded that privatisation had been a success. ¹⁶
Container ports	Capital city container ports have seen throughput more than double since 1999–2000. Waterfront multifactor productivity has grown significantly faster than market sector productivity over this period: the ‘elapsed labour rate’ (a labour productivity index) has more than doubled, and the ‘ship rate’ (a multifactor productivity index) has almost doubled. ¹⁷	Historically, container ports have operated on the basis of a national terminal operator duopoly located across a range of government operated ports. That duopoly has recently been challenged and three of Australia's container ports have been privatised with governments indicating they will proceed to privatise the remainder. There have also been several phases of waterfront workplace reforms since the 1990s.
Roads	Time lost due to congestion in Australian cities has increased more than 50 percent since 2005, despite metropolitan vehicle travel only increasing 12 percent. ¹⁸ This is consistent with substandard investment, whether in the total level or not the right investments being made. There is also a maintenance backlog, with Infrastructure Australia's Infrastructure Audit finding “evidence of a maintenance deficit across many [national highways and major state arterial roads] in all jurisdictions”. ¹⁹	With roads typically unpriced, users have no means to express demand for better services. Traditional PPPs do not resolve this, as investment and toll levels are set administratively. Maintenance spending also has little link with demand or service standards. Traditionally, maintenance has been carried out in-house, without incentives for innovation or cost reductions. Starting in 2013, NSW Roads and Maritime Services has increased road maintenance contestability, with contracts linked to outcomes rather than outputs. ²⁰ Maintenance in Sydney is now fully outsourced to customer-focused ‘network stewards’, who – with 10-year contracts covering large areas – are encouraged to take on the full task of maintenance planning, including the risks.
Urban rail	Urban public transport use has increased in recent years, leading to increased crowding. About \$7 billion annually is spent by taxpayers to support the system however it does not appear to be producing acceptable service outcomes. ²¹	Urban public transport is largely owned and operated by state governments. Even where operations are outsourced, as in Melbourne, there is little opportunity for offering service innovations, as government sets prices and service levels. In some cases, a focus on measuring reliability is likely to have contributed to slower services. ²² Australia is yet to introduce differing service levels for different prices – such as Heathrow Express in London, with three service tiers for different prices.



Innovation in infrastructure

Infrastructure has a great deal to gain by embracing innovation and using it to improve service quality and productivity, especially through using technology, improved data capture and analysis.

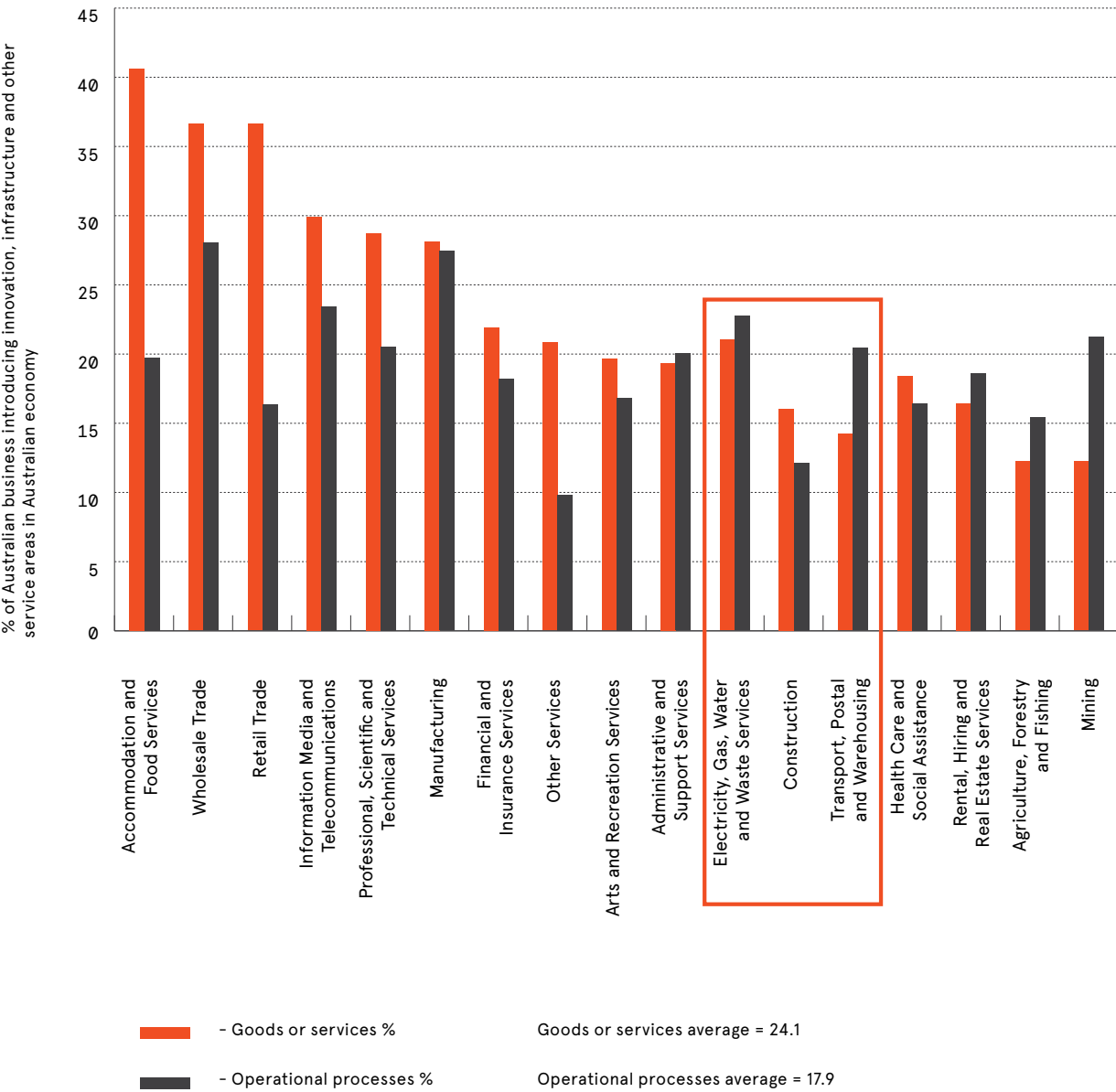
There is evidence the Australian infrastructure sector lags many other sectors in innovation, as shown below in Figure 4. According to the ABS, the Transport, Postal and Warehousing sector has the second lowest proportion of businesses with any innovative activity, at 31 percent.²³ Other infrastructure-related industries, including Electricity, Gas & Water services and Construction, are also low. The Department of Industry's *Australian Innovation Report*²⁴ also found that

the Trade, Transport and Logistics sector has relatively lower business expenditure on research and development.

In light of the long economic life of infrastructure assets, there is an even more critical need for innovation to play a more central role in the sector. In particular, the infrastructure services generated from these assets need to be able to adapt to the dynamic pressures in the economy, such as population growth, higher incomes and changing customer preferences. It is a concern that innovation is not keeping pace with other sectors in the economy, and this in itself is a factor constraining productivity growth in the sector.



Figure 4: Cross-sectorial comparisons of innovation, infrastructure and other service areas in Australian economy



Source: Australian Bureau of Statistics 8101.0 Summary of IT Use and Innovation in Australia 2013-14.

Lifting governance standards

The governance structures required to achieve long-term permanent expansion in infrastructure capability are in need of urgent attention. The contemporary context of the political economy of infrastructure has for too long focused on the short-term Keynesian 'sugar hit' effect of infrastructure expenditure where the rationale is expressed in jobs created during construction. This has favoured megaprojects whose implications are discussed further in Box 1.

While important, there is a much bigger prize in the long-term effects, not only in driving up productivity and income levels but also creating value for customers by providing services that they value and, where appropriate, using new products and services to explore their willingness to pay.

Infrastructure assets need to be designed and operated to maximum efficiency over the longer term, tempered by social equity considerations to ensure access and choice for all. Better infrastructure services are concerned with this rather than just building more new infrastructure.

Demand and supply imbalances persist for a longer period of time in certain infrastructure like roads and rail compared with other sectors, such as airports, seaports, and energy, that have been more adept in developing price and service offerings. Reforms such as corporatisation and privatisation have played a positive role in matching supply and demand through a more rigorous governance framework.

On the other hand, many new and existing infrastructure providers face challenges in positioning very large and lumpy pieces of capital that require long lead times for planning, approval and construction. Additionally, prices for infrastructure services, especially essential services like energy, water and transport, have been set with greater consideration of political rather than economic ends;²⁵ economic regulation should be principally concerned with dealing with inefficient use of market power.

While investments can sometimes be made with more passion than reason, this situation was partly addressed in the 1990s as part of a wider review of national competition policy led by Professor Fred Hilmer. The review looked at governance and regulatory frameworks for public and private

infrastructure and the resulting decisions by governments introduced greater discipline to investments, especially to major utilities such as electricity, water and rail freight.

In 2005, the Productivity Commission estimated the benefits of reforms flowing from the Hilmer Report:²⁶

- selected infrastructure-related reforms added 2.5 percent to GDP
- electricity prices had fallen 19 percent in real terms
- rail freight rates fell 8–42 percent in real terms
- real port charges fell by up to 50 percent
- real telecom prices fell 20 percent in real terms.

However, government-owned enterprises continue to be overloaded with too many objectives, spanning commercial, social and fiscal arenas, which have held back public sector infrastructure productivity. Inevitably these objectives while important have been executed inconsistently and sometimes with perverse effect. Electricity supply is a case in point. It traverses economic and social objectives; however, widespread 'gold plating' and extravagant use of scarce capital occurred without a proper governance framework and despite being subject to detailed economic regulation.

Proper governance and regulatory process for infrastructure critically depends on openness, transparency and accountability.

The key to proper governance and regulatory process for infrastructure critically depends on openness, transparency and accountability of decision-making to all those interested, where costs of an investment are evaluated with respect to benefit within a proper review and evaluation framework. This will help identify the full range of options that can underpin a more balanced approach where larger projects are considered alongside smaller and at times equally potent interventions.

Chapter 2 examines the contribution that more targeted, scaled and feasible projects can make to Australia's infrastructure future. These types of projects are referred to as 'common sense infrastructure' and could be very productive for delivering practical benefits sooner to the community.

Box 1: Implications of megaprojects

There is a case for megaprojects to take their place in the portfolio of Australia's infrastructure options; however, there is an even stronger case for rebalancing the approach towards well-targeted investments.

From a productivity standpoint, megaprojects can be slow to deliver on direct and indirect benefits and until they do measured productivity can decrease, owing to a bigger capital base (inputs) that are not matched with outputs.

However, spare capacity at the time of commissioning is a common feature of megaprojects. Governments do this because megaprojects are built with an eye to the future, and not just to boost productivity. Governments must make a judgment about balancing the costs and benefits, as was the case with building the Sydney Harbour Bridge, which was near empty for its first decade of operation.

Australia has executed a number of very successful mega projects in recent decades: CityLink & EastLink in Melbourne, M7 Westlink in Sydney, the Perth to Mandurah Railway are all likely to have supported better productivity.

There are, however, numerous projects that were far less successful in part because they were built years in advance of expected demand (such as the Ord River Scheme) or mothballed (such as the North-South Pipeline that links the Goulburn River to the Melbourne metropolitan water supply system), resulting in low or no output from these investments.

Despite Australia's relatively strong institutions in some infrastructure sectors its performance is not consistent. An Australian comparative

study of traditional procurement with public private partnerships (Infrastructure Partnerships Australia, 2007, Performance of PPPs and Traditional Procurement in Australia, Sydney) demonstrates there is a marked difference in delivery efficiency between the two approaches.²⁷ However, the study did not extend to how these delivery methods affect national productivity.

Megaprojects demand outstanding governance standards, and politically expedient and inefficient solutions need to be removed sooner from project lists. Part of the issue is that land transport in particular, and to some extent water (desalination) and telecommunications (NBN), have had low levels of transparency, and there are questions about the efficacy of certain decisions.

While smaller projects that decongest and remove bottlenecks are valuable from a cost-benefit perspective, their modesty prevents 'ribbon cutting' opportunities that make them less appealing politically compared with major projects.

There are concerns that institutional biases exist, particularly in the interaction between the federal government and states. For example, in the case of roads the federal government funds major projects, but not enough for ongoing improvements and maintenance to sustain the condition of the road network. This can accentuate the bias towards megaprojects and can have negative implications for encouraging more integrated planning of the road network in regional and urban areas.

Chapter 2

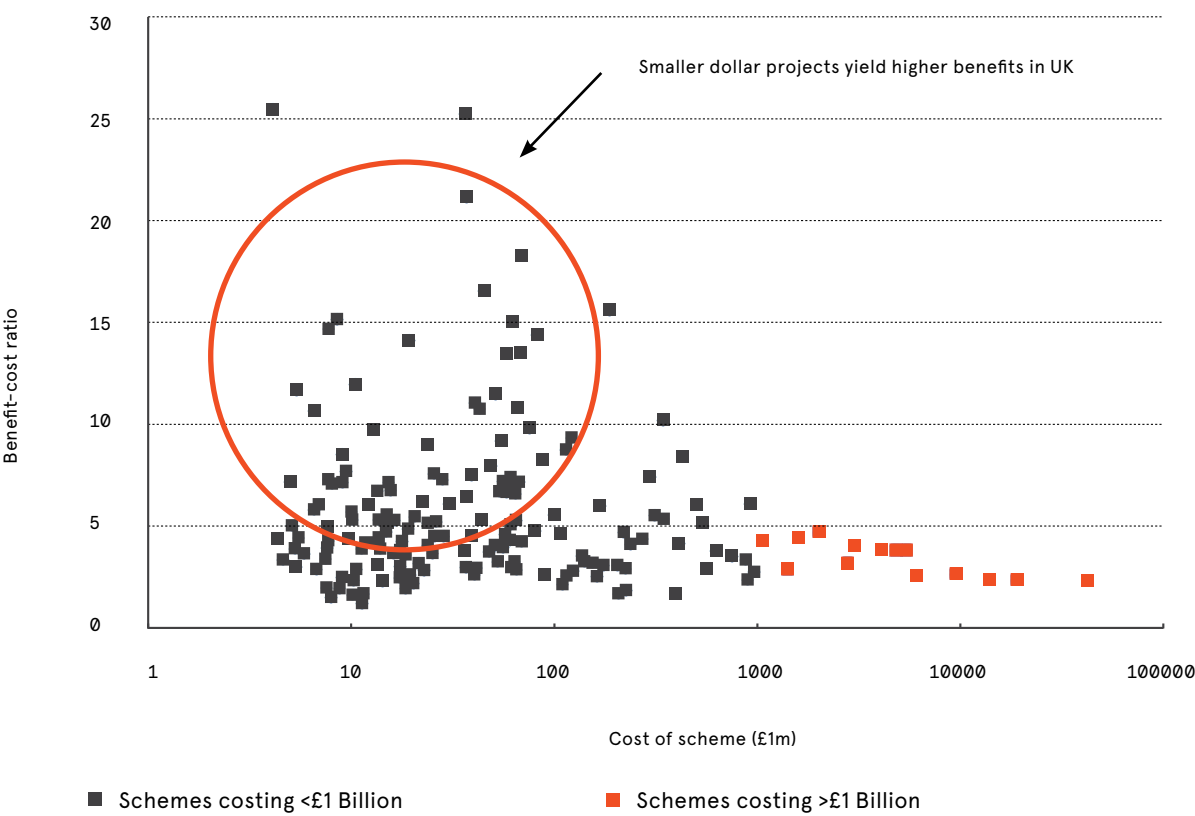
Doing more common sense infrastructure

Australia has everything to gain through adopting a more balanced approach to infrastructure.

This requires giving greater priority to improving existing infrastructure, particularly by addressing areas that need to remove bottlenecks and congestion. Historically, too much focus has been placed on ‘big ticket’ capacity enhancements – so-called ‘megaprojects’ – to the exclusion of other options. There is a case for government to reconsider the contribution smaller projects can make to the productive output of the economy.

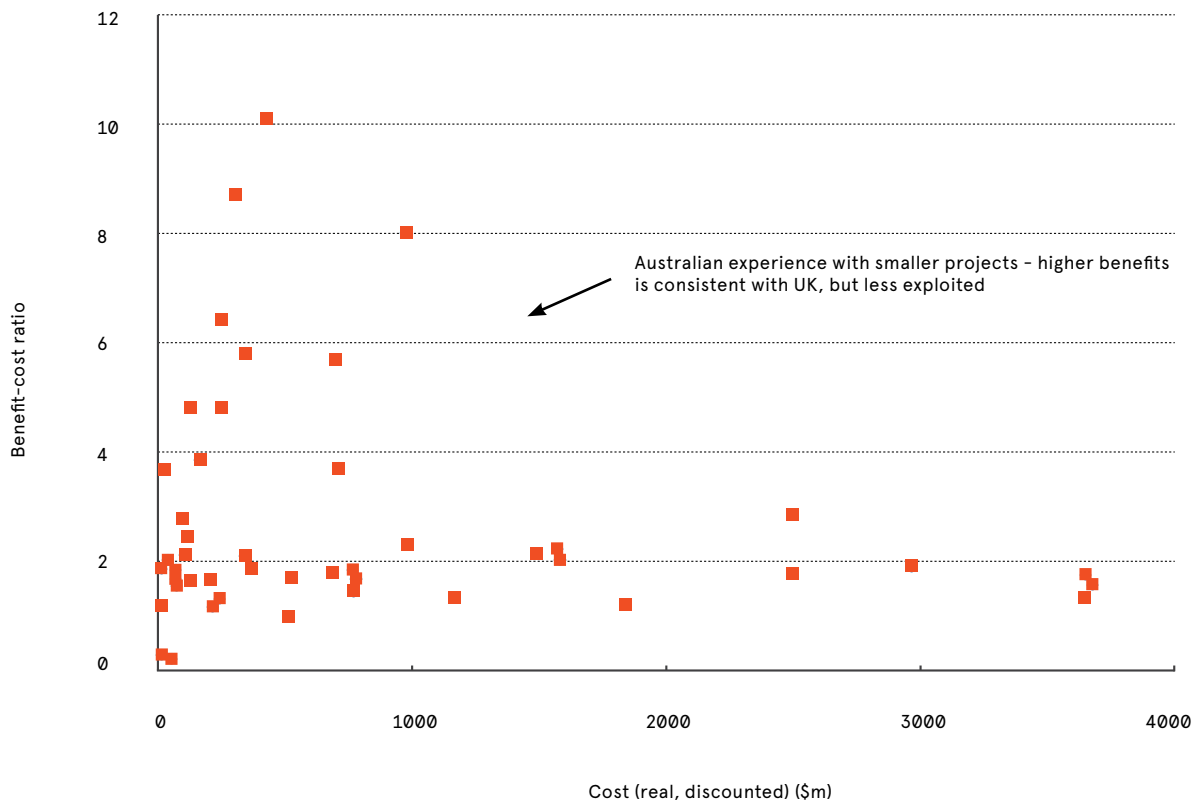
The UK Eddington Transport Study (2006) articulated a ‘Small Can be Beautiful’ principle, demonstrating that small-scale projects, and strategies for better use of infrastructure, can offer higher economic benefits with lower costs, and are quicker to implement than larger capacity enhancement projects. This is shown in Figures 5 and 6 for British and Australian projects respectively.

Figure 5: Economic returns of smaller and larger schemes (over £1B)



Source: Eddington, R. 2006. The Eddington Transport Study – The case for action: Sir Rod Eddington’s advice to Government.

Figure 6: Benefit-cost ratios of projects submitted to Infrastructure Australia



Source: Grattan Institute. 2015. How to reframe transport planning in Australia.

Better use and small-scale investments are often shorter-term solutions with proportionally more benefits; however, these are not perfect substitutes for major investments. Nonetheless, there are important, legitimate and ‘common sense’ options that should be exercised first. To some extent NSW Roads and Maritime Services, VicRoads and Queensland Department of Transport and Main Roads are seeking to do this so they can boost existing infrastructure performance and preserve capital for more productive uses. This has the potential to provide governments with ‘breathing room’ to prioritise investments and stage them to greater effect by encouraging firms to inject innovation and meet the dynamic needs of the sector.

Despite the value of a common sense approach to infrastructure, it is not widely practiced in the Australian public sector. This needs addressing through better governance arrangements that are less project-focused and more concerned with service delivery outcomes. But infrastructure customers expect more and are starting to find their voice, articulating the services they expect from infrastructure. Airports are an example of good practice, as noted previously in Table 2.

An important shift directly influencing the infrastructure project pipeline is new technology connecting infrastructure suppliers with customers, and equally important, customers to each other. Together, the implications of these developments are profound, especially in opening up a richer set of investment options for policymakers and asset owners. For example, using new technology to better allocate demand over the peak period could reduce the immediate need for adding expensive new capacity.

Small behavioural change can have a significant impact on network performance: as is observed during school holidays, after a small reduction in peak traffic volume has a large positive impact on speed. Where a road is close to capacity, a 10 percent increase in traffic volume can lead to more than halving speed.²⁸

These options that are made possible by technology and innovation can also help to build a more balanced project pipeline, allowing smaller, cost-effective alternatives, through better technology and information exchange. They are an important precursor to shifting the remaining sectors of infrastructure to a more customer led market.

Technology, pricing and explicit service levels can work together to have a deep effect on shaping customer demand and stimulate supplier-led innovation towards different types of customer service outcomes. The case examples in this section highlight the possibilities of shifting peak loads, allowing greater sharing of assets and ultimately having a more informed customer, and an even more informed infrastructure owner and service provider.

A specific risk in implementing such measures is securing community acceptance. Some of these measures may result in groups of people who experience a loss of social welfare. For example, commuters not being able to change travel times to minimise the impact of peak hour pricing. These distributional issues are important and further research is necessary to identify the extent of the problem and identify compensation and other mechanisms to deal with these issues appropriately.

Enabling the customer

Customers in infrastructure are only just beginning to find their voice in helping to shape the types of services they require and expect from infrastructure. Previously, users were not engaged and offered infrastructure on a 'take it or leave it' basis.

An important shift in the economy that directly influences the future shape of the project pipeline of infrastructure is the availability of new technology that connects suppliers of infrastructure with their customers and, equally important, connects customers with customers. This is helping to shift the industry towards its customers, and establish a framework to invest and operate in a market context.

Box 2 gives an example of using digital technology to improve passenger movement at airports, particularly during the peak periods.

Box 2: Digital technology and enhanced passenger convenience at airports

All major airlines now offer a form of mobile phone check-in that lets a passenger confirm their flight and have a boarding pass created on their smart phone for faster access to the plane for boarding. This has greatly streamlined the interaction between passengers and staff of both airports and airlines. It has also greatly reduced the requirement to provide infrastructure, including check-in desks and terminal floor space, for them and their associated queues.

Airports have been increasing the use of Wi-Fi, iBeacon and Bluetooth to track passenger movements with digital security camera technology, which now has effective tracking capabilities. These capabilities can be used in a way that defines a discrete movement without identifying the customer, thereby preventing the risk of privacy invasion or breaches. Importantly, this means airport facilities can be better used to identify areas of congestion, lengthy queues, and also allows authorities to clear emerging bottlenecks before they cause inconvenience. For planning, analysing peak movement and gathering areas helps to identify building improvements or even lets retailing adjust so as to better capture value points with products suited to the area.

The combined implications of these developments are profound, especially in opening up a richer set of options for policymakers and asset owners. For example, using new technology to help better allocate demand over the peak period can reduce the need for adding expensive new peak capacity immediately. It can also create a stronger focus on customer service quality and the market possibilities for different layering of services according to preferences and capacity to pay.

While megaprojects are important to meeting infrastructure demand, the emerging business environment is also encouraging worthwhile smaller-scale interventions through better technology and information exchange to be potent and more cost-effective alternatives.

These developments are an important precursor to shifting infrastructure from a cumbersome administrative process of planning, building and maintaining to that of infrastructure markets driven by dynamic customers and suppliers of infrastructure services.

Innovation and capital saving initiatives are the future way for value adding.

Customer centred innovation and capital saving initiatives that adopt a more service outcomes approach are the future for creating new layers of value adding through products and services. This can transform the entire life cycle of planning, delivering and operating infrastructure and is examined further in Chapter 3.

Encouraging a market for smaller-scale investment can improve existing assets and network performance, better allocate demand across the peak and shoulder period and shift the perception and understanding of the so-called infrastructure dollar deficit.

Better information supports better infrastructure

Information exchange between infrastructure consumers and suppliers is generally low, which can prevent both parties from responding quickly. While this situation is transforming rapidly with use of smart phones and better technology connectivity, the potential for wastage in the form of empty buses and trains, oversupply of electricity and, during periods of higher demand, inadequate services, results in low levels of customer satisfaction, and overall higher costs including idle capacity in the non-peak period.

Prices can be introduced into urban infrastructure use, with some more closely targeting the full costs of use than others. While there are calls for more targeted pricing, it is not clear what is likely to be technically and politically feasible. In the absence of full road pricing, tweaking the prices of these components could be used to increase network efficiency. Box 3 details the example of the San Francisco Park.

Innovative scheduling or traffic management algorithms can increase infrastructure's capacity and delay or possibly remove the need for expensive new capital expenditure.

For example, at Port Botany, one of Australia's most important freight precincts, data analysis on users' needs has created new options to better utilise existing infrastructure through improved planning and scheduling. It was demonstrated that "a potential rail track upgrade estimated to cost up to \$200m could be delayed by 15–20 years through applying a new optimised freight movement schedule".²⁹

Box 3: San Francisco Park

In the central area of San Francisco, competing needs for parking spaces saw very slow vehicles searching for an available park, which caused congestion not only immediately near parking spaces but also on adjacent road networks throughout the central business district. Apart from the lost time and cost, the congestion was also limiting vehicle and public transport access to the CBD.

Globally, the number of vehicles searching for a park in cities is estimated to contribute up to 30 percent of traffic in some downtown areas.³⁰

In 2011, the San Francisco Municipal Transportation Agency piloted SFPark, with sensors embedded in parks providing real-time parking availability and rates through a smartphone app.³¹ The data is also used to set pricing flexibly, with a goal of at least one empty parking spot per block.

During the pilot it was found the dynamic pricing reduced search times for parks by an estimated 50 percent³², as well as reducing the average price. Parking infringements, including overstaying meter time and double parking, also fell compared to the control sites. Retail sales were also found to increase faster near the smart parking.

Source: www.sfpark.org/

The creation and availability of basic data on usage and scheduling can shift perspectives on how to manage the physical asset, and enable a more targeted and feasible approach to future expansion. Data recorded through traffic management systems could also inform new road, bridge, and tunnel planning.

Australia is relatively advanced with coordinated adaptive traffic management systems, based on Sydney Coordinated Adaptive Traffic System (SCATS),³³ which was developed in Sydney and is used worldwide. It uses real-time data to optimise the traffic signal timing, boosting speed and throughput. Transport for NSW reports that SCATS provides \$3.6 billion in time saving benefits to Sydney each year.³⁴ With some aspects of the system decades old, improvements to these systems could yield higher returns. As congestion increases in Australian cities, the benefits and economic value of intelligent traffic management like SCATS and Queensland's STREAMS can be expected to increase.

Some particular improvements proposed include further integrating traffic management systems with public transport prioritisation.³⁵ There may be scope to expand the use of this technology at roundabouts to delay replacement with full signalisation or grade separation.³⁶

There are also large potential gains from expanding ramp metering. Data61 (formerly NICTA) has predicted that ramp metering on the M4 in Sydney could lead to 40 percent improvements in travel time, consistent with the benefits seen from ramp metering on the M1 Freeway in Melbourne.³⁷ The pilot in 2007 returned estimated benefits of \$94,000 a day.³⁸ The algorithms used for ramp metering in Melbourne ensure that queue lengths do not grow excessively, which has helped with community acceptance. While no ex-post benefit-cost ratio has been calculated for Australian implementations, a study of the impact of ramp metering from Minneapolis-St. Paul (MnDOT 20), estimated that for 340km of ramp metering, the net benefits were \$80 million a year (in Australian 2015 dollars). As costs are low, this yielded a high benefit-cost ratio of 15:1.

Box 4 reviews two case examples in New York City. In particular, the Fulton Centre where micro simulation helped to understand the movements of rail commuters through a station and identify pinch points so that capital expenditure had a maximum network-wide effect.

Box 4: New York leadership

Lower Manhattan, Fulton Center (pinch point strategy)

A crossover point for several subway lines, many passengers transfer during peak hour. Large passenger volumes, combined with the constrained spaces, meant that pedestrian throughput was a bottleneck, with train dwell times much longer than the rest of the network. The Fulton Center, completed in 2014, links six subway stations on 10 lines, at a cost of US\$1.4 billion.

According to Craig Covil from ARUP, it "much increased subway network efficiencies as a result of reducing the dwell time of the trains at the platforms for loading and unloading passengers ... The 4/5/6 Lines carry about 1.3 million people daily, so 30 seconds saved with this many commuters per day/per year is a very significant value add to the community".³⁹

'Midtown in motion'

In 2012, the City of New York introduced 'Midtown in motion', which initially covered 110 blocks of Midtown Manhattan and implemented a real-time traffic management system. Information on traffic conditions is obtained using microwave sensors and traffic video cameras as well as data from EZ-Pass tags in vehicles. EZ-Pass tags, which allow electronic payment on local toll roads, were already installed in 80 percent of vehicles, which is a large enough sample for accurate speed and flow information.

The total installation cost of phase 1 was US\$1.6 million, with the expansion costing US\$2.7 million. The first phase of the initiative led to a 10 percent improvement in speeds in the area covered, with daytime vehicle speeds increasing from 6.5 miles per hour to 7.2 miles per hour. The initiative has been well received by the community, with the scheme later expanded to 270 blocks.

Further information at:

www.huffingtonpost.com/2012/06/06/midtown-traffic-manhattan-new-york-city-dot_n_1574046.html?ir=Australia



Addressing the data drought

Better data supports better infrastructure, and most importantly creates a stronger marketplace for ideas on how to meet the infrastructure demands of our economy without an automatic presumption to build more.

Yet Australia, along with other major economies, continues to ignore calls for assembling a proper national evidence base for decision-making for infrastructure. Infrastructure in Australia is data poor, with many assets not properly accounted for using balance sheet accounting standards. When important information is retained, it is often locked up in departmental silos, or shrouded in claims of commercial confidentiality preventing comprehensive network-wide planning and management. For example, land use activity and transport facilities are intimately linked but institutionally remain separate and uncoordinated across many jurisdictions.

Better data supports better infrastructure, and most importantly creates a stronger marketplace for ideas.

Not only is decision-making made more difficult with fragmented information, so is policy development. There are significant tax interaction effects on infrastructure, especially in land transport and utilities, such as electricity, gas and water. For example, tax exemption on residential housing combined with inefficient land use regulations are likely to have been a factor in driving urban sprawl and the costly provision of infrastructure to the less densely populated metropolitan fringe.

Australia would benefit enormously from evidence-based policy development, planning and decision-making for infrastructure. This includes an evaluation of projects in Australia that would allow a standardised cost and benefit breakdown, and compare pre-project commencement expectations with outcomes.

There is no doubt that Australia needs integrated whole of government information to inform policy and decisions. In 2014, the Productivity Commission made a number of useful recommendations in this regard that have not been implemented.

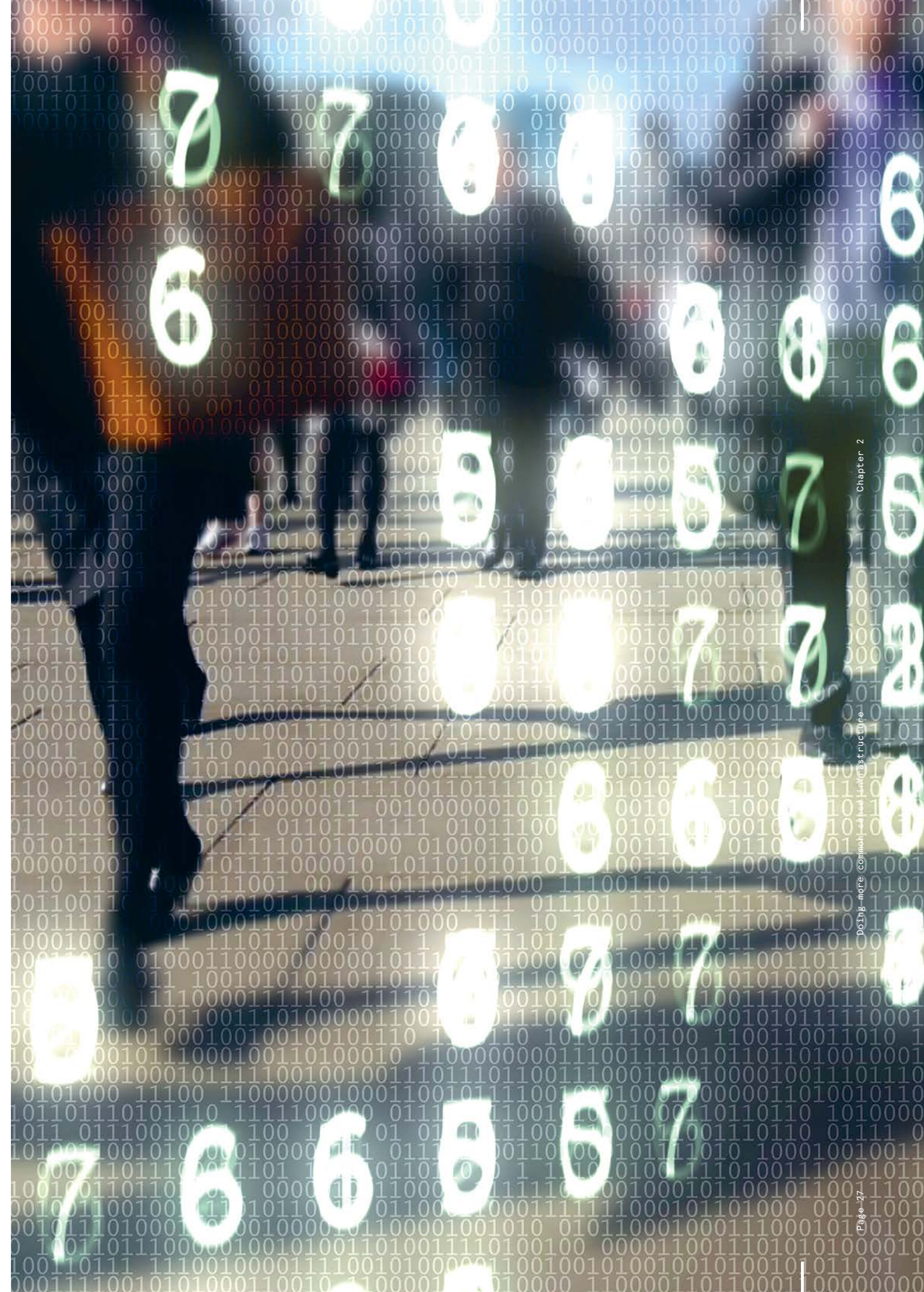
While acknowledging the methodological and data challenges of international comparisons, further research and development work is necessary. Cross-sectorial and cross-country performance would benefit policy development for all categories of projects.

Integrity and independence of data is critical if it is to serve a useful purpose in producing better infrastructure outcomes. Governments should direct Infrastructure Australia, state equivalents (plus G20 Global Infrastructure Hub) and other relevant agencies to establish a national/global infrastructure performance information network. It would be a repository to inform current and future policymakers (and investors) about past projects and infrastructure-related reforms.

The case examples highlighted in this chapter point to the new possibilities that basic data opens up to manage both the physical asset and the service delivery to the benefit of the broader network and its customers.

Common sense infrastructure can only be a serious option when proper data is available on usage, asset condition and customer preference. Without it the process of pinpointing the relative merits of one intervention over another is made very difficult, and perpetuates a hit and miss culture.

Chapter 3 will examine the institutional architecture needed to help apply customer-led infrastructure more consistently across the sector, and how it can provide a more disciplined and transparent governance regime for infrastructure.



Chapter 3

Reshaping government to customer-led ‘infrastructure’

Customer-led infrastructure is intended to acknowledge that the customer is more concerned with service outcomes, less with the ‘physical assets’ and who owns it.

For example, public transport customers want timely, reliable and affordable services that are comfortable in all weathers and relatively un-crowded.

Recognition of the importance of the infrastructure customer and, where appropriate, stakeholders directly or indirectly affected is a fundamental first step towards reinvigorating the Australian infrastructure consensus. To do this will require very different motivations, behaviour and skills from governments and the private sector.

Firstly, Australia’s policymakers must shift their mindset. Despite over half a trillion dollars in investment in infrastructure in the past decade, double that of the previous decade, there is a constant refrain about the burgeoning ‘infrastructure dollar deficit’ estimated by some proponents at around \$700 billion.

This has not served the nation well, as it creates in the mind of the community and their elected representatives a sense that there is a crisis in Australia’s infrastructure sector. This leads to an urgency to spend more, which is not always the best answer, especially for dealing with a range of situations, including peak load capacity problems. Of most concern is that it inevitably concentrates on building big things, not providing quality services that the community needs and values, as was discussed in Chapter 2.

Instead Australia must shift the focus of its considerable financial resources to what most concerns the community, a widening ‘infrastructure services deficit’. This shift will help highlight the necessity for governance reform from ‘asset building’ to ‘service delivery’ that is more capable of translating the nation’s massive infrastructure spending into capital saving, customer service rich outcomes.

However, tangible and practical benefits appear to be missing. For example, escalating congestion is resulting in longer commute times, increasingly unreliable travel and arrival times, higher emissions, greater service costs and lower service quality. This is likely to be contributing to lost business

and investment opportunities in both cities and regional Australia.

For example, in the case of roads from 2002–03 to 2012–13, average AM peak speeds in the five largest cities declined from 39km/hr to 35km/hr.⁴⁰ Several major roads in Sydney, including Military Road and parts of Princes Highway and Parramatta Road, have peak speeds slower than 20km/hr.⁴¹ Urban rail has seen significant patronage growth in recent years, without major service expansion. Sydney’s Western Line is ‘standing room only’ from Blacktown (35km from Central Station),⁴² and Melbourne’s Cranbourne/Pakenham line is ‘standing room only’ from Dandenong (30km from the city)⁴³. Travel speeds have also been stagnant or declining: for example, services from Parramatta to Sydney CBD were no faster in 2013 than in 1962⁴⁴; since 1980 the Ipswich Line in Brisbane has slowed by 20 percent⁴⁵, and speeds in parts of Melbourne have not significantly improved since the 1930s.⁴⁶

A large proportion of the infrastructure services deficit could be addressed by the better use of existing infrastructure and through more scaled, targeted and feasible investments. To achieve more customer-led infrastructure requires greater availability of information to inform all market participants about the services required, the prices customers are willing to pay and the costs of delivering different service options now and into the future.

This chapter explores the next frontier of the infrastructure reform agenda.

Better standards for infrastructure governance

Enabling more innovation through a stronger value creation model centred on the customer may help to guide better project selection and prioritisation of infrastructure that is scaled, targeted and feasible.

This is in contrast to the current political economy of infrastructure, driven by a sugar-hit mentality of Keynesian counter cyclical fiscal policy. While this can be important, too often the rush to get

projects – typically described as ‘shovel ready’ – to market results in poor project selection and prioritisation. Poorly conceived projects fail to lift productive capacity and fall short of customer (and community) satisfaction.

That is why it is critical governments engage in long-term planning coupled with outstanding project governance to help select the right projects. The building blocks of this governance regime are not onerous and are a normal part of how well managed private sector firms manage capital.

The basic checklist for informing the question ‘why this project?’ revolves around four pieces of information that can help translate public policy objectives into design and operational solutions that are sensible and enduring.

1. What is the strategic objective of the intervention?
2. Articulate the problem, and how it is being addressed?
3. Detail expected measurable outcomes to benchmark success/failure.

Box 5: Enduring Road Pricing Reform relies on whole of government thinking

The Harper Review recommendation to introduce cost reflective road pricing and the Federal Government’s response is a unique opportunity in 2016 to move a difficult issue forward provided all parties recognise the root and extent of the problem it seeks to fix.

A fundamental principle that must shape this road pricing debate is ‘efficient infrastructure relies on efficient land use’.

Australia is in the midst of a moment of truth, where scarcity of land in cities is preventing the building of cost effective roads. While many argue that traffic hyper congestion is a concern, its causes are only partly related to transport problems, like insufficient road space.

Australia has ignored the transport and land use connection for over a century, and to continue along this path is to risk a further misallocation of capital and community dissatisfaction.

The combined effects of this disconnect with transport and land use has resulted in a capital substitution process that is extraordinary in

4. Public scrutiny of cost-benefit (and NPV) analytics of approved and rejected candidate projects.

Obviously, the availability of this information for policymakers and the community alike is essential to compare and assess the worthiness of projects presented for approval.

There is evidence of public agencies seeking to do more in respect of the first three issues identified. However, very little has been achieved with public scrutiny of cost benefit analytics, and there is a deeper and even more persistent problem that agencies have very limited understanding of customer preferences and needs.

Box 5 details some of the whole of government issues that need to be dealt with any proposed road pricing reform and the importance of using this methodology for its development.

In its 2014 report on Public Infrastructure, the Productivity Commission identified the roads sector had the greatest need for this type of institutional reform. It proposed a model for a customer-focused corporatised public road

scale and reach. To make fringe suburbs livable, accessing jobs and services has been made possible through multiple car ownership (i.e. buying cars instead of more proximate and expensive land).

Sparsely populated suburbs that lock in car ownership without proper choice to alternative housing types are a fundamental problem. Along with other mega trends like increasing casual employment are feeding multiple peaks in traffic volumes in the day and very complex travel patterns. High transaction costs for buying and selling property is preventing people moving closer to jobs, necessitating longer commute time. There are clear reasons why our roads are so intensely relied upon.

Progressing a discussion on pricing reforms in 2016 is important, and cost reflective pricing may well have its place. But there is much more to this issue than just transport problems, fixing an archaic land use-planning regime is an equal priority.

A good starting point is to ensure whole of government deliberation of the problem, and to un-mercilessly break down institutional silos across Federal and state boundaries that are feeding these problems in the first place.

agencies, which would involve creating one (or more) road agency responsible for operating the road network with its own balance sheet, expected rate of return, customer service outcomes. The agency would control and manage road assets, choosing how to contract with the private sector for the maintenance of existing roads and the construction and financing of new ones. In its final state it would develop charges for road use and have the right to raise capital. Users would be involved in developing projects for funding. A stylised version of this model is set out in Box 6.

Australia has had extensive experience with privatising and corporatising public assets. Airports, seaports, telecommunications and energy utilities provide important case examples of the way large infrastructure can be calibrated towards better governance that supports higher customer satisfaction, improved balance sheet management and efficiency.

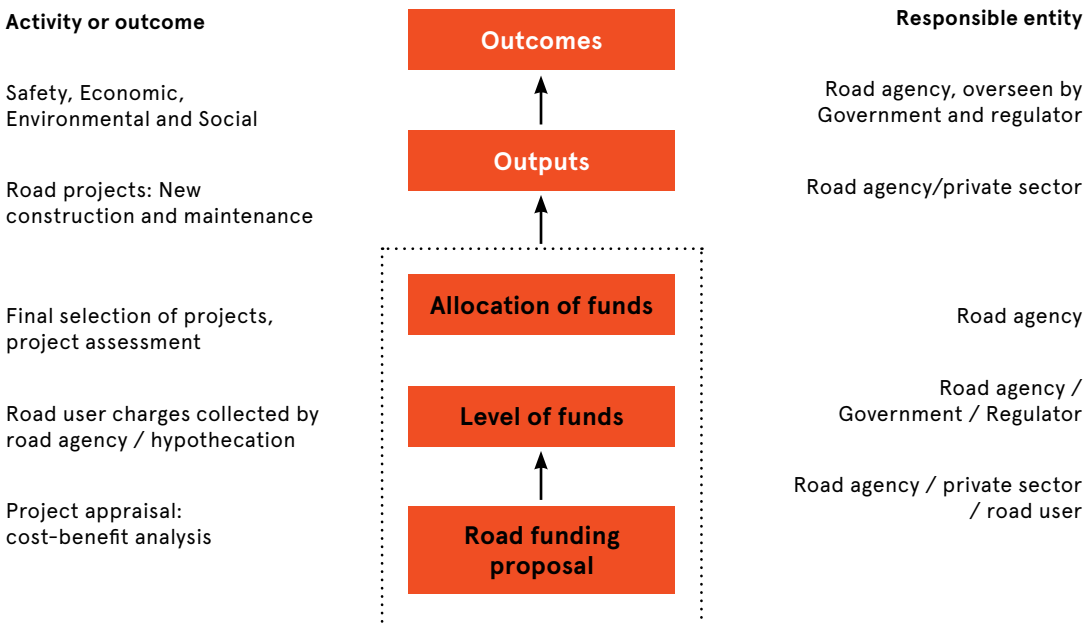
There is a strong case for Australia to better understand these important reforms, their

success and failures and further build on them. An important step in building on past reform is to apply it to areas less touched, such as roads.

The presence of a strategic objective should also invite scrutiny as to the problem the infrastructure is intended to address, and ensure there is a clear diagnosis that the proposed solution and supporting business model is effective and enduring. This simple strategic development process could not only align stakeholders, but also engage the community in a more worthwhile consultation process about the merits of the infrastructure spending.

However, a review of the publically available business cases for major infrastructure projects in Australia makes for interesting reading. It is very difficult to discern a clear strategic objective and a statement of the problem being addressed. It is acknowledged that Infrastructure Australia and Infrastructure NSW have sought to address this, but many government decisions have bypassed these agencies.

Box 6: A stylised model for a corporatised public road agency



Source: Productivity Commission (2014, p.321).

It is critical governments engage in long-term planning coupled with outstanding project governance to help select the 'right' projects.

A contributing factor is that both federal and state governments overload infrastructure projects and government business enterprises responsible for large infrastructure spending with too many objectives that compete and are at times contradictory. It is critical to apply a consistent framework that takes account of the layering and precedence of objectives to ensure the proper management of these priorities in line with community standards.

Inevitably without such a framework these objectives spanning important commercial, social, environmental and fiscal arenas are executed inconsistently and at times with perverse effect. For example, Sydney's Cross City Tunnel (CCT) is a case in point discussed in Box 7.

Box 7: Sydney's Cross City Tunnel (CCT)

There is no doubt the CCT is an example of engineering excellence, just like many other major projects built in Australia. However, a question in search of a proper answer is whether it was the right project. And, more specifically, was there a better business model (risk allocation) to support its long-term commercial viability while meeting community expectations of responsible management.

Initially the logic for CCT was for a short underground tunnel to connect the east and west edges of Sydney CBD. But there was no clear objective to guide the project's development. A major push from the tourism lobby saw a thought bubble of the William Street Boulevard becoming the Champs Elysees of Sydney gain traction.

Such a proposition required a much longer, more expensive tunnel with diminished value to customers seeking an efficient way of crossing the

CBD. The push and pull of vested interests further confused procurement, ultimately resulting in a classic example of 'mission creep'. Clearly, there was no guiding compass in the form of a strategic objective and problem identification for the CCT.

While setting objectives is not easy, the benefit of hindsight suggests if there was an objective it should have concerned reducing congestion on the deck of the city, and in particular improving the traffic flow on its north-south axis. If that was the case, then the CCT concession owner should have had a very different revenue model, one that relied much less on tolls from customers, and more on a performance fee for improved traffic flow on specific north-south traffic corridors via a 'shadow toll' paid by government. This would have avoided road funneling and other destructive practices that attracted the community's opprobrium.

Unlocking infrastructure ‘services’

For some time there has been an untapped opportunity for Australian, state and local governments to shape a more sophisticated, information richer and evidence-based market to more efficiently resolve the infrastructure needs of the nation.

As a new market created by government it would be concerned with inviting ‘problem solving’ skills to the nation’s infrastructure needs. It would operate without the traditionally strict request for tender processes that typically specify an infrastructure solution in such micro detail that there is very limited scope for innovation and problem solving from proponents.

Government need to invite ‘problem solving’ skills to address the nation’s infrastructure challenges.

To be effective, an infrastructure services market needs to be active across the life cycle, and most critically at project conception. In doing so, it is intended to create a new competitive tension that opens up scope for service providers to innovate, better use existing assets and focus on customer service outcomes without recourse to excessive capital expenditure.

It is critical the infrastructure service markets have in place a clear set of values and behaviour that will guide it. This will allow governments (buyers) and sellers to interact with confidence and certainty towards adding more value to the infrastructure opportunity set beyond just building new assets. For example, these values and norms would include:

- only seek to be a (government) service provider when entirely necessary
- only regulate markets when it is demonstrable that the benefits of doing so exceed the costs
- ensure data transparency and its availability to enable dynamic and entrepreneurial processes for both opportunity and need identification for government capital and operating spending
- encourage prudent use of capital and productivity enhancement
- commit to better use of existing infrastructure
- articulate clear strategic objectives for specific projects and service provision for all infrastructure
- pursue an integrated whole of government culture (without the artificial constraints of fragmented departmental silo boundaries to enhance market innovation)
- establish a resilient, consistent and transparent project selection and governance framework that supports investment grade decision-making.

Table 3 sets out a high-level checklist of the main features of an infrastructure services market.

Table 3: Basic checklist for infrastructure services market

Greater transparency	Wider participation of market service providers at the critical stage of project inception to identify the most effective way to meet a strategic objective.
Customer value	The capital and operational budgets for the proposed projects would be carefully evaluated with their customer value proposition to determine final approval.
Value for money	A services market is intended to highlight capital saving options that can prudently postpone large capital expenditure.
More innovation	Greater choice of service outcomes to help stimulate more innovation to achieve better asset use and higher customer satisfaction.
Unsolicited bids	NSW has set a quality benchmark for large projects such as NorthConnex, and the services market must be fully exposed to this source of innovation.
Public participation	The impact of the services market means customers, and in turn the community, is better engaged in all aspects of infrastructure over its life cycle. The French National Commission for Public Debate provides a better practice example of when a service market is not in operation (see Appendix A).



Reframing infrastructure: price for service quality

The way in which society frames its infrastructure needs can have a very powerful influence on the way solutions are developed and ultimately sponsored. The focus on setting the strategic objective of an intervention is an essential element towards understanding the best frame of reference.

Although pricing is a very powerful tool to equate infrastructure supply with demand, equity, environmental and political considerations can prevent it from being simply grafted onto existing arrangements. However, price for quality is a standard operating norm in most parts of the economy, and it has been applied to areas such as telecommunications, airports and the National Electricity Market.

The defence and aerospace industries also provide interesting case examples where the customer pays for assets and equipment when it works according to a set of predetermined service outcomes.

And of course when it does not work, the customer does not pay.

The performance-based (PB) contracting⁴⁷ approach has been operating in the aerospace and defence industries for over 20 years. Rolls Royce coined the term ‘power by the hour’ to describe its service-based contracts for engines and avionics provided to commercial airlines.

The PB contracting model could be applied to infrastructure. In particular, through a commitment to a service outcome it can reshape an entire supply chain of an industry to respond to higher reliability and service outcomes. It also highlights whether infrastructure assets need to be owned by government when a contract for use, and pay on value of that usage, could be a credible option with significant financial implications for taxpayers and investors alike.

In the case of toll roads in the US, the owner/ operator Transurban has propagated a tolling product for customers to choose a premium journey experience. High Occupancy Toll (HOT) lanes are used to manage traffic flow. The price of travelling on a HOT lane fluctuates according to traffic congestion (eg higher congestion triggers tolls for the HOT lanes). The operator ensures at-speed limit service levels on the HOT lane are maintained by varying the price for an individual journey 24 hours a day.

First implemented on California's 91 Highway in Orange County in 1995, HOT lanes operate in parallel to existing roads and offer commuters an alternative to driving in congested traffic. Offering different service outcomes for a given price has also helped with allocating demand in the peak, and has better informed the schedule for future capital investment in the road.

Is it too radical to expect infrastructure customers only pay for what works?

Table 4 sets out examples of reframing infrastructure where a price for quality of services applies that can help allocate demand and trigger more informed use of the existing infrastructure, with significant savings to government and in turn the taxpayer.

Chapter 4 examines the propositions concerning the increasingly loud call from industry and government about how to unlock public and private capital to increase the level of infrastructure spending in Australia.

Table 4: Reframing Infrastructure objectives can save money, deliver better services sooner and trigger valuable innovation

Proposed project	Traditional strategic objective	Reframed objective	Service market possibilities	Potential saving
Desalination plant	Secure 'potable' water sources regardless of climatic change.	Secure water supplies that are 'fit for purpose' at all times.	Encourage a market for different water qualities based on final use. For example, household tanks for gardens, reused water for toilets and industrial use, potable sources for human consumption.	Delay, and possibly remove need for new desalination plant – by reallocating demand to a wider range of water qualities, reduces the call on potable water sources.
Peak load power generation	Achieve 99 percent reliability in peak consumption periods.	Shape peak demand so there is maximum reliability at affordable costs in peak period.	Establish interruptible commercial contracts to reduce loads in peak, compensate firms for disruption.	Better use of existing assets, delay and potentially remove need for expensive additional peak load capacity.
Toll road expansion	Travel time savings for passenger motor vehicles.	Improve passenger mobility across the transport network.	Create different service quality based on car occupancy, willingness to pay and special needs. For example, introduce high occupancy transit lanes to travel at guaranteed speed limit; enable ride sharing and better information sharing on seat availability in cars.	Additional road capacity can be postponed with greater choice of travel both across modes and within the mode.
New prison	Provide cost-effective incarceration services.	Achieve reduction in reconvictions for select prisoner groups .	Stronger in-prison support for education and reskilling, and at prison gate and in the community. Support for prisoner's family while in prison and post release. Create social impact partnerships with not-for-profit and commercial providers.	Benefits may take 5+ years. Reduction in recidivism has potentially significant impact on capital and operational budgets for governments.



Chapter 4

Unlocking capital for better infrastructure

There has been much debate about how to unlock public and private capital to increase the level of infrastructure spending in Australia.

The federal and New South Wales governments' 'Asset Recycling' is a recent example of innovative policy put into action to better use public money for infrastructure. Importantly, it further builds on previous policy reform and the experience of Australian infrastructure businesses. Infrastructure service provision in the hands of companies that actively engage with their customers raises capital more efficiently.

The development of infrastructure markets must be a priority for governments wherever possible. It is an essential move towards greater transparency in project selection while informing it with the full suite of options coming from broad range of suppliers. While financing techniques are important, these can be put to best effect following rigorous project selection and prioritisation.

Policymakers have been distracted from the primary task of strengthening project selection.

Some policymakers have been distracted from the primary task of strengthening project selection with suggestions for new institutions, such as an Infrastructure Bank; directing investment, such as requiring superannuation funds to place part of their portfolios in infrastructure assets; and new ways of structuring government incentive programs, loan guarantees and subsidised finance.

Their underlying policy logic can be very different and often the underlying rationale or problem they are trying to solve is not clear. However, if the starting point is markets for infrastructure services, a stronger framework emerges: one that is less likely to favour large projects and more likely to encourage innovation to serve the customer.

The main focus of this analysis is funding, that is, what are the sources of cash that are available over the project or businesses' life to ensure the services are provided? Consideration of the fundamental role of financing in managing the mismatch between funding and costs, and how to appropriately allocate risk between the providers and the funders will be addressed in subsequent papers.

Funding, user charges

At the end of the day, the infrastructure services that the community wants and needs have to be paid for by someone. There are only three sources of funding – those who use the services, those who otherwise benefit from the use of the services (especially through their proximity to the infrastructure assets concerned) and taxpayers (broadly defined) through the provision of money by various levels of government.⁴⁸ What sources (and there may be more than one) of funding are available, and indeed appropriate, to allow the production of infrastructure services will vary from case to case and fundamentally affect how the services are financed.

Funding by way of user charges provides the best opportunity for infrastructure services to reflect the value that consumers place on them. Giving consumers a clear signal about the cost of infrastructure gives them an incentive to use it efficiently. Conversely, providers will receive signals as to when further capacity is needed. While many infrastructure markets are by necessity relatively concentrated, the development of these price signals is what has allowed competition to emerge, keeping downward pressure on prices and encouraging innovation in service offerings.

For markets to emerge and for efficiencies to be achieved, it is important to ensure that, where possible, customers fully contribute the costs of providing services and that individual prices also reflect the benefits that customers gain from the services they use.

It is fair to say that many of the gains from reform of utilities mentioned in Chapter 3 were a result of applying proper governance through balance sheet management along with changing pricing structures. Importantly, some sectors such as telecommunications have been very successful in engaging their customers with price for quality service offerings. The willingness of customers to pay depends entirely on the relevance, desirability and quality of service they require.

Willingness of customers to pay depends entirely on the relevance, desirability and quality of service they require.

For example, technology and product innovation with the customer has transformed the willingness to pay, first with the introduction of mobile telephony and then data and internet availability. This contrasts dramatically with vigorous public debates in the 1970s and early 1980s with the possible introduction of timed local calls and the community opprobrium this attracted at the time.

In the case of urban water, the old approach of charging based on the value of the property, which had nothing to do with the cost of provision, was abandoned for a structure where users effectively pay a fixed fee for connection and a variable fee for the water they consume.

However, with land transport, and in particular roads, there remains a systemic breakdown in the price and quality of service, which is discussed in Box 8. This also applies to Australia's more innovative motorways delivered through public private partnerships. No motorway in Australia links a toll charge to a service outcome, such as minimum speed, certainty of travel time. As long as the customer is not the beneficiary of a service outcome commitment their willingness to pay will be limited and heavily qualified. The limitation of current motorway PPP contracts around service level commitments is interrupting a proper interaction between the customer and road operator, which is not only inefficient but also distorts the level of risk for the PPP and the funding and financing mix.

Box 8: Reforming the last frontier, roads and urban rail

The Better Infrastructure Initiative supports a more sensible pricing structure for roads along with a new governance model detailed in Chapter 3. The Productivity Commission made the case that this is a primary reform challenge for the Australian infrastructure sector. Put simply, a system that relies almost exclusively on vehicle registrations and a fuel excise cannot possibly hope to send appropriate signals to a range of differently motivated road users using different roads of differing qualities and levels of utilisation over wide geographic areas. Some of the innovations mentioned in chapter 3 and 4 provide an insight into future options, but without serious institutional reform, it is difficult to see how the proper pricing of road use will ever be achieved.

In some very important cases, the benefits of infrastructure are not confined to customers. In some cases (discussed below) there can be improvement in land values, while in others, non-financial benefits can accrue to a broad population base, such as the benefits of reduced emissions and increased amenity that arise from urban public transport projects. In these cases, it is no less important to get prices right – in public transport: for example, significant increases in use (and therefore non-user benefits) can be achieved through appropriate use of peak pricing and innovative fare collection technologies as well as relatively small investments to improve the passenger experience.

Furthermore, the underlying capital intensity of infrastructure has historically led the community and policy makers, legitimately, to be concerned about the abuse of market power. It is important this concern does not lead, without appropriate analysis, to the imposition of unnecessary regulation or, if regulation is required, that the form of regulation does not stifle innovation and efficiency.

It is important that regulatory systems and PPP contractual frameworks do not obstruct innovation. The original framework put in place to regulate airports in 1997 effectively required airports to get the ACCC's permission for every piece of aviation investment they made. This was time consuming, costly and open to gaming by airlines, which from time to time had competing commercial interests. But, most importantly, it stifled innovation because it obstructed the development of relationships and understanding between an airport's two primary customer groups – airlines and passengers. Since these arrangements were removed in 2002, the Productivity Commission's 2006 and 2011 reviews both found that the more light-handed approach has led to better investment outcomes (i.e. allows the firm discretion in how to meet regulatory targets).

Other beneficiary contributions

In his seminal paper on economic development North⁴⁹ explained how much of the spatial distribution of economic activity in the United States at the time could be understood by the benefits firms and people gained from locating close to infrastructure. Such benefits mean the development of new infrastructure can lead to an increase in the demand for land that is close to it – in large cities, people will value closeness to urban public transport services while many trade-exposed businesses will find value in being located close to rail yards, sea ports and airports.

This increase in the demand for land must translate into an increase in its value – land is the only true monopoly. Because this increase has nothing to do with the actions of the landowner, and everything to do with the actions of the infrastructure developer, there is no efficiency loss associated with the increase in land value being 'captured' to fund the

infrastructure that leads to the value increase. Land value capture is not as easy an activity as charging a ship to use a wharf: adapting it to the modern Australian context of Commonwealth-State relations is discussed in Box 9.

Historically Australia has used land value capture to fund the Sydney Harbour Bridge and the Melbourne Rail Loop, although these financial arrangements were prematurely terminated owing to pressure from vested interests. More recently the Gold Coast Light Rail project was in part funded by a flat levy on households. A more equitable and arguably more efficient price signal can be sent if the level of rates increases (in other words the percentage that is applied to the value of the property), as been used to help fund the Crossrail project in London.

Australia has used land value capture to fund the Sydney Harbour Bridge.

A different approach is to incorporate within the business entity providing the infrastructure some or all of the land that increases in value as a result of the infrastructure development. In the context of urban public transport this is often associated with the notion of 'air rights' to build residential and commercial developments over railways stations, such has been used for the private development of subway infrastructure in Hong Kong. Less recognised examples are the vacant and occupied land portfolios often associated with seaports and airports being privatised and transferred to new owners, which have provided valuable opportunities for diversifying income streams and helped in securing financing for further development.⁵⁰

The advantages from these approaches are that they transfer a large part of the increase in value without having to tinker with existing taxation arrangements or impose new taxes. But perhaps more importantly, they also provide a source of funding for the business providing the infrastructure that is generally only weakly correlated with the funding stream from the primary infrastructure business.

Box 9: Prime Minister's land value capture reflections

Malcolm Turnbull mooted in 2015 that value capture may provide a way of funding infrastructure by quarantining and securitising a portion of increasing land values that may result from building new infrastructure (Australian Financial Review, 11 October 2015).

A recent example of value capture is the development of Hudson Yards in New York City. Over 17 million square feet of commercial and residential space is being constructed on the former railway depot, including 5,000 new residences. As part of the development, New York's Metropolitan Transportation Authority has extended Subway line 7 at a cost of US\$2.4 billion, funded through Tax Increment Financing (TIF) bond sales that will be repaid with property tax revenues.

The question is can value capture be used in Australia to fund new economic infrastructure? Value capture presents some challenges:

- It is necessary to separate the increase in value attributable to the project from other sources, namely that which would have occurred, that which is associated with other projects and that which results from project interaction.
- There may be some interactions between the value capture mechanism and the stamp duty system.
- Linear projects contained in one state or territory will generate value along their route but will not do so evenly – this means it will be complex to adjust the rate base, although the increase in value will probably be greatest closer to the primary CBD node. Perhaps one way around this is to capture value associated in small commercial areas rather than the wider surrounding residential area.

- Value capture may increase the cost of procurement. Canada has been wary of using value capture due to the slowing down of infrastructure implementation and increased procurement costs.

Value capture is more likely to suit large transformational infrastructure projects, such as New York's Hudson Yards, which change the nature of a community through significant property development. Smaller projects are unlikely to justify the time and costs of negotiating value capture mechanisms, and may actually slow down the delivery of infrastructure.

In the Australian context, the federal government has limited capacity to deliver value capture solutions. The states, which control property taxes and ultimately make decisions about what infrastructure is actually built, are the main players in implementing value capture. The federal government can provide advice and facilitate an investment-friendly environment. However, the interaction of the federal government with the states on funding and financing infrastructure needs to be reviewed urgently, and the full suite of options needs to be examined thoroughly in the context of the forthcoming White Paper on the Reform of the Federation.

Taxpayer contributions

Despite the best efforts of businesses and policymakers to facilitate markets for infrastructure services, there will be some infrastructure services that can be expected to make a positive contribution to community welfare that cannot be funded by contributions by customers and other beneficiaries alone. In a large number of cases this will be for social policy reasons where there is a view that full cost recovery is not feasible or appropriate, such as in the case of health and education infrastructure, or for infrastructure in economically disadvantaged or remote areas.

The other major instances relate to traditional public goods where typically the benefits are widespread and it is not possible to identify or charge individual beneficiaries. They might include those which produce significant environmental improvements, like major urban public transport projects, or widespread industry benefits, such as major sporting or entertainment complexes.

Risk

The volume of funding available from the sources set out above is never set in stone. The demand for paper might fall so the throughput of woodchips at a regional port might contract or even disappear. Flight paths at an airport might change, making the space over a railway station unattractive for residential development. A government may experience a severe fiscal shock and reduce the funding support for the expansion of a regional convention centre.

Similarly, the costs of providing infrastructure may not turn out as expected. Project specifications may change during the project. The price of concrete might go up during construction. Regulators may require different building standards for a major airport terminal expansion. The price of electricity for a desalination plant might go up. Inflation might be higher than expected.

Many of the risks mentioned above are just part of normal business processes and are dealt with through various market mechanisms within the economy – many prices can be hedged, contracts can be varied for change of scope. But how these risks are allocated between service providers, users and governments fundamentally affects the delivery form – say a PPP or a traditional company structure – of infrastructure services and the financing options that are available.

Being in business, and providing public services, is risky.

Being in business, and providing public services, is risky. Risk must be allocated to parties best able to manage it. If not, then risk will be poorly managed, opportunities for innovation are likely to be lost – those who take on risk must also be allowed to profit from it.

Where Australia does appear to be falling short, however, is where governments remain a funder of projects. Governments have to choose between private and public sector financing, a choice they must make on the basis of efficiency rather than in pursuit of a debt and deficit mantra. However, in Australia, governments do not have the full range of options available because of inadequate governance and other processes for identifying and procuring infrastructure services on behalf of the community.

Conclusion

Australia must shift its mindset to unlock better infrastructure opportunities. The constant refrain of the burgeoning ‘infrastructure dollar deficit’ is not serving the nation well.

It creates in the mind of the community and their elected representatives a sense that there is a financial crisis in Australia’s infrastructure sector. This leads to the serious considerations of financing and procurement processes through to the creation of new infrastructure banks. All of this inevitably tends to focus on building big things, not on providing quality services that the community needs and values.

Embracing better infrastructure for the nation, not just more infrastructure, will consolidate the great national consensus on infrastructure and even extend it. As a consequence the nation will be taking the necessary steps in re-establishing its global infrastructure leadership.

Despite over half a trillion dollars in investment in infrastructure in the past decade, double that of the previous decade, Australians are rightly concerned these massive investments are having little impact. Value for money and translation of infrastructure spending to tangible and practical benefits appear to be missing. Instead escalating congestion, higher emissions, greater service costs and lower service quality, and lost business and investment opportunities in both cities and regional Australia are becoming a new and unacceptable norm. The starting point for Australia’s shift in mindset is for policymakers to focus on what concerns the community, a widening ‘infrastructure services

deficit’. This is a call to action for governance reform from ‘asset building’ to ‘service delivery’ to better translate the nation’s massive infrastructure spending into tangible benefits for the community and business.

While past corporatisation and privatisation programs can help inform the governance reform that is needed, Federal and state governments need to urgently strike an accord on this critical matter. The functionality of the Australian federation must be unified around the role of the customer and in turn the community. The predominant consideration should be designing markets that deliver service outcomes (agnostic to projects and technology) and supported by whole of government collaboration.

The customer is the key to extending the great Australian infrastructure consensus and ensuring the infrastructure can satisfy the many and varied expectations that result from a nation that occupies an entire continent.

Australian experience has shown that where governments facilitate the development of markets and bring service providers and customers closer together, greater emphasis is placed on common sense infrastructure investment; that is better use of existing infrastructure and innovation supports a more balanced approach where scaled, targeted and feasible investments are the norm.

However, without proper data, and an absence of institutional memory, many initiatives to improve infrastructure will not be possible. Transparent decisions along with enabling informed, responsive and adaptive markets are a catalyst for any reform, including customer-led infrastructure.

First best option
is infrastructure
businesses engaging
customers, not
policymakers
lobbying voters.

So the first best option is for governments to constantly be on the lookout for infrastructure market development opportunities that see business engaging with customers, and less bureaucrats/politicians lobbying voters. Where these markets do not emerge, governments must see themselves as the buyers of services, not the buyers of assets.

When it comes to risk, it must be allocated to parties best able to manage it. If not, then risk will be poorly managed, and opportunities for innovation are likely to be lost – those who take on risk must also be allowed to profit from it. Beyond all else, governments must improve the quality of their involvement in infrastructure markets, both in governance and processes, so that they better tap into not only the financial capital of the community but also the ingenuity of private business and citizens that has served this nation with great distinction.

In conclusion, Australia has a unique opportunity to resolve its infrastructure challenges and push the better practice frontier outward. The solution is not more money, but to shift the mindset to serve the customer, the services infrastructure delivers, and to unleash the innovation and ingenuity of Australians on doing more with less.

Done well, an infrastructure services market with the customer and community at its centre has the potential to propel Australia back to where it came, global leadership.

Appendix A

French National Commission for Public Debate (CNDP)

The French National Commission for Public Debate is an independent administrative authority established in 2002 that provides a mechanism for the French public to participate in the development of significant infrastructure projects. Projects above a certain threshold are automatically referred to the Commission, which consists of 22 members from a diversity of backgrounds. The Commission establishes special committees of public debate that will then establish arrangements to inform the public about the objectives and main features of a project. Consultation is held over four months with the ability to extend if needed.

A significant project that the CNDP has subjected to public consultation is the Grand Paris Express, a railway ring route with 68 stations that will connect neighbourhoods and extend existing Paris Metro lines. The objective of Grand Paris Express is to reduce congestion and car pollution, relieve congestion on the RER, combat urban sprawl and promote economic development of the region.

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