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Growth

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Committee for Economic Development of Australia

Infrastructure
Getting on with the job

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The Committee for Economic Development of Australia (CEDA)

The Committee for Economic Development of Australia (CEDA) is an independent, apolitical organisation made up of business leaders, academics and others who have an interest in, and commitment to, Australia's economic and social development. CEDA aims to undertake objective discussion and research into issues affecting Australia's growth.

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Infrastructure:
Getting on with the job

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Contributors

The **Australian Automobile Association (AAA)** has been an official voice of motoring in Australia since 1924. AAA represents eight state- and territory-based motoring clubs and associations with a combined membership of over 6.2 million members. AAA supports and coordinates activities of these clubs and associations, and represents their interests, members and, indirectly, all Australian motorists at the national and international levels. AAA is recognised by government and industry as the official voice of Australian motorists.

The **Australian Council for Infrastructure Development (AusCID)** is the principal industry association representing the interests of organisations owning, financing, constructing, operating, maintaining and otherwise providing advisory services to private investment in Australian public infrastructure. The Council was formed in 1993 and currently has 82 members, drawn comprehensively from key sectors, including electricity generation, transmission and distribution, gas transmission and distribution, roads, rail, telecommunications, water, airports, ports, and social infrastructure.

The **Australasian Railway Association (ARA)** is the industry body representing the interests of the rail industry in Australia and New Zealand. This includes all track managers, freight operators, passenger service providers, tourist and heritage operations, manufacturers, unions, and suppliers of goods and services to the rail industry.

The ARA also owns the Code Management Company, which is responsible for the self-regulation of the rail industry through Codes of Practice. The ARA is committed to representing the interests of its members to governments and other key stakeholders, and to promote sound transport policies and solutions for the benefit of all Australians.

The **Australian Trucking Association (ATA)** is the peak body representing the Australian hire and reward trucking industry. Its membership includes state- and sector-based trucking associations, major trucking companies with a national footprint and the Transport Workers Union. The ATA Council also includes two elected councillors who represent owner drivers and small fleet operators. The ATA Secretariat is housed in Canberra in the ATA's National Headquarters – the Minter Ellison Building. It focuses on national policy development, Commonwealth legislation and regulatory reform developed by the National Transport Commission. It also promotes industry accreditation through the TruckSafe program. Its website is www.atatruck.net.au.

The **Business Council of Australia** is an association of chief executives of leading Australian corporations with a combined national workforce of almost one million people. It was established in 1983 to provide a forum for Australian business leadership to contribute directly to public policy debates in order to build a better and more prosperous Australian society.

Engineers Australia is the premier professional association for engineers in Australia, with a membership base of 75,000 professional engineers, engineering technologists and engineering associates. It is an international leader in promoting innovation and advancing engineering excellence for a sustainable future. The organisation provides a national focus for developing all aspects of the engineering profession and represents the interests of engineers and the community.

Membership is open to all qualified practitioners who subscribe to a common code of ethics and commit themselves to the sustainable development of Australia. In enhancing the welfare, health and safety of the community through engineering solutions, members and their peak representative body remain responsive to the imperative of community security and social justice.

Master Builders Australia (MBA) is the major Australian building and construction industry association. Its primary role is to promote the viewpoints and interests of the building and construction industry, and to provide services to members in a broad range of areas including training, legal services, industrial relations, building codes and standards, industry economics, and international relations.

MBA's membership consists of large national, international, residential and commercial builders and civil contractors, through to smaller local subcontracting firms, as well as suppliers and professional industry advisers. Membership of the MBA movement represents 95 per cent of all sectors of the building industry.

Master Builders Australia is the national body of the Master Builders Group. Its members include all nine state and territory Master Builders Associations.

Foreword

Australia's economic policy debate has been stuck too long on the question of its "hard" economic infrastructure. For more than a decade, an ever-widening group of analysts has been arguing that key Australian roads, water and power systems, ports and rail systems are nearing the end of their useful life. All this is happening as demand is accelerating, thanks in part to Australia's longest-ever stretch of economic growth. If Australia really has under-invested in infrastructure, that under-investment should now be acting as a brake on Australia's economic development.

Over the past decade and a half, the argument in favour of more investment has come, in large part, from infrastructure providers themselves. CEDA has been struck by the lack of discussion in this important public policy area – until very recently, the debate has been almost non-existent.

For that reason, CEDA has gathered together in one volume the existing arguments for higher infrastructure spending. To do this, we have called upon the interest groups that have been making the case for change over the past 15 years. The work they have provided, based on studies by policy consultants including Econtech and the Allen Consulting Group, provides the current best starting point for the national debate on infrastructure spending.

But given the strength of this case, we have also taken the next step and examined the environment which has produced this problem. Here the news is perhaps more disturbing: Australia's institutions seem ill-equipped to provide the right infrastructure over the coming decades. State and federal governments are at loggerheads. New mechanisms that are being embraced by governments, such as public–private partnerships (PPPs), will go only a small part of the way to solving our infrastructure challenges. Governments appear unjustifiably shy of assuming the long-term liabilities needed to fund long-lived infrastructure. And governments may now lack some of the skills required to assess infrastructure needs.

CEDA's assessment is that these arguments are strong enough to shift the onus of proof on to those who doubt the nation has a deep-seated infrastructure delivery problem. With the case for review now stated, CEDA will seek to establish the best ways to ensure Australia copes better with these challenges in the future.

1 Executive Summary

Overview

- Much of Australia's infrastructure is at a crossroads. Following two decades of under-investment, vital elements of the nation's infrastructure are in serious disrepair, if not crisis. Australia's infrastructure – investment sunk in land, such as roads, railways, telecommunications, electric power, sea and air ports, and the like – is struggling to cope with the cumulative demands of Australia's sustained period of economic growth and the vast new trade and investment opportunities emerging – particularly from China.

- There is a serious backlog in infrastructure investment, in water, energy and land transport, estimated conservatively at $25 billion, which requires immediate attention.

- Institutional structures – those of Commonwealth, State and Local governments – which have served Australia well in decades past now appear unable, and ill-equipped, to grapple with the nation's present infrastructure planning and delivery challenge. Yet in Australia's private sector, management skills and technical expertise in infrastructure development and financing are world class. There is a mismatch between public- and private-sector capability.

- Fiscal policies of budget surpluses and debt reduction pursued over the last decade by governments in Australia have led to reduced public investment in infrastructure.

- Even with large increases in tax revenues and aggressive "dividend-stripping" of government trading enterprises, the infrastructure investment required to meet Australia's present and future needs has not materialised.

- Simultaneously, large capital resources are accumulating in the private sector, particularly in superannuation and managed funds, which could be increasingly tapped for infrastructure investment. Closing this circle – between infrastructure capital needs and private-sector capital availability – should be a priority.

There is a serious backlog in infrastructure investment, in water, energy and land transport, estimated conservatively at $25 billion, which requires immediate attention.

Economic growth and infrastructure

- Efficient and productive infrastructure is a prerequisite for economic growth and the international competitiveness of nations. The economic services provided by infrastructure are essential inputs to production and are also in many cases final consumption goods and services. National security, cultural, educational, environmental and personal lifestyle dimensions of infrastructure are now also prominent.

- The expansion and rapid development of the Australian economy, particularly with the gold-rushes and pastoral boom after the 1850s, saw substantial infrastructure investment financed through the London capital market, with the public sector taking the lead role in promoting and progressing Australia's infrastructure investment and its institutions. This government-led development model remained largely unchanged in Australia until the 1980s.

- The adequacy of infrastructure and its timely installation and financing – whether by public or private means – and its pricing are therefore essential questions for national economic growth and international competitiveness. Although they are not traded goods themselves, infrastructure services are important inputs to all industries and hence to economic efficiency, productivity and Australia's international competitiveness.

- Continued productivity growth – in which infrastructure plays a crucial role – will be particularly important in managing the emerging challenge of Australia's ageing population.

- Numerous studies have demonstrated the strong linkage between infrastructure investment and economic growth. There is strong evidence that investment in infrastructure has a positive and permanent effect on economic output, with a 1 per cent increase in infrastructure spending increasing output by between 0.17 and 0.39 per cent. Moreover, investment in infrastructure generates higher returns than investment in other sectors of the economy.

- Infrastructure investment impacts chiefly on the supply side of the economy by improving economic efficiency and resource allocation. Particularly at the present stage when Australia's balance of payments deficit on current account is at record levels, it is important that the huge demand for Australian commodities, notably from China, is serviced with a rapid increase in our export infrastructure capability.

- More generally, a continuation of Australia's successful era of strong economic growth is dependent on improving the supply side of the economy. Infrastructure should be brought back into the mainstream of the nation's economic strategy and play a more effective role in factor markets and support initiatives for further efficiency gains in Australia's labour, financial and product markets.

Infrastructure investment began to decline in the 1980s as governments increased the share of public consumption expenditure in their budgets at the expense of public investment. Fiscal policies of budget surpluses and debt reduction have reinforced this decline.

The decline in infrastructure investment

- Infrastructure investment began to decline in the 1980s as governments increased the share of public consumption expenditure in their budgets at the expense of public investment. Fiscal policies of budget surpluses and debt reduction have reinforced this decline.

- Government capital expenditure as a share of GDP, which was around 7.2 per cent in the 1970s and early 1980s, has now fallen to a low of 3.6 per cent of GDP in 2003–04. Roads investment has fallen from 22 per cent of GDP in the 1960s to 10 per cent.

- Business leaders, politicians, professional economists, local governments, industry and community groups have increasingly expressed concern over the decline in Australia's infrastructure investment and have stressed the need for action.

- Professional evaluation led by Engineers Australia has revealed the very serious problems now facing Australia. Rating on a scale of "A" to "D", the 13 sectors of ports, airports, telecommunications, electricity, national roads, potable water, gas, state roads, waste-water, local roads, storm water, irrigation and rail revealed that no infrastructure class received an A, indicating it was sufficient for Australia's current and future needs. Only four sectors achieved B ratings, indicating a sufficiency to meet current needs but insufficient for the future, while the remaining nine sectors slipped into the C and D rankings.

- New economic modelling of overcoming Australia's infrastructure backlog (but not of providing for future needs) in only five of the key sectors – electricity, gas, rail, roads and water – shows that substantial economic benefits would accrue. GDP would increase by 0.8 per cent, business investment by 1.2 per cent, housing investment by 1.8 per cent and exports by 1.8 per cent. Reduced costs – with CPI falling by 3.2 per cent – and improved living standards of 0.4 per cent would also flow from action to remedy this backlog in Australia's infrastructure.

Government involvement

- Governments have been the main providers of infrastructure in Australia and remain so in the roads, rail, ports and water sectors, and parts of the energy sector. Government administration and institutional structures continue to shape and influence infrastructure investment in spite of the trend to corporatisation, privatisation and increased private provision of infrastructure since the 1980s.

- Australia's federal system of government imposes unique complexities and constraints on infrastructure investment compared with many other countries. Commonwealth–State financial relations have traditionally had a pivotal role in shaping infrastructure investment.

- Commonwealth–State relations changed markedly with the *New Tax System* in July 2000 and the states have enjoyed a buoyant new form of revenue in the GST. However, Specific Purpose Payments, which account for around 40 per cent of payments to the states, continue to be important in defining Commonwealth–State relations and expenditure priorities.

- Various proposals for the overhaul of Commonwealth–State financial relations continue to be advanced and discussed, but progress is unpromising.

- In the important areas of roads, rail and intermodal facilities, the Commonwealth's *AusLink* offer of $11.8 billion over 5 years made in June 2004 is still being negotiated with the states.

- The interplay of governments' fiscal policies of budget surplus/debt reduction, vexatious Commonwealth–State financial relations, and political considerations present an apparently insurmountable obstacle to overcoming the backlog in Australia's infrastructure – and in putting in place fresh institutional structures for effective strategies leading to prompt infrastructure provision.

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Models of infrastructure provision

- The classic Australian public provision model of government planned, installed and financed infrastructure with pricing at marginal cost or on a loss–making basis – with returns recovered through the taxation system – continues to characterise much of Australia's publicly provided infrastructure.

- Significant changes began in the 1980s with corporatisation, privatisation and private provision of infrastructure. Nowadays, infrastructure is split between fully public (roads, most water, some energy, most ports), fully private (airports, some energy, gas pipelines, some ports, telecommunications, some water) and mixed ownership (water and road PPPs, public transport franchises).

- The trend towards private provision of infrastructure has been reinforced by the emergence of significant capital availability in Australia for infrastructure investment resulting from financial deregulation and Australia's superannuation policies during the 1980s and 1990s. Superannuation funds have grown very rapidly in Australia in recent years, from $95 billion, or 21 per cent of GDP in June 1988, to $628 billion, or 80 per cent of GDP in June 2004.

- Private direct investment in new energy infrastructure has significant potential while governments continue to avoid or delay investment in new capacity, particularly in those states and territories that have retained public ownership. Water offers similar potential, especially if network access and pricing outcomes are resolved. Supply of significant new infrastructure via PPP frameworks seems unlikely, other than for toll roads and key social infrastructure (a recent estimate limiting this to perhaps 15 per cent of public capital expenditure). Further innovation in infrastructure investment, including closing the circle between public- and private-sector capital, is required.

Complex issues of pricing, access, public policy and regulation, risk-sharing, tendering processes, taxation and governance have arisen as key challenges that will influence whether private provision of infrastructure can grow as a viable new model in Australia.

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- Sustainability has introduced a further new dimension into the calculus of infrastructure provision. A framework that takes account of environmental and social aspects, as well as economic aspects, is now widely accepted as necessary.

- Long and costly bureaucratic processes are a frequent complaint of private-sector participants involved with infrastructure provision and financing.

- Public administration in Australia working alone seems no longer up to the job. Australia now has an impressive and world-class range of managerial, financial and engineering skills in the private sector. These should be deployed more fully, together with public-sector expertise, into the national task of infrastructure provision.

Getting on with the job

- Our emerging infrastructure backlog and deficient capability warrants immediate attention if Australia is to build upon, and secure, its already impressive record of sustained economic growth and productivity gains.

- *The first task* is to overcome the highly visible and well-documented backlog in existing infrastructure.

- *The second task* is to establish new, forward-looking and resilient institutional frameworks to facilitate timely infrastructure investment by integrating the full range of strategic planning, management and technical expertise in Australia's public and private sectors.

2 Infrastructure in Australia's Economic Growth

In this chapter we review the economic importance of infrastructure. New research on the benefits of overcoming Australia's present infrastructure backlog is presented. Key economic issues, such as supply–side constraints, on economic growth and the challenge of an ageing population are discussed.

2.1 The importance of infrastructure investment

Background

Infrastructure – investment sunk in land, such as roads, railways, telecommunications, electric power, sea, airports and the like – is a fundamental prerequisite to economic growth. Throughout history it has played an essential role in human progress. Australia's economic history was fortunately characterised by early and determined efforts to develop the infrastructure of Port Jackson. Also, the roads, railways, ports, communication and urban infrastructure of the colonies were built progressively at the then state-of-the-art levels set by Britain, the world's leading economic power at the time.

Infrastructure, in its quantitative and qualitative aspects, has therefore long been recognised as a key element of economic growth.

The expansion and rapid development of the Australian economy, particularly with the gold-rushes and pastoral boom after the 1850s, followed by Federation in 1901, saw substantial infrastructure investment, with the public sector taking a leading role in promoting and progressing Australia's infrastructure investment and its institutions. Throughout this era Britain continued to play a major role as a source of capital with Commonwealth and State governments actively tapping the London market for long-term borrowing.

The leadership in initiating and executing infrastructure works, and in the financing of infrastructure, continued to be accepted by Australian society as a prime responsibility of Australian governments until recently. This era of large public infrastructure investments, and the public administration apparatus that supported it, is often characterised as the classic era of "development" in Australia's economic history.

Infrastructure, provided in many countries by public investment and in others more by private-sector models, typically accounts for a significant share of a nation's capital stock and features prominently in the progressive accumulation of capital in modern societies. These economic services (quite apart from the national security, cultural, educational and personal lifestyle dimensions of infrastructure) are essential inputs to production and also final consumption goods in modern advanced economies. Infrastructure, in its quantitative and qualitative aspects, has therefore long been recognised as a key element of economic growth (see Box 2.1).

Box 2.1

Infrastructure: Economic benefits

It is beyond dispute that investment in economic infrastructure, much of it traditionally publicly provided, affects the productivity of the private sector capital stock. Obviously, for example, the productivity of a truck depends very much on the availability and quality of roads where the goods are to go. No one, therefore, doubts that the efficiency of, say, our ports and airports – and our transport and handling system as a whole – is an important ingredient in our international competitiveness.

Source: FitzGerald 1994, p. 14

In the future, infrastructure will also play a crucial role, particularly in light of a major challenge facing Australia in the next 40 years; namely, that of an ageing population. Sustained productivity growth – an area in which infrastructure investment plays a key role – will be pivotal in managing the ageing population challenge. The Productivity Commission, in its recent report *Economic Implications of an Ageing Australia*, states:

> *… Population ageing depresses economic growth. Australia's GDP per capita growth rates are projected to fall steadily over the period to around 2025, with a partial recovery thereafter. For example, given the assumed baseline productivity growth rate of 1.75 per cent per annum, GDP per capita growth would slump nearly as low as 1.25 per cent a year by the mid 2020s – roughly half its present rate. This is primarily due to the effects of ageing on labour supply growth.*
>
> *In the absence of any resurgence in workforce, economic growth over the next four to five decades will overwhelmingly depend on productivity growth* (Productivity Commission 2004b, p. 52).

Sustained productivity growth – an area in which infrastructure investment plays a key role – will be pivotal in managing the ageing population challenge.

Economic efficiency of factors of production

The adequacy of infrastructure and its timely installation and financing, whether by public or private means, and its pricing, are essential questions for national economic growth and international competitiveness. Although they are not traded goods themselves, infrastructure services are important inputs to all industries and hence to economic efficiency and the international competitiveness of all Australian industries. The key roles in international trade and commerce of transport and communications services, for example, give them a measure of significance in a nation's competitiveness far greater than their share in the cost of production of goods and services.

Infrastructure services account for around 12 per cent of GDP, employ 6.5 per cent of the workforce and account for over 10 per cent of the input costs of agriculture; 15 per cent of manufacturing and 25 per cent of minerals and metals industry costs (BCA 1995). Recent research provides strong evidence of the important role that infrastructure plays in the productivity of the private sector. It shows that public infrastructure has a positive and significant impact on productivity in private-sector industries with rates of return to public capital of 25 per cent in terms of cost

saving and 68 per cent in terms of output (Economic Record 2003b). Other research on the sources of Australia's productivity growth has noted a major direct contribution by infrastructure industries to Australia's productivity performance (Economic Record 2004). More recently, the Productivity Commission has stressed the need for cost competitive infrastructure services in Australia's international competitiveness (see Box 2.2).

... infrastructure investment began to decline as a share of public expenditure in the 1980s ...

Box 2.2

Infrastructure reform must continue to be a high priority

Infrastructure services are a large part of the Australian economy. They are key inputs for Australian businesses – and their costs, reliability and quality have a major bearing on Australia's international competitiveness. Moreover, affordable and reliable infrastructure services are central to quality of life in the community.

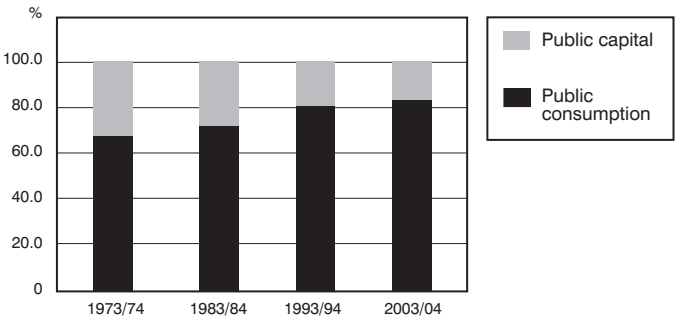
Economic infrastructure is also highly capital intensive, requiring major investment expenditure on long-lived assets. Poor investment decisions or under-investment could constrain Australia's growth and living standards for many years.

Source: Productivity Commission 2004a, p. xxvii

2.2 The recent decline in Australia's infrastructure investment

After more than a century and a half of occupying a central place in the pro-development thrust of Australia's economic policy, infrastructure investment began to decline as a share of public expenditure in the 1980s as Australian governments, both Commonwealth and State, moved to increase the share of public consumption expenditure in their annual budgets at the expense of public investment. The ratio of public consumption expenditure to public capital expenditure has increased from 2:1 in 1973/74 to 5:1 in 2003/04 (see Figure 2.1).

Figure 2.1: Public consumption versus public capital expenditure



Source: ABS Cat. 5204.0

This trend of increasing government consumption expenditure in Australia at the expense of government capital expenditure reflected a fiscal policy strategy adopted widely in OECD countries in the 1980s. It was noted with concern by the Business Council of Australia (BCA) as long as ten years ago in 1994 (see Box 2.3). Yet the decline in Australia's public infrastructure expenditure has continued unabated.

Box 2.3

Public expenditure trends

A distinguishing feature of the 1980s has been an increase in government consumption expenditure in Australia while public investment expenditure has been reduced. This undesirable bias towards government consumption in Australia was noted in the 1993/94 Budget.

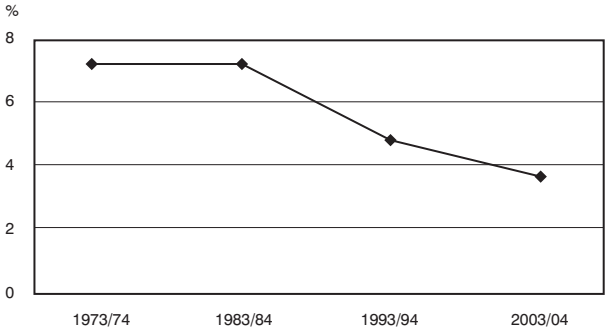
While government consumption expenditure in Australia has increased inexorably over the 1980s, public investment has languished to the point where EPAC has warned that like many OECD countries, Australia has progressively reduced the share of GDP invested in public infrastructure, and in the case of roads, for example, recent investment may have barely kept up with physical deterioration.

Source: BCA 1994, pp. 10–12

The steady decline in government capital expenditure in Australia as a share of GDP ... has now fallen to a low of 3.6 per cent of GDP in 2003–04.

The steady decline in government capital expenditure in Australia as a share of GDP, which was around 7.2 per cent in the 1970s and early 1980s, also began around 20 years ago and has now fallen to a low of 3.6 per cent of GDP in 2003–04 (see Figure 2.2).

Figure 2.2: Public fixed capital expenditure as a share of GDP



Source: ABS Cat. 5204.0

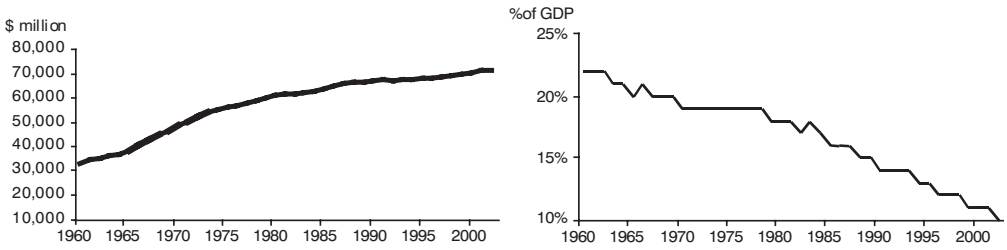
Many commentators have also recently voiced their concern over the decline in infrastructure investment.[1] For example, according to HSBC chief economist John Edwards "... in 1965 (the year in which spending on government infrastructure hit 7 per cent of GDP), total private investment was barely more than double that, at 15 per cent. But by 2003–04, when spending on infrastructure had dropped to 4 per cent of GDP, the private investment figure had jumped to 21 per cent ... although we are in one of the biggest investment booms in Australian history, the public sector share of it is almost insignificant compared to our typical experience. The public sector now accounts for 16 per cent of total investment: in 1964–65 it accounted for a third."[2] The former Reserve Bank Governor and Secretary to the Treasury, Bernie Fraser, is more direct. He has said "... You only have to look at the age of some of the infrastructure and it is crying out for replacement. A lot of it is very ancient – water and sewerage in particular."[3]

... there remains now a clear backlog – and consequent economic cost – due to under-investment in infrastructure investment over recent decades.

While the downgrading of infrastructure investment in public policy and the upgrading of public consumption expenditure may have had obvious short-term electoral and fiscal policy attractions, and indeed may have reflected the view in some quarters that Australia had invested excessively in public infrastructure in the 150 years of its "development era", there remains now a clear backlog – and consequent economic cost – due to under-investment in infrastructure investment over recent decades. This backlog, confirmed in rigorous technical evaluation led by Engineers Australia (EA) and reported in its *Australian Infrastructure Report Card 2001*, is now a serious economic problem (Engineers Australia 2001, Communique). Australia will need to address this infrastructure crisis if it is to retain its leading position in the world economic growth league, and position itself for sustained economic growth and international competitiveness in the first decade of the twenty-first century.

For example, in the key infrastructure asset class of roads, research has shown that while the net road stock has increased since 1960 it has nevertheless declined as a proportion of GDP from about 22 per cent then to a little over 10 per cent in 2002 (see Figure 2.3). The need for greater investment in roads is also supported by other evidence, such as rising congestion costs (Australian Automobile Association/Allen 2003, p. 4).

Figure 2.3: Net road stock in Australia



Source: Australian Automobile Association/Allen 2003, p. 4

Congestion costs, that is the costs to the Australian economy of urban road traffic delays in six Australian capital cities, which were already considerable in 1995 at $12.8 billion, are projected in the Australian government's *AusLink* White Paper to increase substantially by 2015 to $29.7 billion (see Table 2.1). As the government in *AusLink* observes "... Increases in road congestion also severely affect the efficiency of freight operations and costs to their customers. This, in turn, affects Australia's trade competitiveness" (*AusLink* 2004, p. 10).

Table 2.1: Costs of urban road traffic delays ($ billion)

	Sydney	Melbourne	Brisbane	Adelaide	Perth	Canberra	Total
1995 congestion cost estimate	6.0	2.7	2.6	0.8	0.6	0.05	12.8
2015 congestion cost estimate	8.8	8.0	9.3	1.5	1.9	0.2	29.7

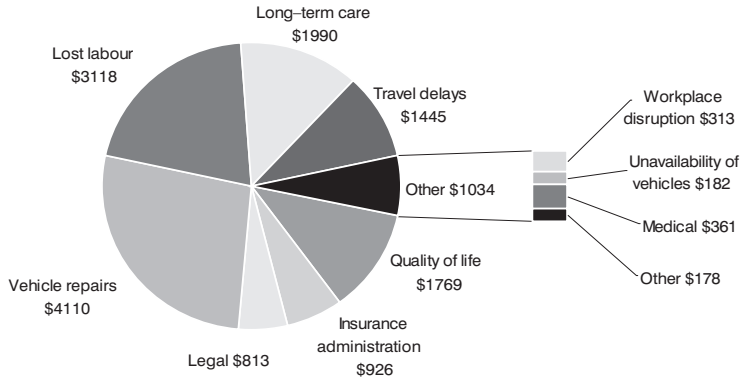
Source: *AusLink* 2004, p. 11

The significant cost of road crashes is another argument for additional road investment. According to the Bureau of Transport Economics (BTE), road crashes waste $15 billion every year in vehicle repairs, lost labour and lost productivity, quality of life, travel delays, insurance, legal and other costs (BTE 2000).

The significant cost of road crashes is another argument for additional road investment.

It has been estimated that nearly half of the official target of 40 per cent reduction in Australia's road toll by 2010 could come from improving roads. The associated reduction in trauma would place less pressure on government health and welfare budgets (see Figure 2.4).

Figure 2.4: Annual costs of road crashes ($ million)



Source: BTE 2000.

Supply-side constraints

Infrastructure investment impacts chiefly on the supply side of the economy by improving economic efficiency and resource allocation. Particularly at the present time when Australia's balance of payments deficit is at record levels, it is important that the huge demand for Australian commodities, notably from China, is serviced with a rapid increase in our export infrastructure. This problem has been highlighted recently by the Minerals Council of Australia in the findings of its annual *Minerals Industry Survey*.[4]

Efficient infrastructure facilitates specialised production, price competitiveness, time sensitivity and reliability of Australian goods and services in both intraindustry and world trade markets.

Other business leaders are identifying infrastructure as a priority item in economic reform for Australia. For example, Mr Graham Kraehe, Chairman of National Australia Bank (NAB), said on 30 November 2004:

> *… public infrastructure investment is falling behind the growing needs of the Australian economy particularly at the Commonwealth but also at the state level. He observed that while governments in Australia are amongst world leaders in debt reduction this has been achieved at the cost of infrastructure investment* (NAB 2004).

Mr Hugh Morgan, President of the Business Council of Australia, has also identified national infrastructure as a priority challenge in Australia's growth outlook (BCA 2004).

Some governments recognise this issue. The federal government in its *AusLink* White Paper of June 2004 reinforces strongly the current linkages between economic growth, exports and efficient infrastructure. It says,

> *… Current forecasts suggest an annual Australian economic growth rate of around 2.7 per cent between 2004 and 2020. An important driver of economic growth will be Australia's trade performance. Trade creates new opportunities for Australian businesses, as well as expanding the range and quality of goods and services available to Australian consumers and lowering their prices. In 2002–03, Australia's trade in goods and services totalled $314 billion. The accelerated flow between countries of trade and investment creates a need for efficient transport infrastructure. Efficient infrastructure facilitates specialised production, price competitiveness, time sensitivity and reliability of Australian goods and services in both intraindustry and world trade markets (AusLink* 2004, p. 1*).*

Local government has also recently expressed concern over Australia's infrastructure crisis, pointing to the supply-side problems in regional Australia. The President of the Australian Local Government Association recently said,

> *… All spheres of government in Australia need to work together now to boost investment in public infrastructure. … Australia needs to invest much more in productive public and private infrastructure if we want to ensure our economic progress is sustained and that we continue to address inequalities across our regions. … Local Government also faces a growing infrastructure crisis. Much of our infrastructure dates from the immediate post–war period and is in desperate need of renewal or replacement.*

Demographic change is putting pressure on many local governments areas, particularly in lifestyle, coastal regions and "fringe cities" in outer-metropolitan areas.[5]

Supply-side constraints in the Australian economy, of which infrastructure is one item, have also recently been highlighted in an address by the Deputy Governor of the Reserve Bank of Australia (see Box 2.4).

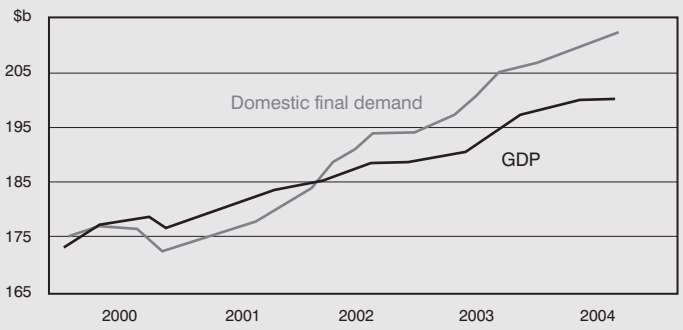
Box 2.4

Economic and financial conditions, December 2004

... According to the national accounts, Australia recorded moderate growth in 2004. It looks like GDP growth over the four quarters to December will be less than 3 per cent unless there is a big surprise for the December quarter or upward revisions to previous quarters. Let me leave aside the apparent contrast with the picture painted by the various business surveys, which is considerably stronger, and for the moment take the figures as given.

That leaves growth running more slowly than was anticipated earlier in the year. But if output growth fell slightly short of expectations, it was not due to apparent lack of demand. Growth in domestic final demand has run at something like 5 per cent over the past year, and an average rate of nearly 6 per cent per year over the past three years. And growth in global demand for things Australia produces has, over the past year or two, been generally as strong as at any time in the past few decades.

Figure 2.5: GDP and domestic demand



Source: ABS

If demand growth is so strong, why hasn't the economy grown faster? Have we hit capacity limits?

Indicators of capacity utilisation available in business surveys are certainly at or close to the highest levels seen in the past 15 years. This is a feature across surveys, and has been for some time. In the labour market, the rate of unemployment is at its lowest for more than 25 years. Other measures of under-utilisation of labour are now at two-decade lows, but have nonetheless declined a good deal. A significant proportion of firms refer to difficulties in finding suitable staff. Areas of skill shortage have emerged. Observable upward pressure on wage and salary rates is minor at this stage, though there are reports of non-wage employment costs rising in some sectors.

Supply-side constraints in the Australian economy, of which infrastructure is one item, have also recently been highlighted ... by the Deputy Governor of the Reserve Bank of Australia.

A continuation of a robust expansion will, it seems, be increasingly dependent on enhancing the *supply* side ...

The clearest evidence of hard capacity constraints is probably on the export side. In some parts of the resource sector there was a significant volume of investment in the second half of the 1990s, but a subsequent period of weak commodity prices saw investment decline to very low levels. Hence, the increase in demand in the past two years apparently left some producers without the capacity to take full advantage of the conditions by shipping higher output, though of course they have enjoyed higher prices. The rise in prices presumably reflects pressure on capacity globally, which suggests that producers everywhere were surprised. There have also been reports of capacity constraints in some of the key areas of transport infrastructure, such as ports and rail. A decline in exports of some fuels was due to a rundown in reserves, a capacity constraint of another sort.

At the margin, the weakness of manufactured exports might reflect the strength of domestic demand, which for some producers may have presented an opportunity for sales in an easier market than some foreign alternatives. It might reflect the rise in the exchange rate (i.e. demand rather than supply), though the export weakness dates from a time when the exchange rate was much lower.

So where does this leave us? There is no hard and fast answer, but there are reasonable grounds for thinking that the Australian economy is now operating closer to full capacity than it has for some time. We don't want to overstate this: it could not be claimed that physical limits have been reached across the board (though apparently they have been in a few areas). The best forecast for inflation, moreover, remains one of only a gradual increase over the coming two years, and no recent price or wage data have cast any doubt on that view. But it does seem to be getting a bit harder to coax above-average growth from the economy.

In the thirteenth and fourteenth years of expansion this is not surprising. Most of the easy gains in lifting output by reducing cyclical slack are by now behind us. It just means that very strong demand growth is now less likely than before to foster rapid output growth and more likely, at some stage, to risk pressure on prices, even though that does not seem imminent at the moment. It was therefore appropriate to have the somewhat less accommodative monetary stance of the past year and to signal in recent Statements the likelihood – assuming the economy evolved as expected – of higher interest rates at some stage. A continuation of a robust expansion will, it seems, be increasingly dependent on enhancing the *supply* side: growing the capital stock, more effectively matching the supply of and demand for both skilled and unskilled labour, and innovation to lift the productivity of all the factors of production.

Source: Address by Glenn Stevens, Deputy Governor, Reserve Bank of Australia, to the Australian Business Economists and Economic Society of Australia, 14 December 2004

2.3 The nexus between infrastructure and economic growth

The under-investment in Australia's infrastructure over the last 20 years may come at a serious cost to future economic growth. While commendable efforts have been made in improved management and delivery of services from the nation's existing infrastructure stock – and indeed productivity gains across the Australian economy have been impressive in recent years largely as a consequence of microeconomic reforms,[6] there is little doubt that new investment in infrastructure is essential for sustained economic growth. Conversely, reduced

investment in infrastructure must ultimately lower economic growth. It now seems widely recognised that, while Australia has skilfully managed to turn in an excellent growth performance off its existing infrastructure stock, the recent years of under-investment cannot prudently be repeated. Notably, the 2004–05 Budget highlighted the important place of infrastructure in economic growth (Budget Speech p. 8).

An early and path-breaking study in 1993 by the Allen Consulting Group for the Australian Automobile Association demonstrated the substantial economic benefits from investment in roads infrastructure. The report states:

> *…The results, summarised in Table [2.2] below, showed very high returns from investments in urban freeways and urban arterials. Returns from investments in rural national and arterial roads are also high by private-sector standards of investment return. Even with relatively low benefit-cost ratios (BCRs), economy-wide returns from investment in rural and urban local roads are greater than break-even.*
>
> *The investments have wide-ranging effects on the economy. These changes arise fundamentally because of the investments' effects of improving the productivity of industry. This is shown in the modelling by significant increases in export volumes and improvements in the balance of trade.*
>
> *The modelling results for the effect of the investments on the public sector borrowing requirement imply that the investments are self-funding from a whole of government perspective* (Australian Automobile Association/Allen 1993, p. ii).

Even with relatively low benefit-cost ratios (BCRs), economy-wide returns from investment in rural and urban local roads are greater than break-even.

Table 2.2: Summary of economic modelling results

Road category	Estimated benefit–cost ratio for each $1billion investment	Annual financing cost over 35 year life	Long–run (year 10) annual net increase in GDP	
		1992–93 $m	per cent of GDP	1992–93 $m
Rural national	2.1	70	0.07	270
Rural arterial	2.0	70	0.07	270
Rural local	1.0	70	0.03	120
Urban freeway	4.8	70	0.15	620
Urban arterial	6.0	70	0.20	810
Urban local	1.0	70	0.03	110

Source: Australian Automobile Association/The Allen Consulting Group 1993, p. ii

Recently, there has been a number of theoretical studies quantifying the relationship between infrastructure and economic output. These are reviewed below.

The debate on the relationship between infrastructure and economic output began with Aschauer (1989). He found that public infrastructure investment in the United States (US) is an important input to private production because it leads to cost savings and a reduction in overall business costs. Aschauer found that a 1 per cent increase in public infrastructure spending resulted in a 0.4 per cent increase in economic output.

Some commentators claimed that the direction of causality in Aschauer's study was wrong, with an increase in private production responsible for an increase in public infrastructure spending. Other commentators questioned the size of the effect on the economy. However, other studies that used different data sets and methodologies have also found that public infrastructure investment has a direct and positive effect on economic output, although the output elasticity varied from study to study.

In Australia, there are a number of studies that have estimated the economic benefits from investing in infrastructure. The results of some of these studies are summarised in Table 2.3.

In Australia, there are a number of studies that have estimated the economic benefits from investing in infrastructure.

Table 2.3: Australian studies on the output elasticity of infrastructure investment

Author	Output elasticity*
Otto and Voss (1996)	0.17
Pereira (2001)	0.17
Kam (2001)	0.10
Song (2002)	0.27–0.39

*The increase in economic output from a 1 per cent increase in infrastructure investment

One of the earlier studies, Otto and Voss (1996), examines the economic benefits of public spending on different types of infrastructure in Australia. The authors found that a 1 per cent increase in spending on public infrastructure led to an increase in economic output of 0.17 per cent. They also found that economic infrastructure services contribute more to economic output than other types of public expenditure. For example, road investment generates a higher return than investment in social security services.

In a later study, Kam (2001) found that infrastructure investment generated smaller economic benefits, but that the accumulation of public capital has a permanent effect on the economy by encouraging private investment in capital.

More recently, Song (2002) found that a 1 per cent increase in public infrastructure resulted in an output increase of between 0.27 to 0.39 per cent. The higher estimate was attributed to the use of more recent data, where the marginal product of public capital was found to be higher.

In addition to Australia, there have been several international studies that have examined the link between infrastructure investment and economic growth. For example, Pereira (2001) compares the output elasticity across 12 OECD countries, including Australia, between 1960 and 1980. Pereira found a strong correlation between infrastructure investment and economic growth, with output elasticity ranging between 0.17 and 1.4. Pereira estimated an output elasticity for Australia of 0.17, which supports the Otto and Voss estimate.

In summary, there is strong evidence that investment in infrastructure has a positive and permanent effect on economic output, with a 1 per cent increase in infrastructure spending increasing output between 0.17 and 0.39 per cent. Moreover, investment in infrastructure in the economy generates higher returns than investment in other sectors.

2.4 The backlog and economic benefits of increased infrastructure investment

The purpose of this section is to plausibly identify and cost the gap in infrastructure investment in Australia and report the economic benefits of overcoming this under-investment. In this section we begin with a discussion of the backlog in Australian infrastructure investment, followed by how the Australian economy would benefit from addressing this under-investment.

Estimates of infrastructure under-investment

Deficiencies in Australia's infrastructure condition and performance were identified in the National Infrastructure Report Card for 2001 (EA 2001). The Report Card rated infrastructure services in 13 sectors covering, inter alia, electricity, gas, rail, roads, airports, telecommunications and ports. The ratings for the 13 sectors are in Table 2.4.

The Report Card rated the country's infrastructure on a scale from "A" to "F". An "A" rating indicated that the level of infrastructure in 2001 was sufficient for current and future purposes, whereas an "F" rating indicated that the level of infrastructure in 2001 was inadequate for current and future purposes.

The report found that investment in infrastructure for rail, irrigation, storm water and local roads was assessed as being in a "disturbing state".

At the broad level, this national infrastructure assessment did not return any "A" ratings. The report found that investment in infrastructure for rail, irrigation, storm water and local roads was assessed as being in a "disturbing state", each receiving a score of D or D–. Only ports, airports and telecommunications received a B rating, indicating that while investment was sufficient to meet current needs, it was still insufficient to meet future needs.

Table 2.4: Infrastructure ratings in the 2001 Australian Infrastructure Report Card

Infrastructure	Rating
Ports	B
Airports	B
Telecommunications	B
Electricity	B–
National roads	C
Potable water	C
Gas	C
State roads	C–
Waste-water	C–
Local roads	D
Storm water	D
Irrigation	D–
Rail	D–

Source: Engineers Australia 2001

The Australian Council of Infrastructure Development (AusCID) has argued that factors such as regulatory failure, planning delays and lack of government fiscal commitment have been major impediments to addressing the level of under-investment found in the above report. This is particularly the case when the above ratings only take into account the investment deficit for current use; it does not examine the issue of suitability for future use. AusCID has extended the Report

Card ratings by estimating the value of the under-investment (or backlog) in five key sectors: electricity, gas, road, rail and water.

In assessing the current level of infrastructure under-investment, AusCID drew on a number of professional reports and also on advice from experts in each of the five sectors. The estimates of under-investment include the land transport projects announced in the *AusLink* white paper. This is because these projects are designed to correct current deficiencies in infrastructure.

The total estimated value of infrastructure under-investment in Australia in the five areas of electricity, gas, rail, road and water is $24.8 billion.

The total estimated value of infrastructure under-investment in Australia in the five areas of electricity, gas, rail, road and water is $24.8 billion (see Table 2.5). As mentioned, this under-investment covers the deficiency in infrastructure in meeting current demand. Previous estimates of infrastructure under-investment are as high as $150 billion because they take into account the inadequacy of current infrastructure services to meet future needs, as well as current needs and they range over a wider set of infrastructure areas.

Table 2.5: Estimates of under–investment and rate of return* by sector

Sector	Under–investment ($bn)	Rate of return %
Electricity	1.15	10.5
Gas	2.60	12.5
Road	10.00	12.5
Rail	8.06	12.5
Water	3.00	9.0
Total	24.81	

*The rate of return is the nominal pre–tax rate of return
Source: AusCID (Econtech 2004)

Economic impacts of overcoming infrastructure under–investment

Analysis by Econtech for AusCID (Econtech 2004) estimates the economic impacts of overcoming infrastructure under-investment by using the estimates of under-investment mentioned above. The model was based on transforming the estimates of under-investment into inputs suitable for the MM600+ model. This involved two scenarios:

- the "baseline scenario" reflects a situation where infrastructure under-investment is not addressed; and
- the simulated (or "reform scenario") reflects a situation where the problem of under-investment in each sector is overcome.

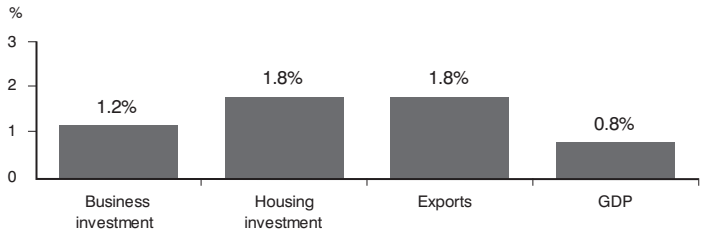
Differences in outcomes between the "reform" scenario and the "baseline" scenario show the economic impacts of overcoming infrastructure under-investment in Australia.

To address under-investment in the five sectors, Econtech used modelling devices that reflected the reasons for under-investment in these sectors. For example, under-investment in the road and rail sectors is mainly due to inadequate government spending; therefore, the model increased government investment spending in these sectors. Similarly, the model set a regulatory price that would induce capital investment in the electricity, gas and water sectors, as regulatory failure is a key reason for under-investment in these sectors.

The modelling results from the Econtech report show that the increases in industry capital stocks under the "reform scenario" boost the productive capacity of the five affected industries, leading to a gain in GDP of 0.8 per cent. The modelling results also show a gain in business investment of 1.2 per cent under the reform scenario compared with the baseline (see Figure 2.6), while upgraded water infrastructure facilitates an expansion in housing investment of 1.8 per cent. In addition, upgraded utility services and freight transport reduce business costs with the resulting increase in international competitiveness boosting exports by 1.8 per cent.

The modelling results from the Econtech report show that the increases in industry capital stocks under the "reform scenario" boost the productive capacity of the five affected industries, leading to a gain in GDP of 0.8 per cent.

Figure 2.6: Estimates of macro–economic effects (% deviation from baseline)



In the long run, lower industry costs for road and rail freight transport, water, gas and electricity are passed on to consumers in the form of lower prices for consumer goods and services (see Table 2.6). In addition, consumers benefit more directly through lower prices for the infrastructure services that they purchase themselves. Hence, the biggest savings are in the housing category, which includes gas, electricity and water services, and the transportation category, which includes rail passenger transport.

Table 2.6: Estimates of impact on consumer prices (CPI) (% deviation from baseline)

	Reform scenario
Food	–2.1%
Alcohol and tobacco	–1.4%
Clothing and footwear	–1.6%
Housing	–8.0%
H/hold furnishings, supplies etc.	–1.8%
Health	–1.7%
Transportation	–2.2%
Communication	–1.3%
Recreation	–1.8%
Education	–0.3%
Miscellaneous	–1.3%
All groups CPI	**–3.2%**

... the upgrading of Australia's transport and utility services translates into higher living standards.

Figure 2.7 shows that the lower consumer prices from the upgrading of Australia's transport and utility services translates into higher living standards. The improvement in consumer welfare (or living standards) is 0.4 per cent.

Figure 2.7: Estimates of living standards and price effects (% deviation from baseline)

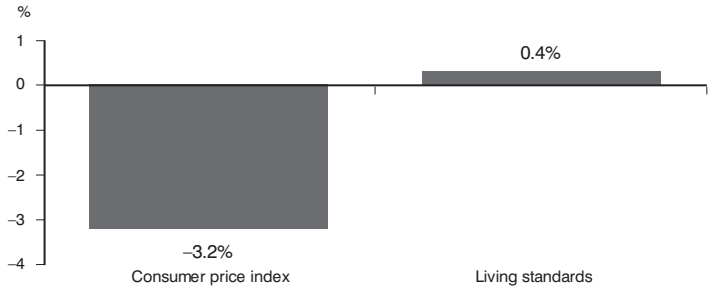
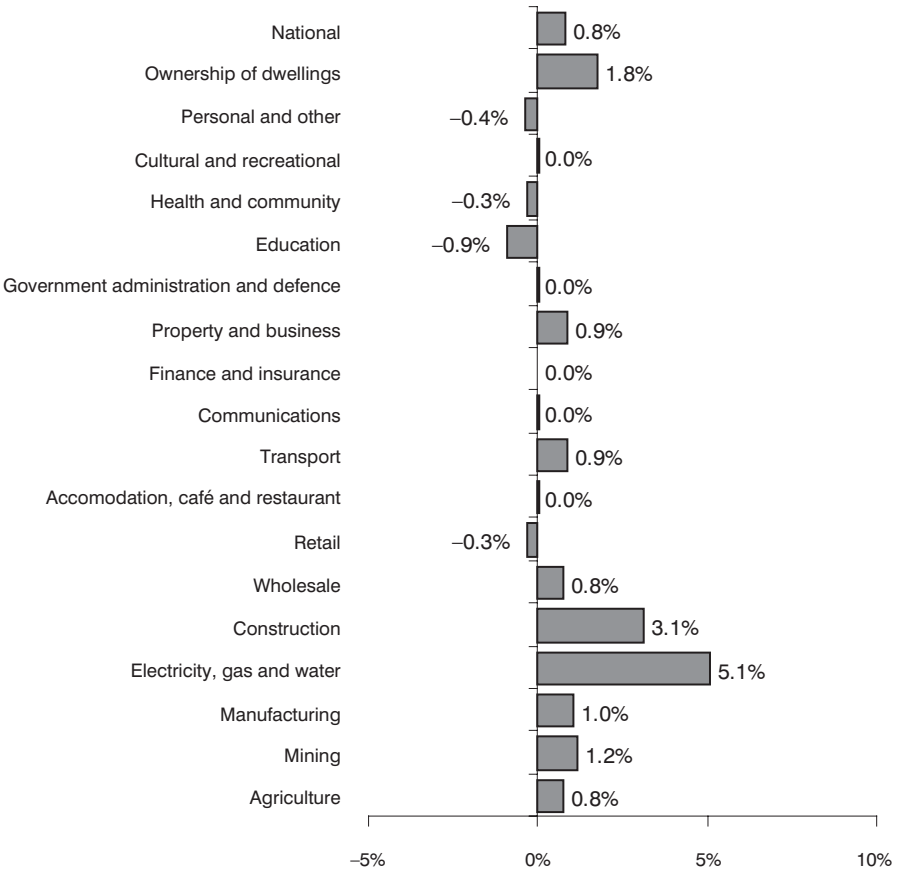


Figure 2.8 shows the gains in GDP by industry. As reported earlier, the overall gain in GDP is 0.8 per cent, with the largest gains accruing in construction and electricity, gas and water industries, increasing output by 3.1 and 5.1 per cent, respectively.

Figure 2.8: Estimates of effects on GDP by industry (% deviations from baseline)



Summary

There is a serious backlog in infrastructure investment in Australia. The National Infrastructure Report Card for 2001 reports that the electricity, gas, water, rail and road sectors require urgent investment so that infrastructure is fit for current and future use. Of most concern are the rail and road sectors, which are assessed as being in a "disturbing state". AusCID conservatively estimates the current level of infrastructure under-investment in those five sectors alone at $24.8 billion. The economic and amenity cost to the nation of this level of the under-investment is high and affects every citizen. Analysis by Econtech for AusCID estimated that if the level of infrastructure under-investment is corrected in the five sectors, GDP would rise by 0.8 per cent, a wide range of consumer prices would fall and Australia's export performance would be enhanced.

Overcoming Australia's infrastructure backlog should be regarded as a task of immediate priority.

Overcoming Australia's infrastructure backlog should be regarded as a task of immediate priority. Another priority is to ensure that the status of infrastructure investment, and its contribution to economic efficiency and the supply side of the nation's growth is recognised in Australia's future investment priorities – both private and public.

However, broader issues bearing on Australia's economic future discussed earlier should again be stressed. With recent economic evidence showing that the Australian economy is hitting serious supply-side constraints, the task of solving quickly our infrastructure backlog assumes even greater urgency. The high pay-offs in moving quickly on infrastructure investment at this time when supply constraints can restrain Australia's ongoing growth are perhaps best underlined in the latest of the research studies cited above (Song 2002). That study, which used more recent data, found the highest output to infrastructure elasticity of 0.27 to 0.39. The big pay-offs to prompt infrastructure investment, which can now be more confidently expected, will also play a crucial role in the task of raising Australia's productivity that, in turn, is the key to managing the long-term impact of the nation's ageing population.

End notes

1 For example: "Push to upgrade 'ancient' road, rail and water services", Lisa Allen, *The Australian Financial Review,* 24 September 2004, p. 1; "Why Australia will sweat this summer. A spendthrift nation lives it up as the power goes off and the water dries up", Deirdre Macken, Brian Toohey and John Breusch; *The Australian Financial Review*, 23–24 October 2004, p. 1, 17–19; "Sustaining Strong Economic Growth", Address to CEDA by Graham Kraehe (NAB 2004).

2 "Big Country Little Vision", Andrew Clark, The *Australian Financial Review*, 4–5 December 2004, p. 25.

3 "Push to upgrade 'ancient' road, rail and water services", Lisa Allen, *The Australian Financial Review*, 24 September 2004, p. 1

4 Minerals Council of Australia, "Outlook for Minerals Sector Robust but Constraints Emerging", Media Release, 8 December 2004:

Launching the Minerals Industry Survey 2004 today, Minerals Council of Australia Chairman, Mr Greig Gailey, said the Australian minerals industry had grasped the opportunities generated by the recent resources boom and is now set to move into a new expansion phase.

"Production, revenues and employment have all grown robustly over the past year, in line with the strong trend growth enjoyed since the late 1990s", Mr Gailey said.

"The industry now plans to invest more to meet the next wave of demand from China, Japan and Korea, and other emerging markets like India.

"New investment in plant and equipment is forecast to grow to $8.2 billion in 2004/05, a 60 per cent surge on the $5.1 billion spent in the last financial year.

But Mr Gailey warned that unless Australia can overcome critical short– and long–term constraints on its export performance, the minerals sector's investment in new production capacity may not fully realise its potential.

"In the near term, we must tackle the growing mismatch between the mineral sector's productive capacity and inadequate public infrastructure like water, energy, ports and other transport facilities," Mr Gailey said.

"There is an urgent need for governments, both State and Federal, to work with industry to close this gap.

"If essential infrastructure can't keep pace with production capacity, we will not fully exploit crucial market opportunities, and will inevitably lose market share to our competitors," he said.

5 "ALGA Calls for National Focus on Infrastructure Investment", Australian Local Government Association, Canberra, 7 November 2004.

6 *Review of National Competition Policy Reform Discussion Draft*, October 2004, Chapter 3, Productivity Commission, Canberra, pp. 33–49.

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3 Institutional Structures

The evolution in public and private models of infrastructure are reviewed in this chapter. The obstacles and problems inherent in Australia's federal system of government are discussed. Case studies in road, rail, urban infrastructure and pricing policies are presented.

3.1 Infrastructure investment: Public- and private-sector roles

Public policy attitudes reflecting the roles and responsibilities of governments and the private sector have shaped the institutional arrangements for infrastructure investment in Australia no less than in other countries of the world. Adam Smith explained as long ago as 1776 how public-sector involvement, in one way or another, is a necessary characteristic of what would nowadays be called infrastructure investment (see Box 3.1).

Models of infrastructure provision vary between countries, and the respective roles of the public and private sectors have changed and evolved significantly throughout economic history.

Box 3.1

The basic duties of government

[One of the duties of the sovereign is] ... the duty of erecting and maintaining certain public works and certain public institutions, which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit could never repay the expense to any individual or small number of individuals, though it may frequently do much more than repay it to a great society.

The proper performance of those several duties of the sovereign necessarily supposes a certain expense; and this expense again necessarily requires a certain revenue to support it ... I shall endeavour to explain; first, what are the necessary expenses of the sovereign or commonwealth; and which of those expenses ought to be defrayed by the general contribution of the whole society; and which of them, by that of some particular part only, or of some particular members of the society; secondly, what are the different methods in which the whole society may be made to contribute towards defraying the expenses incumbent on the whole society, and what are the principal advantages and inconveniences of each of those methods.

Source: Adam Smith: 1776, pp. 687–8

Models of infrastructure provision vary between countries, and the respective roles of the public and private sectors have changed and evolved significantly throughout economic history. As has been noted in earlier studies:[1]

> *… Historically, infrastructure in the USA and the United Kingdom was provided by joint stock companies granted legal franchises. In Britain the early canals and railways were constructed by companies which secured private Acts of Parliament granting them rights of way over the objections of landholders. "Railway mania" was the order of the day in the 1840s. Similarly in the United States, private companies constructed the railroads but were substantially assisted by Congressional grants of land. For example, the Union Pacific railroad was constructed on the basis that the land grants of several miles wide along the whole track would be sold off to pay for its construction. The railway would be financed by recouping the increased land values it was creating.*

In Australia, things took a different turn. Australia did not have sufficient private capital while investors in London were more willing to trust the credit of colonial governments than colonial railway companies. More importantly, the pattern of population distribution, then as now, did not offer railway promoters easy opportunities to make money by linking large well-established or well-populated urban centres, unlike America or Britain. Colonial governments got into the business of railway building because they had to, if they wished to see the colonies develop. (Rural Industries Research and Development Corporation 1999).

Discussing international experience in greater depth, the World Bank[2] observes:

… As shall be seen, many shifts have taken place both toward and away from forms of private involvement in provision of different infrastructures over the past 150 years. Much change has also occurred in which level of government furnishes infrastructures or oversees privately owned service providers. In the United States, shifts between city, state, and federal activity in the ownership and regulation of infrastructures have been common. In Great Britain and France, there have also been dramatic shifts over time in the activities of local, intermediate, and central governments. In all three countries, cycles or bursts of public and private spending on infrastructures have been followed by periods of retrenchment and stability.

Driving change in many instances have been the pragmatic judgments of political leaders and important constituencies that existing ownership and regulatory arrangements inadequately served economic development goals. Economic growth, however, has not been the only priority. Perceptions that there should be some domains of public and civic interactions free of market considerations have also shaped ownership and financing arrangements, as have concerns that exclusion of nonpayers from some infrastructures such as roads or streets could amount to a denial of political and civil rights. The rise of environmental concerns in recent years has made for additional complexities. Effects in the United States have included revision of pricing and regulatory arrangements, greatly increased government investments in infrastructures such as sewage treatment plants, and greatly reduced government investments in others such as large flood-control and hydro-electric dams.

Outcomes have also been shaped by ideas and ideals concerning the role of the State in society. Thus, in the United States, deeply ingrained suspicion of concentrated economic and political power contributed to the survival of private ownership of many infrastructures and to such interventions into private firm operations as the breakup of AT&T. In France and Great Britain, socialist ideals as well as specifically economic concerns were important in driving nationalization of electric utilities after World War II. During the 1980s, decisions on the part of the Thatcher government in Great Britain to reorganize and privatise the country's electric utilities were motivated by ideological and political, as well as economic, considerations (World Bank EDI 1996).

Driving change ... have been the pragmatic judgments of political leaders and important constituencies.

Consistent with many developed OECD countries, Australian economic policy in the 1980s began to emphasise the advantages of private-sector models of infrastructure provision and financing. Internationally, the private-sector models of infrastructure provision was popularised by the World Bank in its path-breaking 1994 World Development Report (see Box 3.2).

Consistent with many developed OECD countries, Australian economic policy in the 1980s began to emphasise the advantages of private-sector models of infrastructure provision and financing.

Box 3.2

Private provision of infrastructure

World Development Report 1994 (WRD) spotlighted the incipient but strong move away from the overwhelming government domination of infrastructure delivery to private provision under increasingly competitive conditions. ... Government-run monopolies were once justified by the low production costs associated with large-scale operations and by the need to protect consumers from voracious private monopolies. But now there is growing recognition that private initiative – disciplined in part by competitive market forces – often has the upper hand in efficiently delivering infrastructure. While the government as a provider is being outmoded (especially in sectors such as telecommunications and electric power) the government as a regulator – protecting the public interest – is acquiring a more prominent role.

Source: World Bank EDI, 1996, pp. xiii, xiv

The worldwide impetus given to new ways of addressing the provision and financing of infrastructure in the process of modern economic growth, which the 1994 World Development Report crystallised, has had significant impact in Australia no less than other countries. Indeed, nowadays in some state-of-the-art models of infrastructure provision, Australia is a world leader. As two experts[3] have recently observed, "... The growing complexity of privately funded major projects means that increasingly, governments and the private sector are seeking advice as to the best way to structure their projects. In Australia, the private sector has now been in partnership with governments for two decades and Australia continues to lead the world in public–private partnership (PPP) innovations. This wealth of experience, and the recent focus in East Asia on PPPs as a solution to the problems of public infrastructure means that Australia is well placed both technically and geographically to lend guidance to both investors and governments."

Although Australia has now come a long way down the path of private-sector involvement in infrastructure investment, nevertheless it is instructive to reflect on the classic Australian public-sector infrastructure model and the foundation it provided for the more innovative investment models of today (see Box 3.3).

Box 3.3

The nature of colonial socialism

By 1900, a basic pattern of relationship between public and major private interests had been long established. This late nineteenth century pattern of public and private relations depended first on large-scale public action to attract resources of capital and labour into the economy from outside (essentially Britain), enhancing rates of increase beyond those that the private market was capable of delivering,

and second on the direct participation by public institutions in investment and the delivery of marketed output on a scale that was rare in the Western world.

... One of the consequences of this mode of direct government intervention was the development of large-scale public business undertakings, most importantly in transport and communications but also in urban amenities of water and sewerage. These all had significant elements of natural or artificial monopoly. In the course of the nineteenth century, the presence of similar enterprises, conducted privately in other countries, had raised problems of conflict of different private interests, particularly between producers and consumers. In these circumstances, the alternatives to resolve or limit these conflicts were whether to convert them to public ownership or to subject private business to regulation. The choice, in Australia, of public ownership and operation limited the growth of the specific and detailed regulation of private activity of private business that emerged, for example, in the United States under the Interstate Commerce Commission and the Sherman Anti-Trust Act and ensuing discriminatory regulations. Those American efforts to constrain private "monopolies" led American public policy along one stream of public–private relations: the increasing adversary relationship between populist Federal government and large-scale business. In opting for public ownership and operation, Australians limited greatly the sources of adversary relationships. The outcome may have been "inefficient" allocation relative to some ideal standard. But these arrangements succeeded, given the special limitations on the type and range of public enterprises, in introducing a strong sense of partnership between government and important business interests. This sense is fundamental to the understanding of nineteenth-century and much of twentieth-century public and private choice in Australia.

Source: Butlin, Barnard and Pincus 1982, pp. 13–14

Yet many growth economists now believe that, perhaps more than any other factor, appropriate institutions are the key to explaining why some countries are rich and others poor.

More generally, developing the insights of Butlin, Barnard and Pincus above, institutional structures are now being recognised as a crucial element in economic growth success. In a recent survey of the history of Australia's economic growth McLean[4] states:

> *… A further influence on the long-run growth performance of the Australian economy that receives little direct attention is the contribution of the institutional arrangements within which growth has occurred. This neglect seems to be because of the combination of the ease with which growth-enhancing institutions were created (most were imported), and because of the limited challenges that arose in adapting them to local or changing conditions. The institutional framework is seldom offered as a reason for our economic success because it is taken for granted. Yet many growth economists now believe that, perhaps more than any other factor, appropriate institutions are the key to explaining why some countries are rich and others poor.*

Models of infrastructure provision and financing – whether "public", "private" or "mixed", and the institutional arrangements in which they are set – are therefore very important issues to address in charting a strategy for the future of Australia's infrastructure.

The important questions raised in this chapter are:

- Do Australia's governmental institutional arrangements for infrastructure provision and financing need an overhaul?
- What new institutional structures are needed to enhance cooperation between the public and private sectors?
- What models of infrastructure are likely to be the most productive for the twenty-first century?
- Can markets play a better role in stimulating our institutional arrangements?

3.2 The complexity and constraints of fiscal federalism

Australia's federal system of government imposes unique complexities and constraints on infrastructure investment compared with many other countries. Commonwealth–State financial relations have traditionally had a pivotal role in infrastructure investment. Equally, institutions at the Commonwealth, State and Local levels, differing decision-making processes, legal imperatives and ever-changing social and cultural attitudes regarding, for example, the environment, the rights of indigenous peoples and social justice, have an impact on infrastructure investment decisions.

Australia's federal system of government imposes unique complexities and constraints on infrastructure investment compared with many other countries.

Evolution in Commonwealth–State relations

Mathews,[5] writing in 1988, identifies three phases in the evolution of Commonwealth–State financial relations:

> *… The first period from 1901 to the 1920s saw the Commonwealth and the States carrying out their fiscal responsibilities largely independently of each other, in accordance with the powers assigned severally to them by the Constitution.*
>
> *The period of co-operative federalism, which commenced during the 1920s and ended in 1942, was marked by the establishment of the Australian Loan Council and the Commonwealth Grants Commission, the sharing of fiscal responsibilities during the Great Depression of the 1930s and the establishment of the first Commonwealth–State ministerial councils, such as the Australian Agricultural Council, to co-ordinate policies in fields of common interest.*
>
> *Centralised federalism commenced in 1942 with the uniform tax legislation and has been distinguished by Commonwealth domination over the Loan Council, constitutional amendments and judicial decisions which have had the effect of extending Commonwealth powers, the consolidation of a highly centralised taxation system, the substitution of Commonwealth general purpose grants for State income taxes, and the use of specific purpose grants on a massive scale to facilitate Commonwealth involvement in expenditure responsibilities for which the States are formally responsible under the Constitution.*

Mathews discussed Commonwealth specific purpose grants to the states, the first of which was for infrastructure investment (roads) in 1923, and which expanded rapidly across a wide area of Australia's public re-current and capital expenditures after World War II and into the 1970s. He notes:

… There were continuing disputes between the two levels of government about the planning and administration of programs, as well as serious weaknesses in the Constitution. The operation of the advisory commissions also caused problems, including defining their relationship to the Commonwealth Government and Parliament, duplication of their activities with those of Commonwealth and State departments, failure to integrate their recommendations in the normal budget processes, virtual freedom from financial constraints and arbitrary methods of distributing the funds among the States. They did not operate as intergovernmental co-ordinating agencies, even though they were advising on financial assistance to States for purposes which were State constitutional responsibilities.

Historic changes to Australia's system of Commonwealth–State financial relations occurred with the conclusion in June 1999 of the *Intergovernmental Agreement on the Reform of Commonwealth–State Financial Relations* prior to the introduction of the *New Tax System* and the Goods and Services Tax (GST) (see Box 3.4):

It is the money that will provide the schools, the hospitals, the police, and the roads of the future.

Box 3.4

Tax reforms

... On 1 July we introduce a New Tax System, one of the largest structural changes to the Australian economy – probably the largest – since World War II. It reforms income tax, indirect tax, family assistance, business tax and Commonwealth–State financial relations.

Every dollar raised by Goods and Services Tax is paid to the State and Territory Governments. It is the money that will provide the schools, the hospitals, the police, and the roads of the future. The days of State Governments relying on Financial Assistance Grants from the Commonwealth are now over. From 1 July they have a revenue base that grows in line with the economy. It will provide a secure base to fund their services.

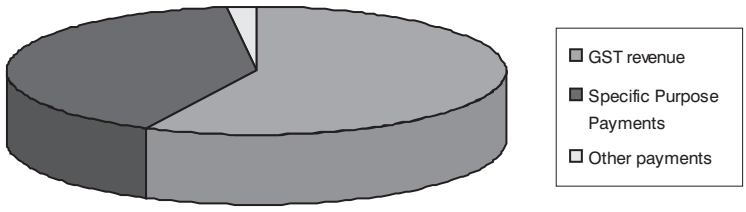
Source: The Hon. Peter Costello, MP, Treasurer, *Budget Speech*, 9 May 2000; p. 3

Prospects for a new era in Commonwealth–State relations

The authors of a recent major review of Commonwealth–State financial relations,[6] while making a range of recommendations to improve equity and economic efficiency, noted that the New Tax System and the GST gives the states, as a whole, a substantial part of what they had been seeking in earlier efforts to reform Commonwealth–State funding. Financially, the states are better off under the New Tax System in the order of $11.8 billion in the period to 2007–08, compared with the pre-GST system. This compares with the initial official estimate of the improvement for the states of $3.7 billion made in March 2000.[7]

In total, the states are estimated to receive $60.2 billion in payments from the Commonwealth in 2004–05, comprising GST revenue of $34.5 billion, Specific Purpose Payments of $24.6 billion and other payments of $1.1 billion (see Figure 3.1).

Figure 3.1: GST and Commonwealth payments to the states 2004–05 ($ billion)



Source: Budget Paper No. 3, 2004–05

Although significant changes in fiscal arrangements between the Commonwealth and the states have been achieved with the New Tax System ... reform of public institutional and administrative decision-making processes in Australia remains a challenge.

There seems little doubt that the states as a whole have enjoyed a buoyant new form of revenue in the GST. However, the role and size of Specific Purpose Payments appears crucial in defining Commonwealth and State relations, both in terms of priorities and the terms under which the functions targeted for Specific Purpose Payments from the Commonwealth operate. Regrettably, vexatious issues arising from vertical fiscal imbalance (the mismatch between the federal government's revenue-raising powers and the states' responsibility under the Constitution to provide a wide range of services), the rise of federal government intervention in states' functions through Specific Purpose Payments under Section 96 of the Constitution, and disputes over horizontal fiscal equalisation in the distribution of Commonwealth moneys to the states continue in spite of *The New Tax System* and various proposals for overhaul and change in Commonwealth–State financial arrangements.[8] Notably, in this context the premier of New South Wales recently advanced a proposal to overhaul Commonwealth–State relations involving large transfers of responsibility between governments in Australia. The Premier said, "... I think we should be prepared to consider large transfers of responsibility between levels of government if that makes sense in the interest of citizens and taxpayers. But the important thing is to approach the question of Commonwealth–State roles and responsibilities in a systematic and strategic way – not in an ad hoc fashion" (Carr 2004).

Although significant changes in fiscal arrangements between the Commonwealth and the states have been achieved with the New Tax System – and overall change in federal arrangements is now being canvassed – progress is not promising. In particular, parallel reform of public institutional and administrative decision-making processes in Australia remains a challenge.

To its credit, the Commonwealth has recognised in its *AusLink* White Paper the urgent need to re-shape institutional arrangements governing the key infrastructure sector of land transport where Specific Purpose Payments have had the longest history in the Federation. In the *AusLink* White Paper, the government observes:

> *... The current framework for land transport infrastructure planning, decision-making and funding in Australia is fragmented, short-term, and unable to deal adequately with the emerging need for a substantial increase in infrastructure spending on the transport system. ... The fundamental reforms the Australian Government intends to make through AusLink will be implemented with important new legislative, intergovernmental, institutional and programme arrangements. There will*

be new strategic planning mechanisms and a more rigorous way of assessing land transport infrastructure projects for which an Australian Government investment contribution might be considered. (AusLink 2004, p. 12).

Indeed, of relevance to Australia's current "mixed model" of infrastructure provision, the Premier of New South Wales states, "... the co-operation of the Commonwealth and States has led to major reforms over the past two decades in transport, water, electricity, gas, competition law and corporations law. These reforms have contributed to the resilience of the Australian economy. And in all these cases the States have essentially ceded power and authority to national institutions and regulators" (Carr 2004).

Service delivery and excessive red tape

Clearly, a considerable amount of work at government level needs to be done before Australia's public-sector infrastructure processes reach the desired levels of effectiveness consistent with the challenges inherent in Australia's future economic growth. Welcome new reforms, such as *AusLink*, will hopefully reinforce the impetus, given to Public Service reform in the area of service delivery following the general election on 9 October 2004 (PM 2004).

Long and costly bureaucratic processes are a frequent complaint of private-sector participants concerned with infrastructure provision and financing.

At the Commonwealth level, public service regeneration has been elaborated in a speech to the Institute of Public Administration national conference on 11 November 2004 by Dr Shergold, Secretary of the Department of Prime Minister and Cabinet. Dr Shergold explained the aims of public service changes announced by the prime minister following the general election as being designed to reduce organisational impediments, reinvigorate bureaucratic endeavour, refocus government effort, renew machinery of government and to revitalise leadership.

Dr Shergold said an aim was to create a public service respected not only for its ability to develop policy but for its commitment to deliver policy (2004).

This sentiment for improved service delivery in Australian public administration has also been echoed by the premier of New South Wales, who has said that the Commonwealth and the states must look for greater efficiency and productivity in the provision of services (Carr 2004).

Long and costly bureaucratic processes are a frequent complaint of private-sector participants concerned with infrastructure provision and financing. A new era in public service efficiency and delivery would be a welcome development. This will be addressed in further chapters.

The Australian government in the *AusLink* White Paper observes, "... There is a wide stakeholder agreement on the need for national and cooperative leadership across all levels of government to anticipate and manage these challenges. It is clear governments need to look at doing things better" (2004, p. 12). The 2001 Report Card also strongly criticised Australia's costly and confusing bureaucratic processes, which retard infrastructure investment and effectiveness (see Box 3.5).

Box 3.5

Regulation inefficiencies

... During the research undertaken for this *Report Card* a number of significant regulatory impediments were identified that retard the management, maintenance and development of Australia's infrastructure. Major concerns are inconsistencies between States in the application of their regulatory frameworks, and difficulties with competition reform.

... Similarly, all three tiers of Government are currently defining environmental requirements for infrastructure. This involves infrastructure developers in excessive, overlapping and sometimes contradictory approvals processes. Various mechanisms have been introduced to overcome these hurdles, including Federal Government intervention through COAG, and National Competition Policy.

Regulations and processes should support infrastructure investment, whilst protecting consumers and others from anti-competitive behaviour. Unfortunately, overall, there are numerous examples of problems with national reforms hindering investment and competition.

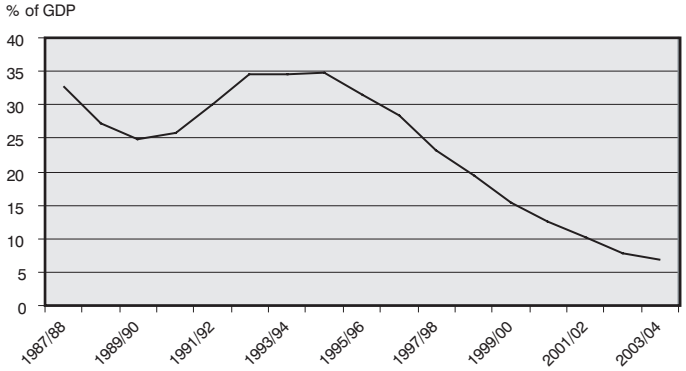
Source: Engineers Australia 2001, p. 2

Overlaying and impacting on Commonwealth–State financial relationships is the rigid fiscal policy strategy adopted by Australian governments over the last decade of budget surpluses and debt reduction.

Commonwealth and State government fiscal policy obstacles

Overlaying and impacting on Commonwealth–State financial relationships is the rigid fiscal policy strategy adopted by Australian governments over the last decade of budget surpluses and debt reduction. The improvement in, and fiscal repair of government finances, over the last decade is illustrated in Figure 3.2. The Commonwealth government has been in surplus since 1997–98, with the exception of a small cash deficit of 0.1 per cent of GDP in 2001–02. State and Local governments' balances have improved from a deficit of 1 per cent of GDP to a cash surplus of 0.6 per cent of GDP over the period 1991–92 to 1996–97. This budget surplus/debt reduction stance of fiscal policy in Australia seems likely to continue – although recently there are indications that the policy could be questioned by the NSW government (*AFR*, 16 December 2004, p. 4).

Figure 3.2: Public–sector net debit



Source: Budget Paper No. 1, 2004–05, Statement 12

Debt reduction has been pursued by Commonwealth and State governments in parallel with the achievement of budget surpluses. Consolidated general governments' net debt as a share of GDP is expected to continue to decline, having fallen from a peak of 25 per cent of GDP in 1994–95 to 1.2 per cent of GDP in 2003–04, and an estimated 0.8 per cent of GDP in 2004–05, while public non-financial corporations' net debt has fallen from a peak of 17.8 per cent of GDP 1987–88 to 5.7 per cent in 2003–04. In total, consolidated net debt (general government plus public non-financial corporations, or PNFCs) has fallen from a peak of 34.9 per cent of GDP in 1994–95 to 6.9 per cent in 2003–04.

Debt reduction in the latter category, PNFCs, has been achieved through lower levels of capital expenditure and improved efficiency and privatisations (Budget Statement 12, 2004–05, pp. 12–13). Significantly, the Budget Papers also note that:

> *… The PNFC sector is an important provider of economic infrastructure and contributes significant revenue to the general government sector, mainly in the form of dividends. State/local governments account for the majority of total PNFC sector payments, reflecting State responsibility for infrastructure and service provision in areas such as electricity, gas, water and public transport.*
>
> *PNFC privatisations over the last decade have occurred in two main sectors – electricity and gas (such as Victorian and South Australian electricity assets) and transport and communications (such as the partial sale of Telstra). Proceeds of asset sales have largely been used to reduce, or contain, the growth of general government net debt, resulting in ongoing savings in public debt interest"* (Budget Statement 2, pp. 12–13).

Lower levels of capital expenditure and "dividend-stripping" by Commonwealth and State governments are now emerging as key areas of concern for the long-term future of Australia's infrastructure assets.

Lower levels of capital expenditure and "dividend-stripping" by Commonwealth and State governments are now emerging as key areas of concern for the long-term future of Australia's infrastructure assets (*AFR*, "States Come Under Fire over Power", 8 November 2004). The problem of dividend-stripping of government business enterprises (GBEs), and the disguised form of taxation it can represent along with excessive "user charges", was first identified some years ago by the Business Council of Australia (BCA 1994, 1995). The Productivity Commission's recent annual survey of the financial performance of 84 government trading enterprises (GTEs) in Australia reveals that 58 GTEs make dividend payments to their governments amounting to $4.3 billion in 2002–03 with some, particularly in the ports area, reporting dividend payout ratios of over 100 per cent. Some GTEs made dividend payments to their governments often reporting operating losses. In addition, 77 of the 84 GTEs are required to make "tax equivalent" payments on their operating profit at the same company tax rate as private businesses. This subvention amounted to over $3 billion in 2002–03 (Productivity Commission 2004c, Chapter 2).

It is also relevant that GBE cost recovery in 2003–04 for electricity was 123 per cent, water 158 per cent, urban transport 99 per cent, railways 90 per cent and ports 131 per cent (Productivity Commission 2004c, p. 8). Disputes about the pricing and dividend/tax policies applying to GTEs in Australia have been aired extensively in recent years in the context of competitive neutrality, National Competition Policy Reform and asset management principles (Productivity Commission 2001, 2004b; Egan 2004).

3.3 Decision-making and delivery in infrastructure: Case studies

Decision-making at the governmental level in Australia, which is compounded by our federal system, is now widely recognised as a problem and is often exacerbated by lack of communication between planning and funding agencies, particularly in road and rail. The Australian government's *AusLink* White Paper states, "... The current framework for land transport infrastructure planning, decision-making and funding in Australia is fragmented, short-term, and unable to deal adequately with the emerging need for a substantial increase in infrastructure spending on the transport system. The arrangements for land transport infrastructure planning and funding in Australia have evolved over time and differ between modes. These responsibilities are set out in Table 3" (2004, p. 12) [reproduced below as Table 3.1].

The current framework for land transport infrastructure planning, decision-making and funding in Australia is fragmented...

Table 3.1: Current responsibilities for transport infrastructure planning and funding

	Roads			**Rail**		**Ports**	**Inter–modal terminals**
	National	*Arterial*	*Local*	*IRN*	*Branch*		
Planning	State/ Australia	State/ Private	Local/ State	Australia/ ARTC/State/ Private	State/ Private	State/ Private	State/ Local/ Private
Funding	Australia	State/ Aust./ Private	Local/ Aust./ State	Australia/ ARTC/State/ Private	State/ Private	State/ Private	State/ Local/ Private

Note: IRN: Interstate Rail Network; ARTC: Australian Rail Track Corporation
Source: *AusLink* White Paper 2004, pp. 12–13.

Not only are economic costs imposed on the nation, but social costs, cultural and amenity issues are also relevant as the Australian government's *AusLink* White Paper points out (see Box 3.6).

Box 3.6

Recognising growing social and environmental costs

... Unless the decision-making framework for transport infrastructure in Australia is improved, the forecast growth in the transport task will increase the social costs of transport, particularly congestion. The expected continuing dominance of road transport in handling the non-bulk freight and passenger tasks, particularly in urban areas, presents significant challenges. These include:

- the increasing costs of congestion associated with time spent in traffic and increased vehicle and fuel usage
- inadequate access to transport compounding inadequate access to services
- health costs associated with vehicle emissions
- transport's contribution to greenhouse gas emissions
- increased traffic and subsequent safety issues
- a range of built environment issues associated with transport planning that many blame for a lower sense of urban amenity.

Source: *AusLink* White Paper 2004, p. 10

An illustration of the costs of traffic congestion the *AusLink* White Paper estimates these as forecast to grow to $29.7 billion in 2015 from the then very significant figure of $12.8 billion in 1995. It might be noted that the sustained upward trend in congestion costs demonstrates the extent of Australia's under-investment in roads infrastructure over recent years.

The complexity and interplay of governmental and bureaucratic structures oversighting Australia's infrastructure provision and its financing are highlighted in several case studies presented below. These deal with bureaucratic decision-making problems in roads, rail transport, urban land and road charges.

Case study 1: Road investment

Background: A decade ago, after a period of under-investment, Australia's road network stood in need of significant investment – particularly to bridge gaps and lift the capacity of urban arterial road systems. Analysis presented in the AAA/Allen Consulting report (1993) – and reported in Table 2.2 in this report – indicated very high net returns from investment in urban arterials and moderate to high returns from investments in other road categories, particularly rural national roads and rural arterials.

The need: The reason for the existence of many projects with high returns was essentially that the capacity of the road stock had not kept pace with economic growth – reflected in rising congestion and other costs, these costs acting as a brake on growth rather than facilitating it.

Notwithstanding that there has been considerable road investment over the intervening period, there is still a range of evidence that investment is not keeping up fully with need. It is still the case that there is a backlog of potentially high-yielding projects. It is estimated that current required road works for national and state roads (including upgrades and new construction) is well in excess of $10 billion for Australia.

What happened: A number of recent and forthcoming projects illustrate how tackling the backlog of investments bring substantial reductions in travel times and congestion costs, vehicle operating costs and crashes. Reductions in these are benefits of land transport investment, not costs as invariably reported by governments.

Melbourne's CityLink tollway, opened in stages by end-2000, provided a significant lift in connectedness for the Melbourne urban arterial system. A recent stocktake of benefits of CityLink estimated direct benefits in excess of $380 million.[9] This figure implies an ex post (gross) benefit cost ratio of around 2:1, or $4 billion of benefits for a cost of around $2 billion.

A particularly positive (expected) outcome has been significantly reduced trip times.

The road-user benefit-cost ratio for building the Western Sydney Orbital (WSO) – also known as the M7 and the largest remaining link in Sydney's orbital road network – is estimated to be 2.2 using the RTA (and NSW Treasury) recommended discount rate of 7 per cent. As with the CityLink example, it is expected that trip times and hence congestion will be greatly reduced between relevant destination points.

It might be noted that the sustained upward trend in congestion costs demonstrates the extent of Australia's under-investment in roads infrastructure over recent years.

Lessons learned: The CityLink and WSO examples illustrate issues associated with private equity investment, fully funded by tolls. In both cases, it is likely that funding arrangements involving lower (if any) tolls would deliver somewhat higher net benefits, as drivers who are currently avoiding tolls (or would avoid them in the case of the WSO) and imposing costs on themselves and others by taking other routes, would use the roads.

It is important that planning for future projects recognises both the inherent major public role in road investment – given its interconnected character – and the existing large flow of road-user revenues that are its natural source of funding; and that planning is open to concepts of mixed public and private funding subject to addressing issues of risk transfer, transparency and accountability.

An effective complement to upgrading road networks is for Australian governments to seriously consider re-pricing road use. Better pricing can potentially improve the efficiency of road provision and use, and help address problems of congestion in urban areas. Indeed, an appropriate pricing framework is fundamental to the success of any transport plan – without it an optimal balance of usage among transport modes will not come about.

Source: Case study prepared by the Australian Automobile Association and adapted from a study for it undertaken by Allen Consulting Group (May 2003)

At a time when Australia's national export competitiveness is in the spotlight, rail is critical to the country's ability to get $6 billion worth of annual export product to market.

Case study 2: Rail transportation of grain

Background: Each year, Australian railways move an average 15 million tonnes of grain for export, generating 10 billion gross tonne kilometres of traffic. At a time when Australia's national export competitiveness is in the spotlight, rail is critical to the country's ability to get $6 billion worth of annual export product to market.

Privatisation of the rail freight sector from the late 1990s coincided with deregulation in the Australian grain industry's export marketing system and supply chain structure. A series of public-sector networks handling the storage, transport, export and sale of grain were opened to competition and value extraction by aggressive, newly privatised grain industry majors. Initial results were promising: improved storage services and prices to grain growers, greater range of marketing options and the elimination of cross-subsidies in freight pricing.

However, the new market-driven supply chains are exploitative of transport infrastructure and services. There is reduced stability and predicability in the usage of rural road and rail routes, already suffering from under-investment. The availability of 'above-rail' competition has concentrated power into the freight customers' (that is, grain marketers) hands and compromised the ability of rail freight operators to continue offering network-wide services.

Rail privatisation is a relatively recent occurrence with most operators still discharging pre-sale obligations to the grain industry and/or coming to terms with the future viability of these businesses. Many such business services are now at crisis point with grain rail systems now at or near the point of collapse, or significant reduction.

The need: Having engineered the rail privatisations and grain industry deregulation, state and federal governments need to keep pace with emerging developments in these markets. They need to maintain an ongoing planning and regulatory relevancy to the rural communities served by transport infrastructure and services. Also needed is a funding mechanisms and the regulatory powers to support key infrastructure investments that cannot otherwise be provided by the market.

What happened: Due to the binding power of national competition policy, the prime focus of the states has been on establishing access regimes to meet approval criteria. The underlying assumption is that creating conditions for competition 'above–rail' would deliver system efficiency. In fact, the opposite has occurred. Short–term benefits have accrued to customers, but at a cost to rail operators, taxpayers and rural communities. Grain transport infrastructure has suffered from uncertainty, rail investment programs have been paralysed and roads have suffered from heavy unplanned-for use.

Lessons learned: Rail serves many purposes for the grain industry. It moves large volumes cheaply to meet harvest and shipping peaks. It maintains a price benchmark for road transporters. It keeps large numbers of trucks off the roads and away from urban areas surrounding the grain ports. It still carries 80 per cent of all export grain movements (measured in net tonne-kilometres), protecting country road systems and communities from over $120 million per year in road damage and related costs.

However, rail needs a stable investment environment in which to survive. Governments need to provide tools to assist private-sector rail track owners and operators in making the major periodic capital and maintenance investments essential for continued efficient service to the grain industry.

If governments wish rail systems to continue operating, they need to develop truly integrated road-rail planning capabilities for rural areas. There is no capacity for parallel high-quality road and rail links to grain ports. If rail is to be the chosen mode, grain volumes must be encouraged to use it. Road investments need to be tailored to be complementary to the rail system, rather than competing with it.

Similarly, there is no future in requiring rail companies to compete above-rail for the right to service the export grain industry. Road transport is highly effective competition, and is winning critical market share from rail, to the point of non-sustainability. The applicability of national competition policy to this' sub-market' must be quickly re-examined if rail services critical to our export competitiveness are to be retained.

Source: Case study prepared by the Australasian Railway Association

Case study 3: Urban land backlog

Background: Australia has up until recently had a comparative advantage in low-cost and well-serviced urban land, and this has underpinned the productive capacity of the economy. However, in the past few years this advantage has been eroded as inefficiencies in the planning process have resulted in excessive increases in land prices.

If governments wish rail systems to continue operating, they need to develop truly integrated road-rail planning capabilities for rural areas.

Affordable, quality housing is essential to Australia's productivity and quality of life.

The cost of these inefficiencies is starkly evident in all Australian capital cities and is being magnified by the inexorable shift of population from the inland to major coastal cities.

The need: Affordable, quality housing is essential to Australia's productivity and quality of life.

It is an integral part of Australia's social and economic fabric, and contributes much to the social harmony and stability that fosters and facilitates improved socioeconomic outcomes.

What happened: In outer Brisbane, for example, project builder prices rose by 26.3 per cent between 2000 and 2003. However, over the same period, land prices rose by 250 per cent. Whereas contractor costs have typically made up 60 per cent of the cost of a house on city fringes and land 40 per cent, land costs now make up between 60 and 70 per cent of the cost of a house.

While an increase in demand partly explains this situation, it is largely the shortage of new development land that explains most of the price rise.

Lessons learned: The planning approval process is not delivering a cost-effective outcome and is in need of a complete review. The delays experienced are getting longer with inconsistent outcomes.

This reduction in land releases on the urban fringe and infill sites is due largely to the lack of strategic planning being applied at state and local government level. What is emerging is a picture of inadequate and spurious planning processes, which slow land release.

As the number of greenfield lots released on the urban fringe is reduced, this results in escalating prices and puts pressure on first-home buyers to move in closer to the CBD and purchase smaller units or smaller parcels of land. Large blocks on the outer ring become less and less affordable.

To improve the constraints on the supply of land, councils need to focus more on strategic planning and develop policy concentrating on the big picture issues rather than lesser day-to-day items.

Source: Case study prepared by: Master Builders Australia

Case study 4: Road infrastructure and truck charges

Background: Australia's 810,000-kilometre road network is owned by the Australian public and managed by Australian governments. It can be argued that fuel excise and vehicle registration charges provide governments with the money to construct and maintain this network, but generally, there is no direct linkage between the two.

In the case of heavy vehicles (trucks and buses over 4.5 tonne GVM) this nexus is well defined and recognised by all Australian governments and industry. It is less well understood by the public and media. The government road construction and maintenance expenditures attributed to heavy vehicles are fully recovered, and return to Australian governments at least $1.5 billion per annum from businesses that own and use heavy vehicles. This was not always the case.

The need: Prior to 1995, with the implementation of the first Heavy Vehicle Charges Determination, developed by the National Road Transport Commission, there was neither a nationally consistent methodology for assessing truck charges for the use of infrastructure, or a nationally consistent set of charges. A prime reason for establishing the National Road Transport Commission in 1991 was to address this situation.

What happened: The Commission worked to produce a methodology and nationally consistent charges to recover from heavy vehicles their allocated share of road construction and maintenance expenditures. This comprised nationally consistent heavy vehicle registration charges for a range of heavy vehicles classes and a notional partial diesel excise payment, which applied to all heavy vehicle classes. Data were used to establish road use by heavy vehicles, and parameters including the loaded mass of vehicles and distances travelled were averaged for each vehicle class. These charges fully recovered the road costs allocated to heavy vehicles. In the first determination this amount was $1.023 billion.

In the second Heavy Vehicles Charges Determination, based on 1998 data, the charges were set at a level to collect an annual amount of $1393 million, although the allocated road expenditure for heavy vehicles was only $1283 million. The $1393 million consisted of $968 million based on the 20c/litre fuel charge and $425 million in registration revenue. The actual amount paid by the heavy vehicle industry is understood to exceed this amount.

Two changes to the process were implemented as part of the Second Charges Determination: heavy vehicle registration charges were to be adjusted annually to reflect road expenditures, but would be capped by the consumer price index (CPI) and could not be reduced, and the net diesel fuel excise was recognised in the New Tax System with the start of the Diesel and Alternative Fuels Grants Scheme from 1 July 2000, which paid an on–road diesel grant to eligible trucking (and bus and coach) businesses of 18.51 cents per litre (cpl) to reflect the retention of the 20 cpl net diesel excise heavy vehicle road user charge by the Australian government. This addressed the situation that the road freight transport industry had been taxed at 2.5 times the industry average in Australia.

From 1 July 2000, under the New Tax System arrangements, the rail industry was rebated the total amount of excise paid on diesel fuel. The current amounts (2003/04) relating to payment of grants under the Energy Grants Credits Scheme for the two industries are road transport $855,827,686 and rail transport $246,656,989.

The ongoing process for reviewing cost recovery from heavy vehicles in Australia is managed by the National Transport Commission at the behest of the Australian Transport Council and in consultation with the trucking and bus and coach industries as heavy vehicle using businesses. Currently, the third Heavy Vehicle Charges Determination is under way. The process is vigorous and lengthy, as data about all roads and road-related expenditure are assembled, the cost allocation to the various classes of road users is calculated and final charges for heavy vehicles determined. At every stage there is extensive public consultation and review of the data and methodology of the process.

In its White Paper *Securing Australia's Energy Future*, released on 15 August 2004, the Australian government announced that from 1 July 2006 the net excise paid by

At every stage there is extensive public consultation and review of the data and methodology of the process.

trucking and bus and coach businesses would be formally regarded as a non-hypothecated heavy vehicle road-user charge. This announcement formalises the de facto heavy vehicle road-user charge arrangements, which have been in place since the mid-1990s.

Lessons learned: The established and proven methodology of determining heavy vehicle charges for both net fuel excise and registration is a well-developed and proven system. It delivers at least $1.5 billion to governments from businesses that own and use heavy vehicles, and provides a guarantee to the tax-paying public – the owners of the road network – that those vehicles pay for their allocated proportion of road construction and maintenance sums expended by all Australian governments.

This methodology, if extended to other road users and possibly to other land transport modes, would provide transparency and clarity to the public about the cost recovery from other users of land transport infrastructure. Where such infrastructure is privately owned or owned in partnership with government (for example, in the case of tollways) separate and additional charges are made on heavy vehicles to recover the cost of the investment to construct and maintain the infrastructure, and in the case where public funds form part of this investment, the charges, for example tolls, should be adjusted from rates of full commercial recovery to a level that reflects the proportion of public expenditure involved.

Australia's road network is a vital investment to Australia's governments.

Australia's road network is a vital investment to Australia's governments. It enables the movement of people and freight, and this must be achieved in the most productive, efficient and safe manner possible, in order to deliver a competitive freight transport network and to allow efficient and safe use of the road network by private users. The network is undergoing regular enhancement, but many inadequacies to its productive, efficient and safe use still exist. Bold decisions are required to address these deficiencies that, given the growth of Australia's population, economy and international trade, will be an ongoing challenge.

The heavy vehicle charging system recovers from heavy vehicles their fair share of the total road network expenditure and is related to it. An improved network will allow for greater and more efficient use by all road users, and heavy vehicles charges would be reviewed and adjusted using the current methodology to reflect this increased infrastructure expenditure. Improved and expanded road infrastructure will also allow Australia to maintain its very competitive road freight transport cost structure in order to continue to move the majority of Australia's domestic and export land freight.

Source: Case study prepared by the Australian Trucking Association

3.4 Towards a new model for infrastructure investment

As discussed in section 3.1, models of infrastructure provision and financing have evolved rapidly in recent years, reflecting international trends towards corporatisation, privatisation, and private provision and financing of infrastructure. The classic Australian model of infrastructure provision was one of public-sector provision financed chiefly by long-term debt with pricing of services at marginal cost or on a loss-making basis. Governments, unlike private companies, are able to recover their "investment" in infrastructure through growing tax revenues,

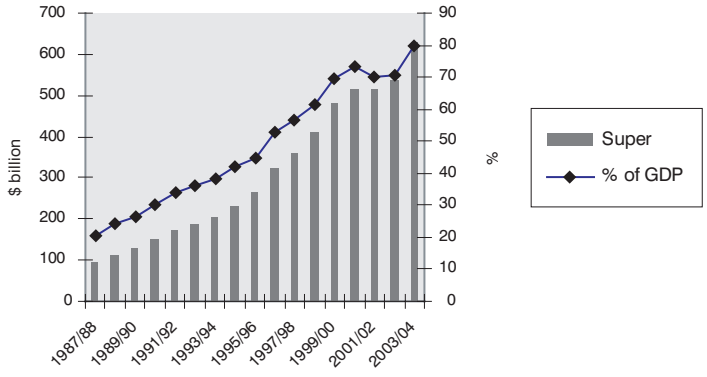
including land rates generated from the economic development – or positive externalities – generated by public infrastructure investment. The economic efficiency aspects of this classic model and the desirability of pricing of infrastructure services at marginal cost has been discussed extensively elsewhere (Rural Industries Research and Development Corporation 1999; Productivity Commission 2001, 2004b).

Corporatisation, privatisation and private provision have raised new challenges for Australian governments, and the private sector also, including the need (because of natural monopoly issues inherent in infrastructure) to develop and put in place complex regulatory regimes for structural separation, access and pricing. These challenging issues have been surveyed recently by the Productivity Commission in its report *Review of Competition Policy Reforms* (2004b).

Reinforcing the fiscal policy attitudes driving change in the provision of infrastructure has seen the emergence of significant private-sector capital availability in Australia for infrastructure investment. This has resulted from financial deregulation and Australia's superannuation policies in the 1980s and 1990s. Superannuation funds has grown very rapidly in Australia over recent years from $95 billion, or 21 per cent of GDP in June 1988 to $628 billion, or 80 per cent of GDP in June 2004 (see Figure 3.3).

... superannuation funds are among the largest investors in the private provision of infrastructure in Australia ...

Figure 3.3: Superannuation funds growth



Source: ABS Cat. 5204.0 and *Reserve Bank Bulletin*, Table B 18

Superannuation funds have a long-term investment perspective and are able to invest in areas where the full investment return may take some time to mature. As a result, superannuation funds are among the largest investors in the private provision of infrastructure in Australia, investing in projects that are either listed or unlisted infrastructure investments.

Increasingly, there is scope for funds to invest via the listed equity markets rather than as unlisted investments. Therefore it is increasingly possible to obtain an allocation to the infrastructure sector via an Australian-listed equity mandate, thus disintermediating the private equity area. With the exit of News Corporation from the Australian Stock Exchange (ASX), the ASX is promoting

increased listings for infrastructure projects. Australia is a leader in this field, with more than $9 billion in infrastructure funds listed on the ASX (*AFR* 3 November 2004).

As already noted in the early 1980s there has been a paradigm shift in the way some governments provide capital works and infrastructure services to their constituents. Traditionally, most governments have provided infrastructure services directly to consumers while retaining some functions such as design and construction in-house. More recently, some governments have begun to see the benefits of utilising the private sector's expertise to deliver more efficient and lower cost services to their constituents. At first this was primarily a response to budgetary concerns, but experience of improved project delivery and of successful risk transfer to the private sector demonstrated that there was intrinsic value in adopting new procurement methods.

These early forms of private-sector participation have now given way to more sophisticated PPPs, where both the private sector and State are responsible for the aspects of project delivery and subsequent operations to which they are best suited.

These early forms of private-sector participation have now given way to more sophisticated PPPs, where both the private sector and State are responsible for the aspects of project delivery and subsequent operations to which they are best suited.

Historically, as already noted, infrastructure assets and services were funded by taxes and government debt. At various times life insurance companies were required to hold a certain percentage of government bonds in their portfolios, which also indirectly financed infrastructure projects. More recently, Australian governments have tapped private-sector finance to directly fund and deliver infrastructure projects with a corresponding fall in the supply of government debt (bonds).

Over the last 15 years, Australia has adopted a policy of microeconomic reform that has been progressed by The Council of Australian Governments (COAG) in its National Competition Policy (NCP) of April 1995. This required Australian states, territories and the Commonwealth to facilitate the development of competition in various sectors, including infrastructure that facilitated a restructuring of many previously publicly owned monopoly utilities through corporatisation and privatisation.

The latter dominated some sectors, such as major airports, gas transmission pipelines and the electricity sector in some states (generation, transmission and distribution). Consequently, there has been a significant shift from public- to private-sector infrastructure investment in those sectors over the last decade.

Another manifestation of the NCP was a recognition by Australian governments of the hidden costs of providing public services, including the price of risk and its impact on the risk-weighted cost of capital. Based on the lead shown by the United Kingdom (UK), a more formal understanding of the cost of risk and the benefits of sharing its impact equitably in infrastructure projects resulted in the development of formal procurement processes based on longer term concession arrangements requiring formal partnerships between public-sector clients and private-sector investors and providers. This led to the adoption of PPPs for the delivery of major infrastructure assets and services (see Box 3.7).

Common features of the PPP framework include clearly specified project outputs, government payments linked to specified outputs and risk allocation whereby the

party best placed to manage a risk accepts it. In terms of financing, infrastructure projects are typically highly geared because of the nature of the underlying asset and the presence of a government counterparty. Superannuation funds are ideal investors for PPP-funded infrastructure assets as the long-term nature of the cash flows are an ideal match for their long-term commitments.

One of the fundamental benefits of a PPP approach to project delivery is the reduced exposure to risk by the State and taxpayers. Where appropriate, risks are transferred to the private sector, the contingent liabilities to the State are reduced and a better project should result. While the State is capable of procuring most projects directly, funding constraints and interface difficulties with private contractors can lead to delays. Experience has shown that projects that are designed, constructed and financed by the private sector are consistently delivered earlier than if they had been procured by traditional methods.

One of the fundamental benefits of a PPP approach to project delivery is the reduced exposure to risk by the State and taxpayers.

Box 3.7
Forms of public–private partnership

Contract type	Characteristics
Design and Construct (D&C)	The government specifies the asset it requires in terms of its functions and the government's desired outcomes. The private sector is responsible for designing and building the asset and any related risks. The asset is then passed to the government to operate.
Operate and Maintain (O&M)	An existing government-owned asset is managed by a private-sector organisation for a specified period. The contractor will be responsible for providing the services to the customer (retail or wholesale), maintaining the asset to a specified condition and ensuring that management practices are efficient.
Design Build Operate (DBO)	Effectively a design and construction contract and an operation and maintenance contract rolled together. The service provider is usually also responsible for financing the project during the construction period. The government purchases the asset from the developer for a pre-agreed price prior to (or immediately after) commissioning and takes all ownership risks from this time. The contractor retains the management function and related risks.
Build Own Operate Transfer (BOOT)	The service provider is responsible for design and construction, finance, operations, maintenance and commercial risks associated with the project. It owns the project throughout the concession period. The asset is transferred back to the government at the end of the term, often at no cost.
Build Own Operate (BOO)	Similar to BOOT projects, but the service provider retains ownership of the asset in perpetuity. The government only agrees to purchase the services produced for a fixed length of time.
Lease Own Operate (LOO)	Similar to a BOO project but an existing asset is leased from the government for a specified time. The asset may require refurbishment or expansion, but no "new build" assets are necessary.
Alliance	An agreement between the private contractor and the government to share the pain or the gain associated with project risks. The parties agree to a benchmark price, time and service standard, and any benefits (or costs) achieved are shared between the parties according to a pre-agreed formula.

When there are competitive pressures arising from competitive tendering, the private sector usually delivers capital works for a lower cost than for public procurement options. A UK study found that, on average, the net cost benefit to the government from adopting the PPP approach was a saving of 17 per cent over the whole-of-life cost of services relative to a government-provided service (Arthur Anderson/LSE 2000, p. 25).

The case for having a PPP channel of public infrastructure provision recognises the need of the State to selectively draw on the growing pool of private-sector capital, technical and managerial skills capabilities.

The objectives of having a PPP channel for infrastructure procurement is largely common among Western governments. They might best be described as follows: "The aim is to deliver improved services and better value for money, primarily through appropriate risk transfer, encouraging innovation, greater asset utilisation and integrated whole-of-life management" (Arthur Anderson/LSE 2000, p. 25). The "niche role" assigned to PPPs is appropriate, particularly as most enterprises involved in PPPs are special-purpose one-off vehicles, unlike the privatised energy utilities that have an ongoing mandate and segment-focused capability.

The case for having a PPP channel of public infrastructure provision recognises the need of the State to selectively draw on the growing pool of private-sector capital, technical and managerial skills capabilities (see Box 3.8). There are, however, critics of the PPP model who argue it is justified only in limited circumstances (Willet;[10] Quiggin;[11] Chaudhri and Kerin[12]).

Box 3.8

Lessons from PPP process

Given the need for informed debate about meeting the nation's infrastructure needs, your editorial (November 30) about the value of public–private partnerships is very important. This is particularly so with your argument that PPP projects "benefit not only investors, government and construction firms, but – most importantly – the people who use and pay for the services".

Whether it be Sydney's Harbour Tunnel or Melbourne's City Link, this has certainly proved to be the case. But your readers may not realise the same benefits have been achieved in less publicised PPPs, like Victoria's County Court project and the recently opened Casey Public Hospital. In each case the partnership between government and the private sector produced public assets that are cost efficient, innovative and the subject of praise by their users.

Australia will be the beneficiary if we see more PPPs in the transport, health, education and water sectors, particularly if, as your editorial indicates, we continue to learn from the practical experience of the many projects that have been completed to date. The lessons are overwhelmingly positive, but there is more that can (and is) being done to harmonise PPP processes and risk–sharing provisions, to cut bid costs and deliver better value services to the public.

Fred Tinsley, Minter Ellison lawyers, Melbourne, Vic

Source: Letters. AFR, 3 December 2004

A challenge for Australia is to unlock its growing pool of private-sector capital for the nation's infrastructure investment needs so as to enhance productivity and exploit new trade opportunities and integration with the world economy. Overhaul of outdated government processes and better coordination of public- and private-sector skills appear to be a prerequisite in this context. The Australian Local Government Association (ALGA) recently proposed a new infrastructure investment model – a "Tri-Level" investment model – to address this need (see Box 3.9):

Box 3.9
ALGA Tri-level investment model: The proposed ALGA model

The [ALGA] State of the Regions report proposes a tri-level local government infrastructure financing model with contributions to be made by local, state and federal governments. Councils or groups of councils would nominate projects, such as bridges, libraries/adult learning centres, tourist facilities/information centres or upgrading regional airports.

For example, an infrastructure market would be established in which private (superannuation) funds were sourced to build projects that have qualified for the scheme. The borrowers would be the three spheres of government with repayment structures designed around the value of the asset to each sphere.

The Australian government would pay off its portion of the loan early, or up-front, with a tax-financed grant on project completion. This can be regarded as a down-payment on the additional tax revenue that the Commonwealth is likely to receive as a result of the project.

The state government pays off its loan more gradually, say over 17 years. The rate of payback could be indexed to the state's GST revenue.

Local government would borrow to finance its share of the project costs but pays off the loan long term, perhaps over 30 years, starting slowly after four or five years. Total nominal contribution for a $10m project over 30 years could be local government 60 per cent, state government 32 per cent and Australian government 8 per cent, with the amounts to vary according to the balance of national, state and local interest in each project.

The repayment structure would ensure that the debt is repaid rapidly at the beginning, tapering off as local government assumes more responsibility in later years. It will also reduce the average cost of capital at the time of project inception.

Local government has limited ability to raise additional revenue and is already finding it difficult to meet increasing demand for human services while maintaining traditional services and infrastructure.

This model would assist all spheres of government by investing in much-needed public infrastructure while stimulating the national and regional economies. It's a model worthy of consideration by all three spheres of government.

Source: ALGA Media Release, 7 November 2004

A challenge for Australia is to unlock its growing pool of private-sector capital for the nation's infrastructure investment needs so as to enhance productivity and exploit new trade opportunities and integration with the world economy.

Summary

New models for infrastructure provision and financing continue to come forward. The evolution of the "classical" model to "mixed" and "private" models is still under way. Major influences in the evolution of these models are the forces of globalisation, government fiscal policies, Australia's federal system, and financial market reform and change. It remains a challenge for leaders in Australia's public and private sectors to stimulate and direct the forces of change into effective new models that will better drive Australia's economic growth and productivity enhancement.

End notes

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4 Infrastructure Investment: Financing and Technical Issues

Forward–looking solutions to Australia's infrastructure problem in the areas of financing, risk, return, governance and the issue of sustainability are discussed in this chapter.

4.1 Timely service delivery and globalisation imperatives

The nexus between infrastructure investment and economic growth was discussed in Chapter 2, and the importance not only of overcoming Australia's current infrastructure backlog, but also of pressing on with new investment, was underlined.

Timely and adequate infrastructure provision that embodies state-of-the-art technology and is responsive to contemporary market signals is of vital importance. Valuable economic growth and productivity gains could be foregone if Australia's infrastructure assets are not quickly brought up to, and maintained at, world best practice. Globalisation and new trade and investment opportunities are drivers of this need for a new "rapid response" attitude to infrastructure investment as the Productivity Commission has recently stressed (see Box 4.1).

Rapid advances in technology and the drive for efficiency gains in business supply chains have also increased the need for more flexible and responsive institutional arrangements.

Box 4.1

The significant challenges ahead

... Increasing integration of the world's economies will provide significant rewards to countries able to respond efficiently, flexibly and innovatively to changing patterns of demand, technological change, shifts in underlying comparative advantage and the increasing mobility of global capital to take advantage of those shifts. For example, though a resurgent China is viewed by some as a threat, very strong economic growth in that country is opening up a myriad of new export opportunities, as well as giving businesses and households in Australia and other countries access to a range of better and cheaper goods and services.

Equally, these changes in the global economy mean that the competitiveness of particular sectors will change over time. Thus, ... Australia's terms of trade for primary product exports have been in long-term decline. And, in the future, Australia's mining sector – currently our largest export earner – is likely to face increasing competition in overseas markets from new sources of supply. Countries which do not have economies capable of readily adapting to such changes in competitiveness will see their standards of living fall, at least in relative terms.

Source: Productivity Commission 2004, *Review of National Competition Policy Reforms*, October, pp. 146–7

Rapid advances in technology and the drive for efficiency gains in business supply chains have also increased the need for more flexible and responsive institutional arrangements. Government/private-sector initiatives, such as The Australian Logistics Council and Intelligent Transport System Australia Inc., are examples of how new technology can be more creatively applied to enhance infrastructure efficiency and improved competitiveness (ALC 2004; ITSA 2004).

Prominent examples of new technology impacting on Australia's existing infrastructure stock are provided by the $100 million upgrade at Sydney airport to accommodate the new A380 Airbus in 2006, which will result in greater efficiency from uninterrupted air travel for 15,000 km and seating for 550 passengers. The

new infrastructure capacity to support such large-scale jet aircraft in international airports is likely to generate ongoing technological innovations as other airline providers compete for market share. Therefore timeliness in implementing necessary airport infrastructure such as longer runways and upgrades to terminal facilities is crucial to capture the technological benefits accruing from current, as well as future, innovations.

As the Australian government notes in *AusLink* (2004, p. 67):

... capturing the full and immediate efficiency gains from the new larger scale container ships depends on infrastructure in Australia becoming more flexible and timely.

… Ongoing technological improvements to vehicles, ships, trains and aircraft as well as to roads and rail infrastructure and fuels, will continue to contribute to better transport outcomes. … Incorporating technology, such as Intelligent Transport Systems and Global Navigation and Satellite System applications, into infrastructure solutions can deliver significant benefits. Estimated additional benefits associated with Intelligent Transport Systems are forecast to increase to $2.1bn by 2012. The Australian Government will consider technology-based solutions as part of, or alternatives to, the construction of new infrastructure or as increases to the physical capacity of existing infrastructure. Funding support for applied research and development will also be considered.

Box 4.2

A vision of rail reform

The escalating freight task and growing passenger numbers pose an urgent challenge to the transport industry and governments. Sound economics and informed discussions must be progressed to provide optimum solutions or the national economy will suffer.

The Australian rail industry is seeking a COAG sponsored microeconomic reform agenda that encompasses inter-capital city freight, regional and urban freight and passenger transport. The reform agenda needs to be able to deliver a new framework that fosters private sector investment by removing distorting competitive policies, such as road pricing, and delivers timely and transparent public sector investment. These should both occur within an agreed forward planning framework.

Source: Bryan Nye, Chief Executive Officer, Australasian Railway Association

The importance of flexible infrastructure provision in responding to larger capacity transport is also evident by the planned $400 million channel-deepening project at Port of Melbourne, and road and rail infrastructure upgrades surrounding the port. Currently, insufficient depth is preventing larger capacity container ships from docking at the port if they are fully laden, while only 30 per cent of container ships can leave at full capacity. This [deepening] will lead to greater efficiencies for downstream export industries and in turn generate further innovations in larger container ships. Therefore, capturing the full and immediate efficiency gains from the new larger scale container ships depends on infrastructure in Australia becoming more flexible and timely. For example, according to evidence presented to the Productivity Commission, the 600 or so new container ships being built around

the world in the next two years would not help Australia because many Australian ports were inaccessible to these new-generation ships, which are much bigger.[1]

Consumer demand change can also have unexpected consequences for infrastructure. This is most recently evident in the demand for home air-conditioners leading to unforeseen summer demands for electricity. In turn, summer supply interruptions are a concern for manufacturing industries triggering equipment malfunctions and production losses. As noted also in Chapter 3, businesses have expressed fears that "dividend-stripping" of public enterprises by their governments will affect the ongoing ability of utilities to address maintenance and supply problems and respond quickly to changing patterns of demand. The recent significant lifestyle and structural changes in Australia's urban and regional population location (the "sea change" phenomenon) has also raised important questions for the timely planning and installation of infrastructure (see Box 4.3).

The recent significant lifestyle and structural changes in Australia's urban and regional population location (the "sea change" phenomenon) has also raised important questions for the timely planning and installation of infrastructure.

Box 4.3

Sea change group calls for infrastructure funds boost

Federal and state governments have been put on notice: they must increase infrastructure spending in fast-growing regions or face a backlash at their next election.

The National Sea Change Task Force says governments at federal and state level are not contributing enough to improve infrastructure in seaside regional communities.

Many of the communities have a growth rate twice the national average.

Task Force chairman Joe Natoli, the Mayor of Maroochy Shire on the Sunshine Coast in south-east Queensland, says the Task Force will actively campaign against any government that does not contribute significantly more money to infrastructure.

"Anything that we can do in this next three years to make it very clear to the governments that if they don't address the issues in sea change communities, then we'll certainly engage the communities to make sure that they rectify the situation at the polling booth," he said.

Source: ABC News Online, 12 October 2004

The new challenge facing public and private sectors alike is to recognise, capture and maximise the benefits of advanced technology and structural change, and bring to bear Australia's world-class engineering, managerial and financial skills for the long-term advantage of the Australian economy and the nation's quality of life.

4.2 Risk, return and governance challenges for infrastructure

Risk and return

Before the National Competition Policy (NCP), infrastructure in Australia was almost exclusively installed and owned by governments. Over the last ten years, Australia's major airports and gas pipelines have become privately owned and operated. Rail freight is substantially private, while the ownership of electricity

generation, transmission and distribution remains mixed. While water and ports remain mainly in public hands, along with roads and public transport, this is under challenge as evidenced by the recent National Competition Council draft decision in favour of third-party access to Sydney's sewer system.

The growing role of direct and PPP related investment by the private sector in public infrastructure has resulted in a new and different perspective on investment risk and pricing outcomes. It also brings into focus the emerging dilemma associated with public-sector strategic planning becoming increasingly reliant on private-sector investment that may not automatically respond to public planning cues.

Prior to NCP government ownership, strategic planning and investment responses were generally well coordinated, despite the growing pressure to curb expanding budget deficits in the late 1980s.

The post-NCP era will see Australia with a mixed infrastructure "economy", with more complex and demanding market signals, expectations and responses.

The post-NCP era will see Australia with a mixed infrastructure "economy", with more complex and demanding market signals, expectations and responses. With governments no longer keen to borrow at the so-called risk-free interest rate, private investors (either directly in airports, pipelines, some electricity and rail, or indirectly via PPPs) now measure and price a number of risks (such as commercial, legal, operational, regulatory and sovereign) and factor these into their returns. If the return is uncertain, then the investment does not occur or, at least, is deferred until an acceptable risk/return trade-off emerges.

Much hope has been expressed about the ability of PPPs to play a greater role in supplying essential infrastructure. While these can achieve a more acceptable sharing of risks between infrastructure investors and governments, with each side managing those risks they are better placed to mitigate, it is now considered that this PPP type of risk-sharing is better suited to larger, complex projects, such as social infrastructure and toll roads. Depending on where the future lies for investment in water infrastructure in Australia, PPP delivery or direct private investment may also play a key role in that sector.

Both in the UK and in Australia, it is now considered that privately financed infrastructure via PPP frameworks are unlikely to contribute more than 15 per cent of public capital expenditures. In 2004, Victoria's use of PPP procurement accounts for some 14 per cent[2] of that State's public infrastructure investment, or 7 per cent over the past 3 years.[3] It is a lower proportion in other states.

Recent examples that demonstrate private-sector investor behaviour consistent with its requirement for suitable returns include adverse reactions to regulatory settings for the Dampier to Bunbury Natural Gas Pipeline,[4] to draft settings for the Dalrymple Coal Loader,[5] various airport examples,[6] calls by Pacific National for rail access charges to allow for a reasonable profit[7] and the relinquishment by National Express of a Victorian public transport franchise.[8]

Inadequate policy settings are another cause of risk aversion by investors. A current example concerns investment in new, coal-fired base-load electricity generation capacity. New capacity will shortly be required in Victoria, New South Wales (NSW) and Western Australia (WA). The lack of a national carbon-trading scheme is, however, cited by investors as a key impediment. This favours short- to medium-term investment in higher priced gas peaking generation. While the recent Energy

White Paper offers incentives for new technologies to deal with carbon dioxide emissions, investors seem to be sceptical for the moment that these measures provide enough certainty.

Evolving greenhouse gas science, a dynamic international treaty scenario, and rapidly converging energy supply and demand all conspire to promote short-term solutions that necessarily result in higher prices to reward reluctant investors.

The post-NCP infrastructure world is also challenging governments that have not privatised key economic infrastructure to address key maintenance and expansion investment needs in a more timely fashion. This is particularly evident in the public transport, electricity and water sectors.

Taxpayers should not need to bear risks of poor infrastructure decision-making. Nor should they carry the risk of operational and commercial outcomes in an increasingly market-based provision of infrastructure services. These are better borne by equity investors. For example, taxpayers were left with a bill for $1.6 billion from failed electricity hedging activity by corporatised businesses in NSW and Queensland. Taxpayers in NSW also carried some additional costs for the Airport Rail Link, but effectively received in return a lower cost rail line and stations, subsidised by the losses carried by equity in that project.

There are also numerous examples of traditional procurement of infrastructure leading to cost over-runs and thus crystallised risks ultimately costing taxpayers. The Federation Square project in Melbourne is a recent case in point and the Victorian Regional Fast Trains look like following this trend.

There is now increased market pressure in response to international competition for governments to invest when the need is evident, not just when fiscal and electoral cycles make it convenient.

There is now increased market pressure in response to international competition for governments to invest when the need is evident, not just when fiscal and electoral cycles make it convenient. The surplus from earlier over-investment in energy and water infrastructure has been consumed in this country and new investment is needed to more closely match supply with demand (after allowing for appropriate demand management measures), while allowing prudent reserve capacity.

With governments also subjected to regulated pricing, they too need to adopt a commercial view of risks and returns to conserve scarce capital and avoid waste. For example, bidding for complex PPPs is time-consuming and expensive. In the case of the Mitcham–Frankston Project the bid costs for the two bidders were approximately $30 million each, with only one winning party. Running bids on this scale is a major drain on the resources of the building and construction industry. Consideration needs to be given as to how these bids can be better managed while giving as good an outcome for government.

Standardisation of contracts would assist in reducing bid costs. While every project has its specific contractual requirements, it would be sensible if governments could move closer to some commonality in the structure of contracts (Holmes á Court 2004). The Victorian Treasury has initiated a project aimed at achieving standardisation of contractual terms in Partnerships Victoria projects.

Standardisation of technology is also important. For example, new toll roads in Victoria, NSW and Queensland have different electronic collection methods and a standardisation of the process occurred after the investment, leading to considerable inefficiencies. While the tolling technologies were in some cases emerging and a

standard was difficult to achieve, a national set of protocols was made more difficult due to the individual approaches taken by individual states. But even now with standardisation of the collection processes, the back office collection processes between systems is cumbersome and expensive. Another illustration of the problem is reported in the *Courier Mail*, which noted that Brisbane motorists will have to wait until the new North South Bypass Tunnel in 2009 before they could use the same e-tags to travel through tunnels in Sydney and Melbourne. Reportedly, tunnel tolling companies were working towards a uniform system similar to those in automatic teller machines, where one card worked in all ATMs regardless of the financial institution.[9]

As noted in Chapter 3, an emerging challenge for Australian infrastructure is to develop further the opportunities for infrastructure investment by Australian superannuation funds. This rapidly growing savings pool is looking for medium- to long-term investments with lower risk profiles and commensurate returns to satisfy their requirement for secure future payments to members. The reduced availability of government bonds, a result of lower borrowings, is also contributing to this search for alternative "secure" investments.

Taxation is a further issue impacting on risk and return of infrastructure investment in Australia.

Overall, all investors seek higher levels of certainty than appear to be available in parts of this infrastructure market, hence one reason for diversifying offshore. This outcome creates the risk of reduced domestic competition for available opportunities, which can result in less keen pricing. This is one market mechanism to re-balance risk and returns. Another approach is to seek government guarantees or subsidies, otherwise termed "rent-seeking". While no doubt appropriate for services that include a community service obligation (CSO), transparent mechanisms are needed to ensure that these are efficiently priced (for example, auction processes based on the lowest subsidy bid).

Major city infrastructure in Australia generally offers sufficient critical mass to allow private financing without added public subsidies (except public transport). This challenges the nation to create a framework for regional, remote and common-user infrastructure that will allow a greater role for private investment in support of public priorities. Solutions deserving of examination include the creation of revolving development funds, depreciation benefits via the taxation system, regulatory holidays, taxation support of "shadow" payments to investors to replace "user-pays" cash flows, and the reintroduction of a robust and resilient infrastructure bond instrument. In this context, a financing proposal recently advanced by the Australian Local Government Association has been outlined in section 3.4.

Taxation is a further issue impacting on risk and return of infrastructure investment in Australia. Over the past 20 years the Commonwealth enacted taxation rules designed to limit the capacity of the states and territories when they acquire certain assets and services (substantially associated with the infrastructure sector) from private-sector providers. This is due to the creation of tax transfer benefits to the states and territories at the expense of the Commonwealth tax base. These arise from the taxable entity in the transaction securing tax deductions from the company taxation system administered by the Commonwealth.

These transaction limiting rules were labelled "anachronistic" by the Ralph Review of Business Taxation in 1999 (Report of the Review of Business Taxation 1999),

particularly in an emerging era of growing private-sector investment in public infrastructure. However, almost five years on from this seminal review, amending legislation designed to remedy this limitation still has not entered the national Parliament.

Australia suffers from a condition of fiscal stress disorder between the Commonwealth, states and territories in the infrastructure investment area. This loads transaction costs, adds many months to project approval time lines and introduces uncertainty for project proponents who choose not to seek up-front binding taxation rulings. Resolution of this tax impediment rests with the Commonwealth. As observed in the *Business Review Weekly* recently, "... Only about 30 per cent of infrastructure investment is made at the Commonwealth level and this imbalance is a source of tension between the Commonwealth and the states over infrastructure development. State governments obviously pay less for new infrastructure if they can offer structured tax arrangements to investors, but the loss of revenue from such arrangements hurts Commonwealth finances" (BRW 2004, p. 20).

Australia suffers from a condition of fiscal stress disorder between the Commonwealth, states and territories in the infrastructure investment area.

Governance

With public infrastructure now split between fully public (roads, most water, some energy and most ports), fully private (airports, some energy, gas pipelines, some ports, telecommunications and some water) and mixed (water and road PPPs and public transport franchises) ownership, new governance challenges have emerged.

Despite these ownership and operational changes, public interest issues are foremost in government accountability for continuity of service provision. Thus there is now a need for an effective public–private interface that meets public interest outcomes. So while there is direct government accountability when, for example, corporatised electricity businesses fail to serve the public interest, the situation becomes complicated when a private provider is involved.

Box 4.4

A vision of governance

Infrastructure is not only about efficiency and productivity. Good transport infrastructure is also safe infrastructure.

The facts today are:

- five people die and 60 are seriously injured every day from road crashes; and
- inadequate road infrastructure is the major cause of death and injury.

Today's vision must be to invest now to achieve by 2010 a road network that is not only productive, but safe. In Sweden the view is that with safe roads, safe cars and safer drivers, no one should die in a crash. We must have such a "Vision Zero" approach to casualties and death on our roads. We must change the current inadequate infrastructure planning and decision processes and invest for the future in a new and effective national way.

This will require a shift in thinking across the community, so now is the time to start.

Source: Lauchlan McIntosh, Executive Director, Australian Automobile Association

The latter challenge was evident during the failures at the Longford gas plant in 1999 and Moomba in 2003. Emergency procedures worked well in both cases but government accountability could be held only to the effective operation of those procedures, not for the infrastructure outcomes themselves. The same might be said about the customer relations for a toll road.

The most challenging post-NCP governance issues for infrastructure has been the development of access and pricing regulations for monopolistic infrastructure. Promised a "light-handed" regime from the outset, private owners instead rapidly found an intrusive "heavy-handed" regime focused on prescriptive outcomes and intervention in operational issues.

... in response to growing acknowledgment of investment shortcomings, regulatory arrangements have improved somewhat from the investor perspective.

Investors argue that more efficient and timely investment outcomes, including acceptable pricing, can be achieved by leaving service providers and users to negotiate terms, with resort to regulators only in the role of arbitrators. If price monitoring is included in the policy mix, regular reviews can provide the necessary checks to guard against unreasonable pricing outcomes. Adverse findings from such reviews may then be used as a trigger for more onerous direct regulation of service providers.

Onerous regulation should therefore be a last resort not a first resort (see Box 4.5).

Box 4.5

There are widespread concerns about current regulatory practices

Virtually since inception, a consistent theme from regulated service providers has been that these arrangements have not worked well. This message was again evident in this inquiry, especially from the electricity sector. Generic concerns about current regulatory practice include:

- the intrusiveness of regulatory price-setting and oversighting arrangements, leading to considerable transactions costs for both firms and the regulator;
- inconsistencies in approach across jurisdictions, with the plethora of regulators adding further to transactions costs;
- an undue emphasis on encouraging the efficient usage of existing services, rather than providing appropriate incentives for new investment and asset maintenance; and
- over-emphasis on "building-block" approaches to price-setting, with inadequate attention given to less intrusive approaches such as "yardstick" competition (linking allowable price increases to average improvements in sectoral productivity) and "price service offerings" (effective removal of controls on prices other than for a "baseline" level of service)."

Source: Productivity Commission, October 2004, *Review of National Competition Policy Reforms*, p. 235

More recently, possibly in response to growing acknowledgment of investment shortcomings,[10] regulatory arrangements have improved somewhat from the investor perspective. This is evidenced in the decision before the sale of Sydney Airport to move major city airports to a five-year price-monitoring regime.

Strong investment outcomes have flowed in the airports sector since 2002, delivering new capacity and high-quality services under commercially negotiated agreements without the regulatory gaming that used to plague airport–airline relationships.

Major gas pipelines are seeking a similar move to price-monitoring to replace more intrusive price regulation. Rail track owners also require access arrangements, which will be priced so as to allow a profit on their track investments. This may be difficult while there remains a lack of neutrality, as compared to heavy vehicle charges for road use.

Apart from the annual "Statement of Opportunities" issued by NEMMCO, which outlines transmission requirements and generation supply and demand analysis for the electricity market (soon to become the energy market), only the Report Cards of Engineers Australia and the *AusLink* initiative seeks to provide a national perspective on strategic infrastructure priorities. *AusLink*, however, is unsatisfactory on implementation as it involves difficult conditional bilateral agreements with state and territory governments to give it effect.

On a piecemeal basis, there are emerging various state or regional infrastructure strategies or plans, but without parallel investment commitments they risk becoming mere political rhetoric. Further, these plans continue to be set by government, albeit with increasing levels of public consultation, but with no significant investor input. Consequently, they risk being ignored by investors if the level of risk exceeds the available returns once these opportunities are put to the market.

... the absence of a standing capacity to identify and measure desirable economic infrastructure outcomes and their preferred timing may prove to become a key impediment in the next round of NCP reforms.

From a national perspective, the absence of a standing capacity to identify and measure desirable economic infrastructure outcomes and their preferred timing may prove to become a key impediment in the next round of NCP reforms.

National leadership and direction is now relevant to determining priorities for ensuring robust supply and demand management to optimise the available economic, social and environmental benefits that appropriate infrastructure can provide. These challenges should no longer be for the relevant state or territory to determine in isolation from Commonwealth and private investor inputs.

At the very least, the time is now appropriate for developing an annual statement for transport, telecommunications and water sectors that is similar to the NEMMCO "Statement of Opportunity" for the energy sector (see Box 4.6). Such a statement should be prepared under COAG guidance and involve appropriate private investor and operator input.

Should the market fail to respond in a timely way to the opportunities identified in these statements, follow-up reviews can pose relevant questions to identify reasons for market failure, in much the same way that Productivity Commission reviews currently do. Thus governments can be sent early investor-sourced signals about inappropriate policy, approvals or regulatory settings.

Box 4.6

NEMMCO statement of opportunity

The National Electricity Market Management Company Limited (NEMMCO) prepares the Statement of Opportunities (SOO) for publication by 31 July each year. The National Electricity Code (Code) requires NEMMCO to provide information about the adequacy of NEM electricity supplies to meet projected electricity demand for the next 10 years.

In a new initiative resulting from a Ministerial Council of Energy request in 2003, NEMMCO now publishes an Annual National Transmission Statement (ANTS).

The NEMMCO publications are an example of how a rigorous analysis of infrastructure imbalances can be prepared, identifying the situation in each State, and showing which element of the electricity supply chain requires priority attention.

Source: Statement of Opportunities, July 2004, The National Electricity Market Management Company Limited. For further information: www.nemmco.com.au

The concept of integrated governance raises new questions and issues for the future.

Policy questions relating to governance, and how it might shape further micro-economic reform in Australia, have been analysed in-depth in a major report by the Allen Consulting Group for the National Competition Council (NCC 2004, pp. 109–110). This report distinguishes between governance in two particular contexts:

- regulatory reform; and
- integrated governance.

The report stresses that "... improving regulatory governance is not an objective in itself; it is always a means to an end, or a series of ends such as:

- improving economic performance;
- improving government effectiveness and efficiency; and
- enhancing democratic values such as government openness, self-reliance, public participation and responsiveness."

The concept of integrated governance raises new questions and issues for the future. As is observed in the report:

> *… Integrated governance is an acknowledgment that reforms need to be undertaken on an integrated basis with solutions that cut across traditional departmental lines, ministerial responsibilities, Commonwealth–State regulatory responsibilities, and even sectors – government, community and business.*
>
> *… The concept of integrated governance incorporates some element of "mutuality", as opposed to individual action. The focus on individual actions by government in recent years is being modulated by a resurgence in the use of collective action. A subset of collective action is mutuality.*

This means mutuality at any point in terms of shared responsibility for policy development, planning, implementation and evaluation. Activities which fall under the concept of integrated governance can include: pooled budgets; triple bottom line analysis; partnerships with the private sector; partnerships with other levels of government; coordination of service delivery; broad policy frameworks; integrated planning; "one stop" shops; summits/roundtables. visioning; networks; and, joint databases and indicators. Fundamentally, the concept incorporates an acknowledgments of mutuality and a movement away from a silo mentality" (NCC 2004, Chapter 14, pp. 109–110).

4.3 Sustainability and infrastructure provision

The 2001 Infrastructure Report Card (EA 2001) told a dismal story about the condition of Australia's infrastructure. If anything, matters have worsened over the last three years. The results showed the inadequate status of some of Australia's infrastructure, a critical foundation stone of the nation's economic, environmental and social performance. Of particular concern were water, energy and land transport infrastructure.

Congested road infrastructure imposes significant economic costs.

These assets have recently been highlighted by Treasury, the Productivity Commission and the National Competition Council as reform priority areas. The challenges in these essential asset classes include water constraints in urban areas, transport congestion, delayed large-scale infrastructure replacement and the suggested need to respond to climate changes as a result of carbon emissions.

Road safety and congestion

Congested road infrastructure imposes significant economic costs. Apart from lost productivity through traffic delays, congestion also contributes to air pollution and accident rates and the costs associated with these. Urban congestion prolongs emission output and hence increases the health costs of air pollution related illness (BTRE 2000). Australia's bill from early deaths and other health effects of traffic pollution range from $2.7 to $3.9 billion (AusLink 2004, p. 11).

Despite safer vehicles and roads and driver behaviour yielding excellent results in recent years (the national road toll declined by over 50 per cent between 1981 and 2002), the drop in road fatalities has reached a plateau and the current costs of road accidents in Australia still totals over $15 billion per annum, or almost 2 per cent of GDP (BTRE 2000). As the Australian Automobile Association observes, "... fixing the roads has a greater potential to save lives than most people think. The federal government's National Road Safety Strategy estimates that by 2010 around 332 lives could be saved each year through improved roads, 175 because of safe vehicles, 158 by better driver behaviour and 35 by the use of new technology. You shouldn't die from making a simple mistake on our roads. Our infrastructure needs to be designed with safety at the forefront" (Australian Automobile Association 2004).

... infrastructure is not keeping pace with outer-urban and coastal population expansion.

Box 4.7

A vision of road freight

A safe and efficient road freight transport system needs a combination of good-quality road infrastructure, skilled labour force, investment by trucking operators, efficient communications systems and balanced, progressive road transport regulation. Australia's arterial and local road networks have improved over the past 20 years; however, the forecast doubling of the land transport freight task by 2020 highlights the need for increased investment in road infrastructure to address this freight transport challenge as well as the requirements of private motorists using the Australian road network.

A cooperative effort is required between all three levels of government and, where appropriate, private investment, to complement the massive capital investment of Australia's 36,000 trucking operators. *AusLink* offers the potential of a cooperative framework to identify, prioritise and deliver a program of road maintenance and development targeting Australia's freight corridors. The contribution to the funding of this program from the trucking industry is considerable through net diesel excise revenue and truck registration charges.

The vast majority of non-bulk land freight in Australia is carried efficiently and safely by the trucking industry. This is not forecast to change. Thus the need to expand and enhance our road network will remain an on-going priority for all Australian governments into the future.

Source: Chris Althaus, CEO, Australian Trucking Association

Urban and coastal expansion ("sea change")

Most cities in Australia are currently addressing the issue of urban development, with many releasing their plans for accommodating growth. These approaches to long-term planning are an encouraging sign that cities are confronting urban growth issues, albeit independent of national objectives and policy guidance. As a consequence, infrastructure is not keeping pace with outer-urban and coastal population expansion. Rapid growth (particularly as we have seen in coast areas) without integrated planning and careful consideration of the knock-on effects leads to a number of issues. These include further traffic congestions, water supply and quality pressures, and inadequate services to meet increased house and office demands. All of these factors combine to undermine the liveability of these places for residents and reduce their attractiveness to visitors.

Energy

Possibly the greatest challenge faced by the energy sector globally is the threat posed by rising greenhouse gas emissions and climate change. In Australia's case we face substantial challenges: how to maintain reliable energy supply at internationally competitive costs, in a world where it is increasingly likely that some form of cost will be imposed on carbon emissions in the short to medium term (if not in Australia, then by our trading partners). Being a largely fossil fuel dependent nation (with long–lived assets and lead times), Australia is particularly susceptible to any adverse impacts that may arise from a cost being placed on carbon.

Uncertainty about Australia's long-term emissions policy may be impacting negatively on investment in energy-related assets because investors are experiencing difficulty estimating the likely future cost of carbon-based energy sources and any future carbon regime. The Energy Supply Association of Australia states: "One of the biggest sovereign risk issues facing the energy sector is future Government policy and measures on emissions" (Energy Supply Association of Australia 2004). Similarly, the Productivity Commission recently noted that "divergent approaches to greenhouse gas abatement across jurisdictions, as well as uncertainty about future policy directions are impeding necessary investment in many parts of the economy" (Productivity Commission 2004). Early action to provide greater uniformity and policy certainty in this area is therefore very important.

Uncertainty about Australia's long-term emissions policy may be impacting negatively on investment in energy-related assets ...

Despite these concerns, and while other countries are lowering energy demand per person, Australia's energy usage continues to rise. Halting the growing peaks in electricity demand, which are primarily a result of increased household use of air–conditioners on hot days, is a major community demand management issue.

Water

Australia faces three key challenges in the management of water:

- current extraction levels exceed sustainable limits in may areas of both urban and agricultural use;
- climate change and its potential to reduce rainfall or increase its variability; and
- salinity and nutrient concentrations reducing water quality.

While Australia's total water use represents only one-third of total sustainable flows, some water sources are over-used because the areas of greatest rainfall do not coincide with the areas of greatest usage. For example, extraction levels from the Great Artesian Basin, which is Australia's largest groundwater sources, exceed sustainable limits by 15 per cent in some parts, resulting in decreased flow pressure. Similarly, surface water along the east coast of Australia and inland NSW is fully utilised and in large areas over-allocated. Over-allocation is problematic for both water users and the environment. It reduces the reliability of water supply to users and creates substantial and sometimes irreparable damage to the environment.

Current urban water infrastructure is also being used at near-maximum capacity in some of our major cities. This is most evident in Sydney where consumption has exceeded sustainable yield by 5 per cent, or 30 gigalitres on average over the last three years. But other major cities, including Melbourne, Adelaide and Perth, also face current and substantial supply problems.

Compounding a potential issue in the future, CSIRO forecast that climate change could culminate in reduced rainfall and higher evaporation rates in key regions of Australia. A continuation of existing water management practices and approaches to water infrastructure will produce major gaps in the future. These will include further urban water shortages, barriers to economic growth (particularly in agriculture) and adverse environment consequences.

It is therefore not surprising that the Report Card showed Australian infrastructure delivery and performance were unsustainable, even within a limited interpretation of that term. The challenge is even greater if the nation is to aspire to a population growth rate high enough to maintain recent economic growth rates. The Treasury's

own predictions that Australia will grow at a lower rate over the next 40 years than the last 40 years are a wake-up call to fix ailing and under-specified infrastructure to plug the economic growth gap and address the need for best practice outcomes in support of higher levels of international competitiveness.

Infrastructure assets and services need to be provided on a "whole-of-asset-life" perspective to optimise capital and maintenance outcomes; allocate delivery and operational risks sensibly; and deliver better value for investors, consumers and taxpayers. Better environmental and social outcomes are essential elements of continuous improvement in an era when unsustainable consumption of the "commons" is so evident – to the detriment of climate, clean air and healthy water. Clearly, the more advanced and efficient the economy the greater the ability to manage such impacts.

It is necessary to account in economic terms for the external costs associated with environmental and social aspects of infrastructure delivery ...

It is necessary to account in economic terms for the external costs associated with environmental and social aspects of infrastructure delivery, such as physical and supply security in an insecure world, emissions and waste, questionable operational efficiency, safety, and amenity. Increased stakeholder contribution through the life of an infrastructure facility to the identification and monitoring of agreed sustainability indicators is very desirable. If sustainability is a journey, not a destination, then indicators are the milestones.

Shifting Australia from a carbon rich to a carbon-constrained energy economy, drought-proofing our towns and cities, and dealing with embedded logistical inefficiencies and external cost on our road and rail systems require a national infrastructure re-investment effort over several decades. The national development challenges of the post-war years are upon us again.

Australia needs a national framework for the development of infrastructure to take account of its environmental and social aspects as well as the economic. A strong case needs to be made for infrastructure development that embeds sustainability principles to become a core driver for national development goals.

To achieve these goals – efficient land transport modes, networks and nodes, low carbon energy production, and sustainable water capture and use – will require a multi-partisan reworking of the basis for cooperation and coordination within Australia's federal system. From an infrastructure perspective, desirable outcomes might include:

- a nationally coordinated infrastructure outlook which articulates a 25-year strategy and a 50-year vision;
- integrated planning, or processes that result in effective frameworks for land use, new works, maintenance and project management;
- policies on use of sovereign debt for national investment outcomes combined with prudent debt limits; and
- accelerating the application of private capital for infrastructure investment in lieu of undesirable levels of public debt.

Given its location and population density in a dynamically competitive world, Australia cannot afford to delay national infrastructure investment opportunities over the next 25 to 50 years. The challenge of sustainable development is such that a long-term vision backed by a rolling implementation plan is essential.

Clearly, the relationship between economic growth and sustainability of our key infrastructure assets must be thoroughly understood and planned around it. The opportunity offered by striving for sustainability acts as a significant rallying call and incentive to build effective partnerships between governments and between the public and private sectors, together, thus including constructive discussion with, and the concerted involvement of, community stakeholders.

Box 4.8

A vision of Australian infrastructure

By 2025, all sectors of Australian economic infrastructure will have reached a 21st century engineering standard and will operate within the top quartile of internationally benchmarked performance. As a geographically large nation with a limited population, we cannot afford anything less demanding, economically, socially or environmentaly. This will mean extensive, efficient and competitive connectivity between communities by road, rail and broadband, drought-proofed settlements and substantial progress towards a sustainable energy supply which promises negligible greenhouse impacts. Private investment, supported by Australian retirement savings, will play the dominant role in meeting the nation's infrastructure needs.

Source: Dennis O'Neill, CEO, Australian Council for Infrastructure Development

Clearly, the relationship between economic growth and sustainability of our key infrastructure assets must be thoroughly understood and planned around it.

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5 Improving Policy and Institutions

In this chapter we present contributions from four distinguished experts on the topics of:

- ***The role of governments – How can it be improved?;***
- ***Utilising private-sector management expertise;***
- ***Establishing new institutional structures and decision-making tools; and***
- ***Fiscal policy in Australia: Some thoughts on change.***

5.1 The role of governments – How can it be improved?

Dr John Uhr[1]

The secret to improved involvement in infrastructure by Australian governments is better inter-governmental decision-making. The federal government is good at managing public revenue, and the other levels of government are good, or are at least getting better, at managing public expenditure. Each level of government contributes to national policy outcomes, and public policy in general is better when each level accepts the legitimate role of other players in the federation.

The secret to improved involvement in infrastructure by Australian governments is better inter-governmental decision-making.

Alas, there is no secret formula for better federalism. What works in one policy area does not necessarily work in other policy areas. Micro-management by the Commonwealth is no better a general rule than is state or territory "autonomy". Federalism is necessarily an evolving policy mix. Accordingly, a state premier like Bob Carr can raise the possibility of a federal takeover of hospitals and a federal minister like Brendan Nelson can raise the possibility of the states relinquishing control over universities.

If I had to bet, I would say that the federal government is likely to have an increasing role in the policy framework for Australian infrastructure. This is so not only because the current institutional architecture of COAG reflects the preponderant power of Canberra, but also because the world situation increasingly favours central governments.

Inter-governmental relations now includes international relations. Just consider the dreadful tragedy of the Asian tsunami, which highlights many of the infrastructure roles of governments in the contemporary world. This tragic event can serve our purpose because it illustrates writ-large many of the competing infrastructure demands on governments. The issues are urgent and the problems very practical. The policy sciences have many tidy theories about appropriate models of government involvement in infrastructure. However, like many academic models, these are often behind the times and out of step with current practical developments in international governance.

Why international governance? This question about international dimensions introduces the first infrastructure lesson coming out of the tsunami tragedy. National governments have many roles in relation to many areas of public policy, and most are increasingly international in character. The roles taken on by national governments reflect changing international expectations. Inter-governmental management once meant federal–state relations, but it has now expanded to include international relations.

Infrastructure is not immune from these machinery of government developments. In response to the Asian tsunami, the Australian government initially devised an aid strategy to direct Australian funds to areas in need of immediate relief. Then

during the prime minister's visit to Indonesia in early January came the huge program of targeted assistance, mainly for infrastructure development in Indonesia.

The first helping hand was an act of charity, providing relief to those most in need. But the second helping hand was an act of very deliberate policy to invest in infrastructure because it provides the opportunity for needy countries to rebuild themselves as sustainable social entities. The decision to channel the Australian infrastructure assistance through a joint Australian–Indonesian commission also illustrates the role of inter-governmental institutions in the emerging world of international infrastructure.

This story of Australian international involvement is one very dramatic example of a government role in infrastructure that would not appear in many public policy textbooks. It illustrates a national government taking responsibility for very considerable budget expenditure to promote basic infrastructure in a neighbouring country and region. The government action is not hard to explain in terms of politics and international policy, and not hard to justify in terms of effective aid strategies. But for present purposes, the relevance is what it tells us about the increasingly international roles of government involvement in infrastructure, including the marshalling of domestic Australian expertise in "exporting infrastructure".

... financial infrastructure is no less important, and that of course depends increasingly on communications infrastructure.

Australia as a national government here has a huge role on the international stage as a purchaser of infrastructure expertise, leading to many opportunities for interchanges between "the infrastructure industry" in Australia and overseas, all set in motion by deliberate government action. The fact that domestic Australian policy has seen the relaxation of direct government control of many areas of infrastructure does not erase the understanding that Australian politicians have of the fundamental role of government in generating infrastructure, either directly or through managed market mechanisms.

This story also illustrates the wide range of infrastructure attracting government interest. The physical infrastructure of roads and bridges is among the most urgent of necessities. But financial infrastructure is no less important, and that of course depends increasingly on communications infrastructure. All in turn draw on, and also impact, on the social infrastructure, which is an area where many of the civil society aid-providers identify their greatest challenge. Government has roles in each of these forms of infrastructure, more as manager and regulator than as provider, protecting "the public interest" against the predictably narrower interests of many infrastructure providers – including providers of social infrastructure, which is a field just as open to provider capture as many other fields.

We can turn our sights internally as well. This international story is really only the latest chapter in the inter-governmental story of the public management of infrastructure. Australian Federation arose in large part because of colonial fears about national insecurity and the need to devise a capacity for continental defence in the hands of a national government. National security is about the most central and basic role that governments perform, and the Australian Constitution places national defence firmly in the hands of the national government.

Thus a central role for the new national government after Federation was development of defence infrastructure, with national coordination not only of defence forces but also of national defence preparedness. If anything, it was defence

policy that initially got Australian governments centrally into political decisions about infrastructure development. Many other public policies, particularly agriculture and later regional development, reinforced this historic interest in the framework of national infrastructure.

Although the thrust of government-initiated micro-economic reforms of the 1980s and 1990s has put many infrastructure facilities into commercial rather than government hands, larger developments in the international scene means that national governments will find new ways to exercise controls over "the infrastructure industry". Once again, national security will drive government involvement. One only has to look at the remarkable consolidation of national powers mobilised in "the war against terrorism" to see how Australian national governments can orchestrate governmental controls over the deployment of core infrastructure, from traditional forms like ports to contemporary forms like telecommunications. Government might not be the monopoly provider it once was, but it still retains its role as public manager and protector of "the public interest" to give it leverage over national infrastructure.

Government might not be the monopoly provider it once was, but it still retains its role as public manager and protector of "the public interest" to give it leverage over national infrastructure.

Of course, just as governments have many roles and responsibilities in managing infrastructure, so too "the government" has many faces and different voices. In Australia, "the government" means the many local governments, as well as the six state and two territory governments, in addition to the Commonwealth government. And every level of "the government" has its own distinctive separation of governmental powers. For example, the federal government frequently speaks in several tongues, with Parliament (or more particularly the Senate) often acting independently and expressing competing expectations of infrastructure policy and practice.

And not all federal bureaucracies sing the same tune, some being noticeably more pro-market and pro-competition than others closer to traditional government-monopoly provider groups. Consumers can benefit from competition within and across governments. But not all the public authorities act in conformity with agreed national infrastructure action-plans, as the federal Productivity Commission does its best to publicise. If only there were an international equivalent of the Productivity Commission to report on international infrastructure efficiencies!

With the changing international scene, one thing at least is certain: central governments will have renewed incentives to modernise public infrastructure. They cannot do it all themselves and, just as importantly, there is little they can do without the cooperation of other levels of government – just as internationally, few nations can do much to promote international security without the cooperation of those nations and peoples seeking improvements. Australian contributions to international reconstruction in the wake of the Asian tsunami reflected independent cooperation across governments and civil societies. So too the future of Australian infrastructure policy must draw on diverse stakeholders in and out of government.

5.2 Utilising private-sector management expertise

Peter Taylor[2]

Engineers Australia is the peak professional association representing engineers in Australia, and has about 75,000 members. Since its formation in 1919, Engineers Australia has recognised that Australia's vast distances and climate make it reliant on efficient infrastructure. Therefore, the state of the nation's infrastructure has been high on our agenda.

Every decade our interests change. In the 1990s, the infrastructure issues of importance for us included:

- privatisation and corporatisation, and how these affect strategic planning and continuity of supply;
- competition policy and competitive neutrality, and how to ensure that investment levels match business and community needs;
- downsizing and how it would affect future skills availability; and
- public–private partnerships (PPPs) and how government policy and community attitudes contribute to delivering the potential that PPPs could offer.

One way to bring all of these issues together was to produce a national report card on infrastructure. In 1999, we prepared the first report, with a more rigorous and comprehensive report following in 2001. The 2001 Report Card was supported by 20 industry and consumer associations. Sections of national infrastructure were each given a rating in the Report Card. The ratings relate to the concept of "fitness for purpose"; that is, is the infrastructure fit for its current and anticipated purpose?

The only way this will be addressed is by increasing investment in infrastructure from both the public and private sector.

There is no doubt that adequate infrastructure is essential to economic growth and the community's prosperity. The increased need for infrastructure investment will not go away. Tens of billions of dollars will be needed to address the backlog of work, as well as meeting the changing needs caused by the ageing and growing population, and its move to new housing estates and to the coastal fringe.

The only way this will be addressed is by increasing investment in infrastructure from both the public and private sector. Unfortunately, this will not occur quickly, as all major policy shifts move at a glacial speed as institution and cultural barriers must be overcome.

Engineers Australia is proud to have played its part, and made a significant contribution towards influencing government to be more involved in providing Australia with the infrastructure necessary for future economic development. But an issue that needs further consideration is the use by governments of technical expertise to ensure effective strategic planning; continuity of supply; and maintenance of infrastructure for the economic, social and environmental benefit of Australia.

Governments must have the capability to obtain and assess sound advice when required. The critical issue is not where the advice is located, but how the government is guaranteed access to it when needed.

Over the last decade, the Commonwealth, State and Local government public sectors have been reduced considerably in size. This has resulted in a corresponding decrease in the number of specialists (including engineers) within the public sector.

The loss of technical expertise in Australian governments increases the risk that infrastructure contracts will not achieve government or taxpayer expectations.

While governments recognise the need to maintain and retain relevant expertise, changing conditions and contracting practice are often at odds with this objective. There are two areas of divergence often present between government contracting policy and practice. These are:

- *Loss of engineering expertise.* Over the last decade there has been a 20 per cent to 40 per cent reduction in the number of engineers in the Commonwealth, State and Local government public sectors.
- *Focus on contract management skills to the detriment of technical expertise.* In the late 1980s and early 1990s, the shortage of contracting expertise and the reasonable number of technical specialists meant that priority was rightly given to improving the contracting skills of technical specialists. However, since the departure of many technical specialists, the focus on improving contracting skills has overlooked the growing problem of a decline in technical expertise. Both skills are essential to being an informed buyer.

Having and utilising technical expertise in planning, and implementing infrastructure projects is essential.

Having and utilising technical expertise in planning, and implementing infrastructure projects is essential. Access to appropriate technical expertise gives governments the ability to select and justify the option that offers best value for money, select and justify an innovative solution, reduce contractor risks by providing relevant technical details in tender documents, and prevent unscrupulous contractors taking advantage of the buyer's lack of knowledge.

Determining the appropriate level of technical expertise to be an informed buyer is a difficult value judgement. Another challenge facing agencies is the decision on whether the expertise should be in-house or contracted in, and how to obtain and, where appropriate, retain the expertise.

The debate on where it is best for government to obtain technical expertise – either in-house or to contract it in – is not productive. The critical issue is not where it is located, but how the government is guaranteed access to it when it is needed.

Government agencies must explicitly recognise that both contract management and technical expertise are essential for the delivery of sustainable infrastructure.

The engineering contribution can take many forms, including the efficient organisation of resources, technical management and physical design. The greatest contribution from engineers will come from their assistance in the development and improvement of policies, procedures and practices. The secret to maximising the engineering contribution is to make engineers involved from the early stages of any potential project. For a typical structure, about 80 per cent of its costs are fixed after it leaves the concept stage. By including engineering professionals in multi–disciplinary teams, far better outcomes will be generated than if they were only involved after the project has been defined in detail. A multi-disciplinary approach is also essential in identifying potential problems that may prevent a solution from working effectively in a system.

Australia has world-leading engineering and other expertise of relevance to infrastructure. Governments must harness this more effectively to drive the infrastructure dollar further and make industry globally more competitive.

5.3 Establishing new institutional structures and decision-making tools

Dr Vincent FitzGerald[3]

Australia's institutional structures and processes for the planning, funding and regulation of economic infrastructure vary across jurisdictions and type of infrastructure – as does the involvement of the private sector. Current arrangements do work, but in many respects are not optimal. The question addressed here is how these arrangements, and the quality of decision-making to meet infrastructure needs, can be improved.

Clarify governmental responsibilities for infrastructure

Commonwealth, State and Local governments share responsibility for the efficient provision and use of infrastructure. Their respective roles have been shaped by the Constitution, Commonwealth–State financial relations, and history. State governments have the prime responsibility for water, energy and transport infrastructure, although with major Commonwealth involvement. The Commonwealth has sole responsibility for telecommunications. Local governments have a significant role in the provision and maintenance of local infrastructure, including local roads, and in land use and planning.

Current coordination arrangements among governments, including how well they work, a very mixed picture.

Current coordination arrangements among governments[4] are, including how well they work, a very mixed picture:

- On some issues, such as water, current forums including COAG have operated reasonably well. Water-specific national funding and pricing structures are being established, along with corresponding executive bodies.
- In energy, progress is occurring towards integration and national consistency of regulation, but there are still issues of "turf" and overlap to sort out, and differing approaches to public versus private involvement in energy. Climate change policy (also affecting land use) is one key area where national consistency has not yet been achieved.
- In transport infrastructure, there is considerable room for improvement. The process for allocation of funds for land transport investment has too much political involvement and insufficient reliance on expert bodies (for example, like the Murray–Darling Basin Commission in water) and on transparent, rational decision-making processes and supporting tools.
- Arrangements between the Commonwealth and the States for provision of infrastructure to support major resource projects, vis-à-vis corresponding financial arrangements, are structurally dysfunctional.

Current arrangements could be improved in several ways, such as:

- clearly defining the responsibility of each level of government in relation to a given type of infrastructure; and
- where public investment retains a major role, as in roads, shifting much of the decision-making on the allocation of investment resources, particularly at the national level, to independent expert bodies. The new National Transport Commission has the potential to play such a role.

There is no "one-size-fits-all" approach to the efficient and effective allocation of responsibilities between the different levels of government in relation to the provision of infrastructure. An appropriate framework for the provision of energy infrastructure (where the private sector can play extensive roles) is unlikely to be as suitable for investment in the road network (where there is an intrinsic major public role). Accordingly, roles should be defined according to a range of factors, including the nature of the infrastructure, who benefits from it, relative scope for public versus private involvement, the extent to which it has national or cross-border significance, and the financing capacity of each level of government.

Developing an integrated focus on infrastructure

Within the states and territories the planning and coordination of infrastructure is receiving increased focus from governments. This is reflected in the emergence of specific infrastructure agencies charged with the planning, coordination and ongoing maintenance of all significant infrastructure. For example, in Victoria the Department of Infrastructure is charged with the responsibility for the provision of essential infrastructure, including transport, major projects, energy, freight logistics and marine infrastructure, and information and communication technology (ICT).

There is no "one-size-fits-all" approach to the efficient and effective allocation of responsibilities between the different levels of government in relation to the provision of infrastructure.

Bringing together the various functions in relation to essential infrastructure has several advantages, including:

- streamlining the planning, coordination and regulation of infrastructure throughout the state or territory; and
- allowing for the efficient allocation of government resources to those infrastructure projects that will result in the greatest benefits to the community as whole.

Also, a single infrastructure would allow for the better coordination of infrastructure planning between different levels of government (that is, Commonwealth and State governments and State and Local governments).

Optimising private-sector involvement

There is much scope for increased private-sector involvement in the provision of infrastructure. This ranges from the privatisation of utility businesses, such as telecommunications and electricity networks, to well-structured public–private partnerships (PPPs) for the provision of transport and other infrastructure. While there is increasing interest in these arrangements by state and territory governments, there is no preferred or recognised "best practice" model for engaging the private sector. As a result, many of these partnerships are relatively complex and involve substantial administration and compliance costs.

These shortcomings may be reduced, however, by establishing clear and comprehensive guidelines for appropriate project selection, and the selection process for inviting and selecting private-sector involvement. Such guidelines should include:

- a clear specification of project outputs that encourage innovation;
- sophisticated methodologies for the assessment, identification, measurement and allocation of risk associated with the infrastructure project;
- analysis of alternative public- and private-sector delivery models, including benchmarking against private-sector comparators;

- the clear specification of procedures/process (to be competitive and transparent, with an emphasis on minimising transaction costs); and
- appropriate dispute resolution guidelines and processes.

Conclusion

There is pressing need for reform of inter-governmental arrangements in respect of infrastructure, and for greater private involvement, if optimal levels and allocation of infrastructure investment are to be achieved. To achieve such reform requires:

- leadership at the highest levels from both the Commonwealth and the States; and
- willingness to move arrangements for decision-making on infrastructure investment further away from politics, with correspondingly greater roles for independent expert bodies using best practice decision-making processes and tools, and for the private sector.

... it is hardly surprising that the current approach of budgeting for surplus after surplus is assumed to reflect the policies of the dreaded economic rationalists.

5.4 Fiscal policy in Australia: Some thoughts on change

Tony Cole[5]

A good deal of my public service career was spent as a Treasury economist helping the government to "economise". What this means is that I helped ministers to put together budgets that met their priorities but stayed within their means. There is never a shortage of ideas as to where the government could solve a problem by spending some money or more money. As public servants we provided analysis to help ministers decide which should be taken up, and to what extent, and what existing programs could be terminated to make room for more effective or necessary programs.

While every budget represented the collective decisions of Cabinet and Cabinet Committees, the Treasury and Finance economists who assisted them were always allocated part of the blame for any existing program that was axed or a good idea for a new one that was not taken up. This was fair enough. Our analysis did contribute to these decisions. But our analysis also contributed to the decisions to introduce new programs and to their effective design. Whatever the public perception we were never opposed to all new programs and we did not want effective programs slashed and burned.

Against the background of public perceptions of Treasury economists as Scrooges it is hardly surprising that the current approach of budgeting for surplus after surplus is assumed to reflect the policies of the dreaded economic rationalists. It doesn't. It represents political fashion, not economics. The United States (US) is often the source of political fashions adopted in Australia and it appears to have had an influence here, too.

For more than a quarter of a century there has been a continuing political campaign in the US to amend the constitution to require the federal budget always to be at least balanced (if not in surplus). The balanced budget amendment campaign gained strength from the Regan deficits in the early 1980s (a Bill to implement it was passed by the Senate in 1982), lost momentum with a series of surpluses under Clinton, but is topical again with the huge Bush deficits.

The main argument US opponents of the balanced budget proposition use is that it would require the federal budget to be tightened whenever a sluggish economy was holding down revenue and increasing spending, but allow extra spending or tax cuts whenever a booming economy was creating large surpluses. In other words, it would result in pro-cyclical fiscal policy. A former Treasury colleague, Ric Simes, has demonstrated that Australia's current stance presents the same problem. Neither the government nor the opposition has been moved by the analysis. They both continue to promise surplus after surplus.

There has been concern among economists in Europe at the levels of debt run up by various countries through regular deficit budgeting. There did not seem to be the political will to raise the taxes needed to cover large public-spending programs. As a reaction to this, most of the countries in the EU agreed to restrict future deficits to no more than 3 per cent of GDP and to rein in their debt levels over time to no more than 60 per cent of GDP. This is a far cry from our surpluses every year. Even this less restrictive budget rule has implications for fiscal policy and the economic cycle, especially since implementation of the single currency has taken away domestic monetary policy as a swing instrument for macro-economic policy. I am pleased that Germany and France have sensibly found ways to avoid implementing the fiscal tightening required by these rules at a time when their economies were in recession and in need of stimulus.

There is no support for an aversion to debt at the household sector.

As Table 5.1 shows, there is little international support for our policy of surplus after surplus and for abolishing net public debt. Are there any lessons from the private sector that are more supportive?

Table 5.1: International budget balances

	Budget balance % of GDP	Net debt % of GDP	Official short rates	10–year bonds
US	–4.9	48.9	1.75	4.08
Germany	–3.9	60.8	2.0	3.88
France	–3.4	54.6	2.0	–
Italy	–2.9	99.4	2.0	–
UK	–3.0	34.8	4.75	4.75
Japan	–6.9	85.2	0.00	1.49
Australia	0.6	2.3	5.25	5.3

Economists trying to find an explanation for the anti-deficits, anti-debt policy of both sides of politics say it is based on a mistaken view that the national budget should be managed in the same way as a household manages its finances.

There is no support for an aversion to debt at the household sector. As we are regularly reminded by the Reserve Bank, Australian households have been on a debt spree over the last couple of decades. As a proportion of disposable income, household debt has more than doubled since 1990. Relative to the rest of the OECD, the debt/income ratio has gone from the lowest to the highest, although it is only a little higher than the pack. What is important, however, is that this large increase in debt has caused no problems for household balance sheets. On average Australian household net wealth has grown from five times disposable income in 1990 to almost eight times today.

This is not really surprising. How many people do you know who got wealthy by saving alone? The way to build wealth is to invest and borrowing to finance greater investment than can be funded from saving. This is a part of life. Householders borrow to invest in home ownership. They borrow to buy rental property and to invest in shares. Small businesses start on borrowed money and borrow more to expand. The way to wealth is to borrow and invest – not to save. Of course it is true that there is a tax wedge (taxation/deductibility of nominal interest, concessional taxation of capital gains) supporting this but the case does not rely on that alone.

Big business also uses debt to build wealth. If a project can produce a return that is greater than the cost of borrowing, companies will borrow to invest in it. Businesses manage their balance sheets by sustaining an appropriate level of gearing. They can become takeover targets or face campaigns from shareholders if they run "lazy" balance sheets.

It is surely time that Australian governments took a lead from the household sector and business in terms of managing their balance sheets.

To return to "economising", one element of it is deciding what level of spending is within our means. There is no economic reason at all that this important decision has to be constrained by a need to achieve a budget surplus each and every year. And if we weigh the case for surpluses against the clear needs for additional spending on infrastructure I think the answer is very plain.

We have urban rail systems that are breaking down and where timetables are providing for slower travel time because tracks are unsafe. The electricity network is unreliable. We are rationing water in almost every city. Our ports are clogged and hamper exports vital to our market credibility and balance of payments. We know that the best way to cut the road toll is to improve the roads and that will also make business more efficient. We need more investment in hospitals and universities. I said at the start of this article that there are always more good ideas for spending than we can finance. But it is clear that in so many of these areas the returns will exceed the cost to the Commonwealth of some additional debt.

It is surely time that Australian governments took a lead from the household sector and business in terms of managing their balance sheets. It is clear they would not be blotting their copy books internationally if they did so.

End notes

1 Dr John Uhr is a Senior Fellow in the Research School of Social Sciences, Australian National University. A graduate of the University of Toronto with a PhD in political science and a Harkness Fellow in the United States in 1985–87, he was the final Head of the Federalism Research Centre at the ANU. His books include *Terms of Trust: Ethical Argument in Australian Government* (UNSW Press forthcoming).

2 Peter Taylor is Chief Executive, Engineers Australia.

3 Dr Vincent FitzGerald is Chairman of the Allen Consulting Group. He was formerly a senior Commonwealth Public Servant and served as Secretary, Department of Trade and Secretary, Department of Employment, Education and Training.

4 Arrangements at Commonwealth and State level include: the Council of Australian Governments (COAG), which is the highest level forum for discussion of these issues, a number of sector–specific Ministerial councils and numerous committees of Commonwealth and State officials established to deal with specific areas of responsibility. There are also some inter–governmental regulatory, advisory or administrative bodies and arrangements; for example, energy regulation.

5 Tony Cole is National Practice Leader, Mercer Investment Consulting. He was formerly a senior Commonwealth Public Servant and served as Secretary to the Treasury, Chairman of the Industry Commission and Secretary, Department of Human Services and Health.

6 Conclusion

In this chapter we draw together the main themes and findings of this volume.

This publication centres on key issues in Australia's present infrastructure dilemma. Two decades of under-investment has seen much of Australia's infrastructure assets slip into a condition of disrepair and inadequacy. The reasons for this have been discussed in earlier chapters and new frameworks for infrastructure investment and decision-making have been canvassed. The main themes and findings are summarised below.

The economic context

Infrastructure is crucial to Australia's economic growth. Efficient state-of-the-art infrastructure, promptly installed, reduces business costs, increases consumer welfare and drives higher productivity. It also helps Australia keep at the forefront of world technology and helps the nation respond to unexpected political-economic challenges such as terrorism and catastrophic natural disasters. Australia's expertise is already prominent overseas as an infrastructure-provider and financier. The tsunami tragedy has underlined this capability further as John Uhr, from the Australian National University, points out in his contribution in Chapter 5.

Efficient state-of-the-art infrastructure, promptly installed, reduces business costs, increases consumer welfare and drives higher productivity.

Also of immediate concern for the Australian economy is the clear supply-side constraints evident in infrastructure, notably in ports, roads, electricity and water, which are restraining economic growth and Australia's ability to service burgeoning world export demand, notably from China.

Overcoming the backlog

Fiscal policies pursued by Commonwealth and State governments in the 1980s and 1990s resulted in infrastructure investment plummeting. A serious backlog in investment of $25 billion is now urgently required. Tony Cole argues in Chapter 5 for a change in Australia's "budget surplus/debt reduction" fiscal policies and a return to more common sense attitudes to infrastructure investment.

The backlog problem, which is widely documented and identified, is urgent and should be a priority in the 2005–06 Budgets of Commonwealth and State governments alike.

Federalism: Obstacles and new frameworks

Commonwealth–State relations at various levels – political, economic and regulatory – continue to shape infrastructure investment in Australia. In spite of the New Tax System of 2000 and the Commonwealth's *AusLink* initiative for roads in June 2004, which is still being negotiated with the States, and other proposals for change, the outlook for Commonwealth–State relations reform is not promising.

John Uhr discusses the impact of recent complex issues internationally, which now bear on contemporary Commonwealth–State government policies in infrastructure, while Dr Vincent FitzGerald presents possible new arrangements in public administration. FitzGerald observes, "... There is no 'one-size-fits-all' approach to the efficient and effective allocation of responsibilities between the different levels of government in relation to the provision of infrastructure. An appropriate framework for the provision of energy infrastructure (where the private sector can play extensive roles) is unlikely to be as suitable for investment in the road network (where there is an intrinsic major public role). Accordingly, roles should be defined

according to a range of factors, including the nature of the infrastructure, who benefits from it, relative scope for public versus private involvement, the extent to which it has national or cross-border significance, and the financing capacity of each level of government."

Private-sector involvement

The evolution of infrastructure provision and financing models from the "public", the traditional Australian model, towards the contemporary "mixed" and "private" models is still under way.

There is much scope for increased private-sector involvement in the provision of infrastructure.

The apparent, or contrived, capital shortage in the public sector – driven in part by budget surplus/debt reduction fiscal policy attitudes, which are criticised by Tony Cole in Chapter 5 – contrasts sharply with the huge growth in capital in the private sector, particularly in superannuation funds. Closing this financial circle is desirable.

As FitzGerald notes, "... There is much scope for increased private-sector involvement in the provision of infrastructure. This ranges from the privatisation of utility businesses, such as telecommunications and electricity networks, to well-structured public–private partnerships (PPPs) for the provision of transport and other infrastructure. While there is increasing interest in these arrangements by state and territory governments, there is no preferred or recognised 'best practice' model for engaging the private sector. As a result, many of these partnerships are relatively complex and involve substantial administration and compliance costs."

Public administration: Tapping the nation's full range of expertise

Engineers Australia CEO, Peter Taylor, presents in Chapter 5 a case for better deployment of Australia's excellent range of engineering skills in the future planning and execution of the nation's infrastructure. Service delivery improvement has been foreshadowed as a Commonwealth and State priority for public administration in 2005. The question is how can private-sector expertise be better utilised along with public-sector skills – particularly at this time of labour market tightening – so as to accelerate infrastructure investment?

Peter Taylor states: "... While governments recognise the need to maintain and retain relevant expertise, changing conditions and contracting practice are often at odds with this objective. There are two areas of divergence often present between government contracting policy and practice. These are:

- *Loss of engineering expertise.* Over the last decade there has been a 20 per cent to 40 per cent reduction in the number of engineers in the Commonwealth, State and Local government public sectors.
- *Focus on contract management skills to the detriment of technical expertise.* In the late 1980s and early 1990s, the shortage of contracting expertise and the reasonable number of technical specialists meant that priority was rightly given to improving the contracting skills of technical specialists. However, since the departure of many technical specialists, the focus on improving contracting skills has overlooked the growing problem of a decline in technical expertise. Both skills are essential to being an informed buyer.

... The debate on where it is best for government to obtain technical expertise – either in-house or to contract it in – is not productive. The critical issue is not where it is located, but how the government is guaranteed access to it when it is needed."

Examples of new initiatives

Examples of new initiatives for infrastructure-provision referred to in this publication are provided first by *AusLink*, which is clearly a significant new development in land transport infrastructure initiated at the Commonwealth level. Negotiations with the states and territories to implement *AusLink* are still under way. The second is the Australian Local Government Association's "Tri-Level" investment model described in Chapter 3. That proposal has the feature of introducing explicit funding machinery, thus attempting to "close the circle" between public- and private-sector capital availability. Finally, an outline of a sustainable model is provided in Chapter 4 with the key elements of: (1) a nationally coordinated infrastructure outlook that articulates a 25-year strategy and a 50-year vision; (2) integrated planning (or processes that result in effective frameworks for) land use, new works, maintenance and project management; (3) policies on the use of sovereign debt for national investment outcomes combined with prudent debt limits; and (4) accelerating the application of private capital for infrastructure investment in lieu of undesirable levels of public debt.

These initiatives – and new initiatives that might come forward to solve Australia's infrastructure impasse – might usefully be tested against the issues and data presented in this volume. Important technical contributions to infrastructure assessment and investment, such as the Report Card work of Engineers Australia and the NEMMCO Annual Statement on electricity, needs to be recognised in this context and encouraged.

Deploying the nation's complete and impressive range of skills – financial, managerial and technical... are essential elements of success for an effective policy for the future.

Looking to the future

Colonial socialism, the era of Australia's economic history described in Chapter 3 by the scholars Butlin, Barnard and Pincus, is now past. The challenge for the future as Australia emerges from two decades of infrastructure under-investment and grapples with the economic imperatives of 2005 and beyond is difficult, but by no means insurmountable.

Deploying the nation's complete and impressive range of skills – financial, managerial and technical – and accepting that infrastructure should be returned to a central place in Australia's economic strategy are essential elements of success for an effective policy for the future.

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