The Australian Resources Boom: Sharing the Benefits

Report to the
Construction, Forestry, Mining & Energy Union (CFMEU)
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FOREWORD

The Resources Boom is not finished, though the investment boom and its associated speculation has certainly abated. The challenge of better managing our substantial mineral resource assets remains.

This matters for all Australians. Public sector budgets are being squeezed by the perennial problems of insufficient revenues and major expenditure commitments. More than that, many of our export industries are being crippled by the high Australian dollar, brought about largely by the resources boom. This is hurting employment in manufacturing, tourism and many other industries.

And while employment in mining has grown, much of it has been in Fly-In, Fly-Out operations that are often based on long working hours and substantial time away from families and communities. In mining towns themselves, a chronic deficit in social infrastructure (including housing, health and community facilities) has barely been addressed, making life in those towns increasingly difficult and expensive.

We could do better, and in fact others in a similar situation have done so. At many points in this report it is shown that Norway has done a far better job of maximising the permanent gains from the (temporary) exploitation of North Sea oil and gas. In sharp contrast we have experienced a major boom but have relatively little to show from it, other than that it contributed to Australia avoiding the worst of the Global Financial Crisis. Too much has gone into the pockets of shareholders and management, overwhelmingly based overseas, and too little to the Australian community that owns the resources.

The CFMEU covers major industries in construction, manufacturing and resources, and we have witnessed first hand the dysfunctional and inequitable outcomes of the resources boom. This report was commissioned to provide backing to the union’s Let’s Spread It Around campaign – to examine the dimensions of the problems that Australia faces and contribute to solutions.

The Minerals Resource Rent Tax introduced by the Australian Labor Government was a significant but deficient attempt to place the Australian community and economy on a more sustainable basis in relation to its mineral resource endowment. The MRRT needs to be revamped, not abolished. We have been fortunate to have such mineral riches; but our track record of failing to make the most of that good fortune cannot continue.

Tony Maher
National President
Construction, Forestry, Mining & Energy Union

The Mining Boom
Let’s spread it around

Sharing the Benefits
# TABLE OF CONTENTS

## EXECUTIVE SUMMARY

1. The economic benefits of the resources boom were highly concentrated  
2. The resources boom increased macro-economic imbalances  
3. Resource taxation reform is unfinished business  
4. Better ways to address the social infrastructure deficits in resources regions  
5. Policy integration between resources and other industry sectors  
6. Improving wealth creation – Towards a Sovereign Wealth Fund

## 1 SETTING THE SCENE

### 1.1 Introduction

## 2 THE POLITICAL ECONOMY OF RESOURCE DEVELOPMENT

### 2.1 Introduction

## 3 AUSTRALIA’S RESOURCE SECTOR

### 3.1 Background

## 4 TAXATION AND THE RESOURCES SECTOR

### 4.1 The resource taxation architecture

### 4.2 State and territory resource taxes

### 4.3 Commonwealth resource taxes

### 4.4 Emergence of shadow royalties and the rise of financialised regulatory resource instruments

## 5 ADDRESSING THE SOCIAL INFRASTRUCTURE DEFICIT IN RESOURCE REGIONS

### 5.1 Introduction

### 5.2 Background

### 5.3 Characteristics of mining communities

### 5.4 The role of social infrastructure and its importance

### 5.5 What is social infrastructure?

### 5.6 Social Infrastructure Provision – Resource Regions vs Urban Areas

### 5.7 Nature of workforce

#### Temporary Workforce

#### Semi-permanent Workforce

#### Permanent Workforce

#### FIFO Workforce

### 5.8 Defining the Social Infrastructure Deficit for housing

### 5.9 Other Social Infrastructure

#### Health

#### Sport and Recreation

#### Community Hubs
LIST OF FIGURES

FIGURE 1 AUSTRALIA’S GDP GROWTH PERFORMANCE VS. OECD MAJOR COUNTRIES 1991-2011 16
FIGURE 2 THE LONG TERM CONTRIBUTION OF THE RESOURCES SECTOR TO AUSTRALIA’S GDP GROWTH 17
FIGURE 3 TERMS OF TRADE, INDEX 18
FIGURE 4 TRENDS IN MINING EMPLOYEE COMPENSATION AND GROSS OPERATING SURPLUS ($MILLION) 19
FIGURE 5 TRENDS IN MINING INCOME SHARE (%) 20
FIGURE 6 INDUSTRY SHARE OF GDP (%) 21
FIGURE 7 COMPARISON OF GROSS FIXED CAPITAL FORMATION IN SELECTIVE INDUSTRIES ($MILLION) 22
FIGURE 8 SELECTED EXPORT PERFORMANCE 2005-06 TO 2011-12 23
FIGURE 9 EMPLOYMENT TRENDS IN SELECTED INDUSTRY SECTORS 24
FIGURE 10 DISTRIBUTION OF RESOURCE SECTOR PRODUCTION BY STATE AND TERRITORY 26
FIGURE 11 ANNUAL GROWTH RATES % (GROSS REGIONAL PRODUCT) 27
FIGURE 12 MINERAL AND PETROLEUM EXPLORATION, AUSTRALIA 29
FIGURE 13 TAXES AS A SHARE OF PROFITS 1999-2009 31
FIGURE 14 TRENDS IN STATE/TERRITORY ROYALTIES 33
FIGURE 15 GENERAL GOVERNMENT - NATIONAL PROPERTY INCOME RECEIVABLE - RENT ON NATURAL ASSETS 34
FIGURE 16 LOCATION OF “BOOMING” MINING TOWNS 39
FIGURE 17 PROPORTION OF THE CENSUS NIGHT POPULATION WHO WERE VISITORS
40
FIGURE 18 NEWMAN, PILBARA REGION, WESTERN AUSTRALIA
41
FIGURE 19 NEWMAN HOSPITAL, PILBARA REGION, WESTERN AUSTRALIA
44
FIGURE 20 JIGALONG WELLBEING CENTRE, PILBARA REGION, WESTERN AUSTRALIA
44
FIGURE 21 PUNMU FOOTBALL OVAL, PILBARA REGION, WESTERN AUSTRALIA
45
FIGURE 22 MEDIAN WEEKLY RENT PAID FOR A SEPARATE HOUSE BY WHO IT WAS RENTED FROM (AUGUST 2011)
49
FIGURE 23 TYPE OF HOUSING IN WHICH PEOPLE SPENT THE NIGHT OF 2011 CENSUS
50
FIGURE 24 HOUSING TENURE TYPES IN MINING TOWNS VS AUSTRALIA
51
FIGURE 25 MANUFACTURING GROSS VALUE ADDED $ MILLIONS – VOLUME MEASURE
65
FIGURE 26 PANEL REGRESSION ECONOMETRIC STATISTICS
70

LIST OF TABLES

TABLE 1 GOODS EXPORTS ($ MILLION NOMINAL) 17
TABLE 2 RESOURCES EXPORTS (SHARE %) 18
TABLE 3 SELECTED MINING INDUSTRIES EARNINGS BEFORE INTEREST, TAX, DEPRECIATION AND AMORTISATION ($ MILLION NOMINAL) 20
TABLE 4 RESOURCE INDUSTRIES EMPLOYMENT TRENDS (’000) 24
TABLE 5 PROJECTED EMPLOYMENT IN MINING OPERATIONS, 2015 25
TABLE 6 MINING GROSS VALUE ADDED BY REGION (SM) 28
TABLE 7 STATE MINING ROYALTIES 32
EXECUTIVE SUMMARY

The Australian resources boom of the last decade has been presented as a once in a century opportunity, characterised by high demand from emerging Asian economies and commodity prices, growth in resource exports and mining investment, and solid growth in employment in the mining industry. This report examines whether the benefits of the Australian resources boom were shared over the period from 2003, when commodity prices skyrocketed, to 2013, when the evidence suggests that the boom has at least peaked.

Despite these highlighted successes, in many ways the early 21st Century resources boom squandered an opportunity to efficiently and effectively share the benefits. This report has six important findings:

1. The economic benefits of the resources boom were highly concentrated

Since the beginning of the 21st century Australia’s resources sector has experienced a massive increase in wealth. Most of the benefits have accrued to predominantly foreign resource companies and their shareholders and a small group of Australian mining license holders.

Income distribution can be divided between firstly, Gross Operating Surplus (GOS), i.e. gross output less the cost of intermediate goods and services (to give gross value added), and less compensation of employees, making no allowance for depreciation of capital, and; secondly; compensation for employees. The Gross Operating Surplus (GOS) from the Australian resources sector increased from $28.6 billion in 2003 to around $112.9 billion in 2012. At the same time, with a significant increase in workers employed, compensation for employees increased from $7.8 billion to $28.2 billion. Despite increases in employment, the share of income going to compensation for employees has declined over the past 20 years, from 30% to 20%, whereas the share going to GOS increased from 70% to 80%.

The extraordinary returns to resource companies are highlighted by earnings before interest, tax, depreciation and amortisation (EBITDA). Between 2006-7 and 2010-11, for example, EBITDA in three selective resource industries coal mining, oil and gas extraction and metal ore, increased in nominal terms from $48 billion to $88.5 billion. Taxation and royalties have increased, but nowhere near the rate of increase of EBITDA. Royalties paid to the states and territories for all resource industries increased from around $12.1 billion in 2006-7 to $18.2 billion in 2010-11. Commonwealth resource revenues, mainly from offshore petroleum and uranium in the Northern Territory also increased from around $800 million to $1.7 billion over this period.

2. The resources boom increased macro-economic imbalances

The Australia dollar appreciated strongly against all major currencies over the past decade. In relation to the US dollar, the Australian dollar (AUD) appreciated from less than US $0.50 in 2001 to a peak of over US $1.10 in 2011. At the same time, policy settings from the Reserve Bank of Australia maintained interest rates above major trading economies, making it attractive
to purchase Australian dollars in the short term but more difficult for Australian businesses to access funds for expansion. The resources boom was an important, but not the only, driver of the over-valued currency. At the end of the boom, the results for many industries, including steel, automobiles, petroleum refining, international education, rural produce and tourism, have been disastrous, with loss of jobs, investment and capacity.

The benefits of the resources boom have not been broadly shared with these industries. In relation to manufacturing, the report models the impacts of an increase in Australia’s Trade Weighted Index. It finds the 40 per cent increase in the TWI observed over the past decade reduced manufacturing gross value added by around $4.0 billion and reduced employment by 36,000 jobs.

There are important lessons for future management of Australia’s resources sector. The suite of policy instruments used by Australian governments over the past 30 years, particularly over-reliance on monetary policy and budget surpluses, is extraordinarily narrow, and more emphasis should be given to exchange rate outcomes and supporting trade-exposed industries restructure during periods of an over-valued exchange rate.

3. Resource taxation reform is unfinished business

The mining industry does pay considerable taxes and other payments to governments, which is to be expected given the size of the industry, its dominance by multinational corporations, its international competitiveness and the relative profitability of the sector. However, the question remains as to what is the achievable level of taxation that increases benefits to other parts of the Australian economy and community while still enabling investment and reasonable profits.

The appropriate royalty and tax regime for the Australian resources sector is clearly unfinished business. The opportunistic increase in royalties by some State Governments seeking to exploit weaknesses in the federal Minerals Resource Rent Tax demonstrates that the overall regime, and State royalties in particular, are archaic, complex and inefficient. There are also considerable issues with the various allowances and deductions that enable the resources sector to have a lower achieved corporate tax rate than any other industry.

The report argues that we have a long way to go in rationalising resources sector taxation, and a key requirement will be reconciling State and Federal Government objectives. Further, the seizing of economic rents via shadow royalties and similar mechanisms (in simple terms, the generation of astronomical profits and wealth from ownership of leases rather than productive activity by a very small number of so-called entrepreneurs) is a wasteful burden on the industry. While there is no neat solution to this problem, the greater deployment of profits-based taxation would reduce levels of speculation during resources boom periods.

4. Better ways to address the social infrastructure deficits in resources regions

The deficit in social infrastructure in mining communities and the impacts on existing communities and the mining workers has been well articulated. Resource regions are experiencing increasing pressures on, and insufficient supply of, social infrastructure. Social infrastructure deficits in health, education and aged care are commonly reported, among others, with significant consequences for the health, wellbeing and prosperity of communities. Gaps in service provision are becoming more pronounced as non-resident workforces and new in-coming populations increase.
The deficit is significant – in terms of physical infrastructure, operating and maintenance costs and also the indirect costs on communities such as impacts on health and wellbeing and criminal activity. These regions should be sharing in more of the benefits of Australia’s resource endowments.

It is recognised that economic activity generated by resource development can have significant benefits for host communities, such as increased investment and employment opportunities. Conversely, there are also significant adverse implications for resource communities and workers. Social isolation and the broader effects on health and wellbeing are common for those employed in the resources sector, particularly FIFO workers. Those employed in the resources sector also experience comparatively higher incidences of relationship and family breakdown, with the problem often compounded by a lack of social infrastructure for crisis support (i.e. lack of emergency accommodation).

Labour and skills shortages are also prominent in resource regions, particularly for small business operators that find it difficult to compete with the remuneration packages offered by major resource companies. Cost of living pressures are also evident, with higher costs for housing, goods and services.

State governments and mining companies have historically focused on enabling projects without enabling “places”\(^1\). This inevitably results in social infrastructure being implemented late and inadequately. While social infrastructure in most situations is the responsibility of local, State and federal governments, its provision in remote mining areas is largely in response to the needs of the mining industry. Given the severe constraints on funding of all levels of government, and the large private surpluses often achieved by mining companies, there needs to be greater recognition by industry and governments of the funding or direct investment role of the industry in social infrastructure.

The report documents the backlog in housing and social infrastructure and services. Critical issues relate to how to improve planning and public and private funding mechanisms to address the deficit, and how the economies of the larger resource abundant regions can be diversified to ensure their long term sustainability.

5. **Policy integration between resources and other industry sectors**

Successful resource-abundant economies seek ways to maximise the spillovers from resources development to other sectors. As new areas are opened up for resource exploration and production in Australia, this should create new economic, environmental and environmental challenges and, if solvable, opportunities for Australian companies and research expertise in mining and maritime industries. The resources boom has not created enough world class Australian companies and industries and has not maximised the positive spillovers from resources development to other industries. A comprehensive policy framework is needed to create and sustain a world class competitive cluster in the resources sector and to build more world class companies.

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The report argues that Australia could learn from the Norwegian experience, which used its resource endowments to extend opportunities to manufacturing and service firms engaged in offshore engineering. The country was able to develop strong and competitive local capabilities in a range of activities including exploration, drilling and production as well as secondary activities such as shipbuilding, rigs, construction and assembly of platforms, and downstream activities including refining, pipeline manufacture and transportation. Norway established a number of knowledge centres in selective regional locations and increased investment in problem solving research and education. The Norwegians also increased exposure of specialists by offering overseas scholarships and creating a number of centres of excellence. Norway implemented industrial policies, many linked to resource development, which put emphasis on knowledge, technological progress, and human capital.

Norway is relevant to the Australian experience. Both are small and developed economies with strong resource endowments. But Norway has taken a longer view regarding strengthening inter-industry relationships by leveraging its natural resource base. Australia has developed a short term market oriented approach, left it predominantly to large global corporations and has not been pro-active in developing interventionist policies to strengthen local industry competitiveness.

Given the relative success of the Norwegian experience in managing resource industry development, flow-on benefits to other industries and public revenues for the long term compared to the short-term hands-off approach taken by the UK and Australia, Australian Governments should investigate and consider adoption of appropriate elements of the Norwegian model.

While the recent shift by the Australian and Queensland Governments towards encouragement of inter-industry linkages and greater local industry participation in resource projects is welcome, it is a belated development. Achieving maximum local/national benefits from growing industry sectors should always be a public policy priority.

6. Improving wealth creation – Towards a Sovereign Wealth Fund

One of the most significant issues since the beginning of the 21\textsuperscript{st} Century has been the reform of resource taxation to bring Australia in line with world best practice. Many of the potential benefits of the resources boom were squandered. The Australian resources sector is lowly taxed and the system of sub-national royalties is inefficient and lacks transparency. The system of shadow royalties, which is a privately negotiated rent between regulatory licence holders and productive mining companies, concentrates wealth in fewer hands. The Labor government’s attempts to reform the resource taxation system, following the comprehensive Australia’s Future Tax System review, were undermined by a political campaign by the mining industry and conservative states. Nevertheless, the introduction of the Minerals Resource Rent Tax, and associated reform of the Petroleum Resource Rent Tax, does provide the architecture for a much improved system that may enable the economic benefits of resources development to be more broadly shared. A further challenge is the best way for resource abundant economies to use the returns from resource development. Many of the short term increases in government revenue from resources development were used on populist initiatives such as tax cuts and the baby bonus during the resources boom. This report argues that Australia should give consideration to the establishment of a Sovereign Wealth Fund, what we have termed an Australia Development Fund, to use some of the proceeds of resources development to invest in long term projects such as infrastructure, human capital and industry development.
The Australian Government should consider allocating a significant proportion of revenues from resource rent taxes (and any other economic rent or excess profit taxes) to a new Sovereign Wealth Fund (SWF) - the Australia Development Fund – to help manage public revenues from the resources sector for the long term benefit of all Australians. One of the advantages of a SWF is to build up the principal over time and allocate funds from the annual earnings of the principal. This enables allocations to be smoothed out over time.

While the failure of the MRRT to raise significant revenues in the short term has contributed to calls for its demise, Australia will continue to rely on resources sector revenues for many decades to come and it is imperative that we become better at managing the scale and impacts of those revenues.
The Construction, Forestry, Mining & Energy Union (CFMEU) commissioned this report to investigate how the development of Australia’s resources sector based around minerals and energy exploration and development can bring broad benefits to the whole Australian community and to other Australian industries. This report looks at ways the benefits of resource development can be shared in a number of dimensions:

- macro-economic outcomes such as high employment outcomes that enhance national wellbeing;
- commitments to ensure that future generations benefits from the current generation’s use of non-renewable resources;
- appropriate infrastructure and services supporting resource-based regions and mining communities; and
- resource development that is integrated and supports other trade-exposed industries rather than undermines them.

Although there is some debate about when the latest resource boom started and, indeed, whether it is over, this report focuses on a ten year period from 2003, when commodity prices skyrocketed, to 2013, when major new projects started to level off. It is well known that the resources boom over this period made a significant contribution to national economic growth and export performance, and, along with government fiscal intervention, played an important role in stimulating the economy at the macro level following the onset of the Global Financial Crisis (GFC). The union movement has tens of thousands of members employed in the resources sector and many more employed in industries that are impacted by resource development, particularly in manufacturing and construction. However, the union movement recognises that many Australian businesses, farmers and workers have experienced some of the negative effects of the resources boom. A widespread view exists in the community that the benefits of the resources boom have not been broadly shared. This report addresses four particular areas of concern:

1. Australia has a long history of boom-bust cycles in the resources sector, with major spurts of investment, job growth and exports followed by falling orders and prices, and economic turbulence that quickly reverberates across the whole economy.

2. The high Australian dollar over the past decade, largely driven by the resources boom, as well as higher relative interest rates, put enormous pressure on other sectors of the Australian economy involved in trade-exposed industries, particularly manufacturing, agriculture, tourism and international education. In the case of manufacturing, once supply is curtailed, with plants closing and workers losing their jobs, it is exceedingly difficult to get them back again, even when a currency depreciates. The number of closures of industrial plant and loss of industrial capacity, rising unemployment in key regions, and bankruptcies of small businesses have been blamed on the high currency, which makes local industries less competitive. With an over-valued currency, domestic
consumers shift from domestic producers to foreign producers, and domestic exporters find it harder to compete in global markets. This affects workers, farmers and small businesses. Many of the negative impacts are felt in regions located a long way from Australia’s resource abundant regions such as North West Australia and Central Queensland, particularly in the industrial large cities of South East Australia and regions dependent on international tourism such as the Gold Coast and North Queensland.

3. In resource abundant regions, the evidence suggests that social infrastructure, housing and local services lag behind more established areas, putting increased pressure on workers and their families. The rapid growth of Fly In Fly Out (FIFO) and Drive In Drive Out (DIDO) are a cause as well as an effect of social infrastructure shortfalls in resource regions.

4. Our massive natural resource endowments, which belong to the Australian people, have not generated sufficient economic and social returns to all Australians. Although states and territories have royalties in place and the Australian Government, in addition to company taxes and income taxes, now has in place a Minerals Resource Rent Tax as well as a Petroleum Resource Rent Tax, there is much to be gained from looking at how the system can be improved through better policy development and coordination. One option is to look at how Sovereign Wealth Funds are deployed to both strengthen the wealth base of whole economies but also to manage economic disruptions.

Recognising the implications of this situation, the CFMEU has commissioned this report to investigate how the development of Australia’s resources sector can bring greater benefits to the whole Australian community and to other Australian industries. This report is presented as follows:

− Chapter 1 sets the scene by canvassing key issues addressed by the report.
− Chapter 2 examines the political economy of resource development and the broader global context for the development of resources.
− Chapter 3 analyses the performance of the Australian resources sector, with particular reference to the resources boom 2003-2013.
− Chapter 4 examines the taxes and royalties paid by the resources sector.
− Chapter 5 discusses the social infrastructure deficit in resource regions and how it can be addressed (the focus of this paper).
− Chapter 6 looks at the relationships between the resources sector and other interrelated industries in the economy, and explores ways that spinoffs from resources to other industries could be increased.
− Chapter 7 draws on best practice models to canvas the potential for allocating a proportion of resources sector revenues to a Sovereign Wealth Fund – with the objective of providing resilience to fluctuations in resource sector revenues due to mineral price cycles, and to provide long term wealth for all Australians beyond the time when mineral resources are depleted.
2 THE POLITICAL ECONOMY OF RESOURCE DEVELOPMENT

2.1 Introduction

This chapter outlines the economic issues associated with resource development and sets the global context for Australian resource development.

2.2 Issues and perspectives on resource development

The traditional view of resource development in resource abundant economies is that as they develop, these economies will shift capital and labour into high value added manufacturing and service industries and reduce their dependence on resource extraction. For much of the last century, resource development was characterised by falling commodity prices and cyclical swings, resulting in imbalances in these economies. Hence there was an imperative to restructure away from resource dependence.

Australia has experienced resource booms and busts in the past such as the gold mining boom of the 1850s, an export led boom in the 1960s, and short lived energy price booms in the late 1970s and 1980s. These were associated with substantial increases in incomes for mining license holders, mining companies and their shareholders and macro-economic imbalances including loss of jobs in other sectors. From the late 1970s, there was a growing concern in Australian policy circles that we were becoming a “quarry economy”, with an over-reliance on the resource sector and associated pressure on other industries. Today, it is closer to reality than ever. Hence, the priority in the 1980s was to implement policies to encourage structural shifts towards high value industries and to reduce our dependence on volatile resource exports. The boom in Asian economies, led by China, and their seemingly insatiable demand for resources - particularly coal, iron ore and LNG, was a significant game-changer over the ten year period 2003-2013. With demand outstripping supply, this resulted in a substantial increase in commodity prices, sparking substantial investment in new mine capacity and infrastructure, and a dramatic increase in the terms of trade and resource exports.

The exploration, extraction and transport of resources entail high risks, complex technologies and large amounts of financial and physical capital. Highly skilled and experienced labour is also an essential input. A small number of multinational resource corporations dominate the production of key resource commodities, including BHP Billiton, Rio Tinto, Xstrata (now Glencore Xstrata) and Shell. The substantial increase in demand, technological innovations and the resulting scale of large mines spurred a series of mergers and acquisitions and increased concentration in key resource industries. Of the top 20 mining companies on the Australian Securities Exchange (ASX) in 2000, only 7 of these were still listed in Australia at the end of 2005. Further, large overseas resource consumers, often state-owned, have taken an increasing equity interest in Australian mines to ensure long term security of supply. In

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Australia, smaller groups of individuals have sought to establish a position in the industry by obtaining prospective mining licenses (or inheriting them) and then using control of these licenses to enter into lucrative arrangements with the large resource companies to invest in these mines and associated infrastructure. Some of these “rent collectors” are using their substantial revenues to shift more towards production. Key players at this end of the industry included Lang Hancock, who bequeathed most of his wealth to his daughter Gina Rinehart, as well as current figures such as Clive Palmer, Nathan Tinkler and Andrew (Twiggy) Forrest.

Despite this structure, it is essential to recognise that Australia’s abundant mineral and energy resources belong to the Australian people. They are non-renewable resources. On this basis, their exploitation not only needs to bring benefits to current generations but they also need to provide inter-generational benefits. These benefits may include building economic capability and broad-based prosperity, supporting the transition to a more sustainable and equitable economy and also rewarding those who directly contribute to creating resource wealth. From a national and community perspective, the central issue is sovereignty, a legal responsibility of government to ensure that our resources are developed and depleted in such a way that is consistent with national interests.

Australia’s major resource projects, particularly those characterised by relatively low extraction costs, high volumes and booming markets, generate substantial economic rents. In this context we define economic rents as the monopoly profits that accrue to companies that have exclusive use of a community asset. The returns are surplus returns much greater than the normal rate of profit throughout the economy. The evidence suggests that Australia has experienced a likely shortfall in resource revenue compared to potential revenue, particularly since the beginning of the 21st century. In Australia, the economic rents have substantially accrued to resource companies and wealthy individuals, notwithstanding the introduction of the Minerals Resource Rent Tax.

These elites and powerful groups, often with a supportive media, have been able to set an agenda to protect these economic rents and equate national interest with their commercial interest. To a large extent, Australia missed an opportunity to “share the benefits” of the resources boom over the period 2003-2013 by not having a well-designed resource taxation system in place at the beginning of the boom. This would have given successive governments the revenues to reduce debt, effectively manage fiscal policy and set savings aside to provide benefits to future generations, including the transition to a more sustainable economy. Potential benefits were squandered by the Howard Government by not putting in place a resource rent tax and using revenues from resource corporate profits to introduce populist and short term programs such as the baby bonus and cutting taxes. To address this, the Labor Government sought to introduce resource taxation reforms, but these have been impeded by well-funded hostility from the resources sector.

As a consequence, most of the economic rents of the last decade have flowed to the global shareholders of resource companies such as BHP Billiton, Rio Tinto, Xstrata (now Glencore Xstrata) and Shell, as well as resource companies with more Australian equity such as Woodside Petroleum (in which Shell owns 34%) and Santos, and other Australian based companies that have used their access and control of resource licenses to negotiate development agreements with global partners.

3 Lindsay Hogan and Rebecca McCallum (2010), Non-renewable resource taxation in Australia, prepared for Australia’s Future Tax System Review Panel, p.55.
2.3 The Dutch disease and the resources curse

Resource dependent economies have experienced phenomena known as the “Dutch Disease” and the “Resources Curse.” One of the striking features of economic development literature on resources is evidence of what has been termed the resources curse - a negative relationship between resource abundance and national wealth. A number of studies suggest that the “Resources Curse” is a political and institutional phenomenon, with influence over policy and planning decisions resulting in rent seeking by individuals and corporations and corruption as core elements of what causes the curse. A separate but related phenomenon is what is known as the Dutch Disease, which occurs when capital and labour shift into the resources sector, bidding up prices and crowding out other sectors of the economy, and increased resource demand resulting in currency appreciation which causes other sectors to shrink. The two challenges can be summarised as follows:

1. To avoid the resources curse, governments must limit rent-seeking from powerful sectional interests, and seek a balance between the interests of government, representing the owners of the resources, and resource companies, who apply expertise to explore for and develop resources.

2. To avoid the Dutch Disease, policies need to be put in place to reduce negative spill-overs from resource exports to other sectors of the economy, particularly through ensuring that the currency doesn’t become overvalued, and putting in place pro-active policies to better integrate resources development with complementary sectors, particularly manufacturing and construction.

Australia’s resource abundance and the dominance of resource exports as a proportion of GDP gives rise to periodic debate about whether the Australian economy is prone to these phenomena. More attention has been given to the Dutch Disease in Australia, but the Resources Curse may be at least as significant. The initial analysis of the Dutch Disease was associated with the development of the Netherlands natural gas production from the North Sea, which resulted in a rapid appreciation of the Dutch currency and loss of competitiveness for manufacturers and farm exporters. The broad interpretation of these theories is that specialisation of the economy around a narrow grouping of resource commodity exports can result in disruptions and imbalances at the macroeconomic level and negative impacts on non-resource trade exposed industries. The Australian experience supports this argument. The primary causes of imbalances are due to high global demand for resource exports resulting in an appreciation of the local currency, which in turn puts enormous pressure on other exports including rural producers, manufacturers, tourism dependent businesses and some services such as international education. Other factors related to successful resource exports have also kept the Australian dollar relatively high, including higher interest rates, a solid economic performance and a AAA rating from the major global rating agencies.

In an open economy, an appreciating currency results in cheaper imports, more domestic consumers shift from domestic producers and exporters find it harder to compete in international markets. An over-valued currency results in local business closures and a decline in local supply capacity. Disruption occurs again when commodity prices fall and the currency depreciates. Many local businesses are unable to take advantage of the falling exchange rate because it is often difficult to quickly adapt and rebuild the physical plant, technology and skills to grow market share because volatile currency movements increases uncertainties and risks for local producers.

One way to address the Dutch Disease and the Resources Curse is to establish a Sovereign Wealth Fund to both manage economy-wide impacts of resources development and ensure economic rents are re-invested. This report is concerned with ways to generate more wealth and jobs for all Australians. Sovereign Wealth Funds (outlined in Chapter 7) are state-owned investment funds comprised of a range of financial and other assets such as equities, bonds, property and precious metals. They are becoming significant participants in global financial markets. Given their societal responsibilities they tend to steer clear of speculative assets that characterised much of the exuberant behaviour leading up to the Global Financial Crisis. They have traditionally concentrated on less-risky assets. Despite the ideological assaults on public ownership they have outperformed their private sector counterparts since the GFC. Some are based on Resource Funds such as the Kuwait Investment Authority, Norway Bank Investment Management, Saudi Arabia – SAMA Foreign Holdings and the Alaska Permanent Fund. Others are more broadly concerned with raising revenue from broader sources including China Investment Corporation, Singapore GIC and Korea Investment Corporation. Resource Funds (RFs) can be a component of Sovereign Wealth Funds or, in many cases, they provide the only revenue source resulting from the extraction, processing and sale of depletable natural resources.

Governments have a number of objectives in establishing and managing SWFs or RFs. Firstly, they can be used to manage macro-economic imbalances associated with rapid injection of funds into an economy and the resulting disruptive impacts mainly associated with currency appreciation and/or inflationary impacts of resource income being invested into the domestic economy too quickly. SWFs can be used, for example, to purchase international equities, with the purchase of international currency for the transaction dampening the appreciation of the domestic currency. Secondly, they can be used to address volatility associated with commodity cycles by increasing savings during resources booms and injecting funds into the economy during economic downturns. Thirdly, they can be used to transform wealth generation in relation to sale of depletable natural resources into wealth creation for future generations in the form of new industries, knowledge and other economic and social infrastructure.

Norway is often cited as a best practice case study of the use of sovereign wealth funds. The country has developed two funds to ensure that wealth produced by oil profits is equitably shared. The first is the Government Pension Fund – Global, one of the largest sovereign wealth funds in the world, deriving its funding from the petroleum industry, amounting to US$804 billion in 2013. The fund is actually much larger than the Norwegian economy. The second fund - Government Pension Fund – Norway (formerly The National Insurance Scheme Fund) is concerned with growing Norwegian businesses. The fund invests strategically in domestic companies, predominantly through the Oslo Stock Exchange.
2.4 The global context

The world’s resource and energy markets are undergoing an extraordinary transformation. Firstly, the insatiable demand for resources and energy resources in advanced industrial countries has now been matched and increasingly surpassed by demand from large emerging economies, including China, India and Republic of Korea, which is driving high demand growth for minerals such as iron, copper and metallurgical coal to support industrialisation and urbanisation, and energy resources for power. Secondly, this is occurring at a time when new resources of easy-to-access hydrocarbon resources and key minerals are harder and harder to come by. This is driving major global corporates and countries to take action to secure and develop new sources of energy in particular, including exploring and developing high cost and risky extraction of oil and gas reserves in areas such as the Arctic circle and deep sea zones, oil sands and shale, and biofuels. Thirdly, as a result of growing resource and energy scarcity, one argument is that countries and resource corporates are seeking to lock in long term supplies of minerals and energy, resulting in acquisition in major resource and energy projects and the negotiation of long term contracts⁶.

The authoritative account of the world’s energy futures is provided by the World Energy Outlook, produced every year by the International Energy Agency (IEA)⁷. World Energy Outlook 2012 examines major trends emerging in global energy markets and trade in an age of increasing uncertainty. Firstly, a major resurgence in oil and gas production in the United States, driven by deployment of upstream technologies, are unlocking tight oil and shale gas. The United States, according to the IEA, is projected to become the largest global oil producer by 2020. Already, the increasing availability of lower-priced natural gas is reducing domestic demand for thermal coal in the US and pushing US coal producers to compete with countries like Australia in global coal markets. Secondly, some countries are putting plans to expand the nuclear industry on hold, with natural gas a possible substitute. Thirdly, coal has met nearly half the rise in global energy demand over the past decade, mostly in developing and newly-industrialised countries. Future growth of global coal demand depends on implementation of new policy measures to favour low-emission energy sources, deployment of more efficient coal-burning technologies and ultimately the viability of carbon capture and storage (CCS) technologies. Coal demand is projected to be flat and decline in OECD countries. China and India account for three quarters of projected non-OECD coal demand growth.

The IEA projects China’s coal demand will peak around 2020 and remain steady to about 2035. Indian coal demand continues to rise and, by 2025, overtakes the US as the world’s second largest user of coal. The IEA emphasises a number of uncertainties in relation to coal demand, such as the expansion of alternative fuels such as unconventional gas and the development of new infrastructure. Fourthly, the economics of renewables and wind continue to improve, as does the economics of unconventional gas production, although the latter is subject to environmental concerns and constraints. By 2015, the IEA projects that renewables – particularly solar, wind and hydro – will become the second largest source of power generation. Fifthly, natural gas is the only fossil fuel that will grow under all scenarios. For example, China’s growth in gas consumption is projected to increase from 130 billion cubic metres (bcm) in 2011 to 545 bcm in 2035.

Given the uncertainties in relation to energy markets, sources of energy and climate change impacts, the IEA develops projections for three scenarios. In its baseline New Policies Scenario, the IEA projects global energy demand will grow by one-third to 2035, with China, India and the Middle East accounting for 60% of the increase. Under the Current Policies Scenario the projections do not incorporate any possible, potential or even likely future policy actions. Under the 450 Scenario the focus is on actions that will limit the concentration of greenhouse gases in the atmosphere to around 450 parts per million of carbon-dioxide equivalent (ppm CO2-eq). This is consistent with actions to provide a 50% chance of meeting the goal of limiting the global increase in average temperature to two degrees Celsius (2 °C) in the long term, compared with pre-industrial levels.
3 AUSTRALIA’S RESOURCE SECTOR

3.1 Background

This chapter is concerned with an empirical analysis of Australia’s resources sector and its relationship with the economy. The resources sector is defined as mining activities including the exploration for, and extraction of naturally occurring solid and liquid minerals. The subcategories within mining are:

- Coal mining – firms engaged in open-cut or underground mining of black or brown coal.
- Oil and gas extraction – producing crude oil, natural gas or condensate through the extraction of oil and gas deposits.
- Metal ore mining – iron ore, bauxite, copper, gold, mineral sand, nickel ore and other metal ore.
- Non-metallic mineral mining and quarrying – gravel, sand and other construction materials (including stone, chalk, marble etc).
- Exploration and other mining support services – exploring for minerals, petroleum & natural gas and services integral to the mining process.

Australia is a major player in global resources industries. The country’s Economic Demonstrated Resources (EDR) is ranked in the top four countries for key resources. Australia is one of the top five global producers of major mineral commodities and is currently the largest exporter of black coal, iron ore, alumina, lead and zinc and the second largest exporter of uranium. In relation to petroleum, crude oil production is declining, but natural gas production is expanding rapidly, with abundant natural gas resources located off north western and northern Australia, while the development of coal bed methane gas resources in Queensland and New South Wales are, despite continuing environmental conflicts and uncertainties, providing increasing supplies of natural gas to Eastern Australia.

Resources and energy export earnings are central to the relatively strong performance of the Australian economy since the onset of the Global Financial Crisis in 2008 and subsequent economic crises, due predominantly to the rapid bounce-back and high growth in very large customer markets of China, India and other Asian countries.

The Bureau of Resources and Energy Economics has prepared projections (not forecasts) for primary energy consumption and production from 2012 to 2049-50. Highlights of the projections include:

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8 Australian Bureau of Statistics, Australian and New Zealand Standard Industrial Classification (ANZSIC) (cat. no. 1292.0).
− Primary energy consumption to grow by around 21 per cent (0.5 per cent a year) to reach 7,369 petajoules (PJ).
− The share of coal in total primary energy consumption to fall from 31% in 2012-13 to just 6%.
− Gas will be the fastest growing non-renewable energy source, with its share increasing to 34%.
− Renewable energy use will quadruple in volume terms (at 3.6% per year).
− Australian energy production (excluding uranium) to grow by 69 per cent (1.4 per cent per year) to reach 27 803 PJ.
− Coal and gas to account for 96% of Australia’s energy production (most of it for export).
− Production of black coal, which includes thermal and metallurgical coal, becomes increasingly export oriented and grows at an annual 1.2% to 17 973 PJ (around 539 million tonnes).
− LNG exports to more than triple, to reach 6127 PJ (around 113 million tonnes).
− Projections of declining oil production and constraints around petroleum refining suggest Australia’s net trade position for crude oil and refined petroleum products will weaken over the projection period, with net imports projected to increase at an average rate of 2.1 per cent a year.

3.2 Resource and Energy Sector and economic performance

The global economy is beset with multiple crises - economic, social and environmental. Since the onset of the Global Financial Crisis (GFC) in 2008 the global economy has been characterised by economic turbulence. Crisis in the financial sectors of major developed economies and some smaller economies have resulted in destabilisation of economies resulting in recession, falling demand and declining living standards, increased business insolvencies and high unemployment. Large North American, the Japanese and European economies are not on a path to sustained economic recovery. Although nearly all economies experienced negative impacts of the GFC, the extraordinary shift of economic activity to emerging economies dominated by China, and including India, other Asian and Middle Eastern countries, enabled many “new engines” of global growth to emerge. The shift of global production and a rise in consumption in these economies has resulted in high demand for minerals and energy to underpin high rates of economic growth. Although unable to avoid some of the negative impacts of the global financial and subsequent economic crisis, Australia, unlike most other OECD economies, has to date been able to avoid economic recession and has emerged as a stand-out performer of the OECD. Figure 1 compares Australia’s GDP growth rate with the OECD average over a 20 year period to 2012. The figure highlights two things. Firstly, Australia has consistently grown above the OECD average and, secondly, Australia bounced back very quickly from the GFC. Many factors explain Australia’s relatively good macro-economic performance including good economic management, growing ties with prosperous Asian economies and, in relation to the GFC, decisive intervention through the Economic Stimulus package in 2009.
In the context of this report, there is no doubt that high demand for Australia’s resources exports and associated historically high terms of trade was a major factor in driving economic growth of the Australian economy over the period 2003-2013. Australia’s resource base has historically been an important driver of economic growth, including rural and well as minerals and energy resources. This contribution has been cyclical, but compared to most advanced economies, has always been strategically important, dating back to the gold rushes of the 1850s. Figure 2 summarises the contribution of the resources sector to GDP since the early 1900’s. The figures shows a U-shaped curve, starting from strong national resource dependence in the early 1900’s, with the declining share of resources as the economy developed and industrialised from the 1920’s, through to the continuous rising share of mining to GDP from the 1960s, and finally, to the doubling of the share of resources and energy since the beginning of the 21st Century.
FIGURE 2 THE LONG TERM CONTRIBUTION OF THE RESOURCES SECTOR TO AUSTRALIA’S GDP GROWTH

Source: Various

The growing importance of resource exports as a share of total goods exports is set out in Table 1, which summarises trends between 2005-6 and 2011-12. Table 2 shows that the combination of mining plus resource manufacturing increased from 44% to 60% of the total in a six year period.

TABLE 1 GOODS EXPORTS ($ MILLION NOMINAL)

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture</th>
<th>Mining</th>
<th>Resource Manufactures ie simply transformed manufactures</th>
<th>Food &amp; Beverage Manufactures</th>
<th>Other Manufactures</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>10,056</td>
<td>56,820</td>
<td>10,408</td>
<td>16,473</td>
<td>48,211</td>
<td>10,523</td>
<td>152,491</td>
</tr>
<tr>
<td>2006-07</td>
<td>9,138</td>
<td>61,883</td>
<td>11,294</td>
<td>17,066</td>
<td>57,018</td>
<td>11,702</td>
<td>168,101</td>
</tr>
<tr>
<td>2007-08</td>
<td>9,582</td>
<td>72,832</td>
<td>12,489</td>
<td>16,763</td>
<td>59,241</td>
<td>9,951</td>
<td>180,858</td>
</tr>
<tr>
<td>2008-09</td>
<td>11,843</td>
<td>117,646</td>
<td>11,867</td>
<td>18,570</td>
<td>62,076</td>
<td>8,832</td>
<td>230,834</td>
</tr>
<tr>
<td>2009-10</td>
<td>10,424</td>
<td>99,693</td>
<td>10,799</td>
<td>16,107</td>
<td>53,130</td>
<td>10,574</td>
<td>200,727</td>
</tr>
<tr>
<td>2010-11</td>
<td>14,014</td>
<td>136,731</td>
<td>11,018</td>
<td>16,979</td>
<td>56,278</td>
<td>10,704</td>
<td>245,724</td>
</tr>
<tr>
<td>2011-12</td>
<td>17,358</td>
<td>147,424</td>
<td>12,001</td>
<td>17,917</td>
<td>58,910</td>
<td>10,405</td>
<td>264,015</td>
</tr>
</tbody>
</table>

Source: ABS International Trade in Goods and Services, (cat. no. 5368.0)

Data for the period 1900–01 to 1938–39 are taken from estimates published by Butlin N.G., Barnard, A. and J.J. Pincus (1982), Government and Capitalism—public and private choice in twentieth century Australia, Sydney: Allen and Unwin; data for 1938–39 to 1948–49 were published in the Budget White Paper National Income and Expenditure, 1955-56; data for 1948–49 to 1959–60 were published in the 1995–96 issue of Australian National Accounts: National Income, Expenditure and Product (cat. no. 5204.0), and are on an SNA68 basis; while the estimates for 1959-60 to the current year were published in Australian System of National Accounts (cat. no. 5204.0)
TABLE 2 RESOURCES EXPORTS (SHARE %)

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture</th>
<th>Mining</th>
<th>Resource Manufactures</th>
<th>Food &amp; Beverage Manufactures</th>
<th>Other Manufactures</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>6.6%</td>
<td>37.3%</td>
<td>6.8%</td>
<td>10.8%</td>
<td>31.6%</td>
<td>6.9%</td>
<td>100%</td>
</tr>
<tr>
<td>2006-07</td>
<td>5.4%</td>
<td>36.8%</td>
<td>6.7%</td>
<td>10.2%</td>
<td>33.9%</td>
<td>7.0%</td>
<td>100%</td>
</tr>
<tr>
<td>2007-08</td>
<td>5.3%</td>
<td>40.3%</td>
<td>6.9%</td>
<td>9.3%</td>
<td>32.8%</td>
<td>5.5%</td>
<td>100%</td>
</tr>
<tr>
<td>2008-09</td>
<td>5.1%</td>
<td>51.0%</td>
<td>5.1%</td>
<td>8.0%</td>
<td>26.9%</td>
<td>3.8%</td>
<td>100%</td>
</tr>
<tr>
<td>2009-10</td>
<td>5.2%</td>
<td>49.7%</td>
<td>5.4%</td>
<td>8.0%</td>
<td>26.5%</td>
<td>5.3%</td>
<td>100%</td>
</tr>
<tr>
<td>2010-11</td>
<td>5.7%</td>
<td>55.6%</td>
<td>4.5%</td>
<td>6.9%</td>
<td>22.9%</td>
<td>4.4%</td>
<td>100%</td>
</tr>
<tr>
<td>2011-12</td>
<td>6.6%</td>
<td>55.8%</td>
<td>4.5%</td>
<td>6.8%</td>
<td>22.3%</td>
<td>3.9%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: ABS International Trade in Goods and Services, (cat. no. 5368.0)

Growth of resource exports, driven particularly by high demand in China for iron ore and Japan, China, India, Republic of Korea and Taiwan for coal exports, resulted in an unprecedented uplift in Australia’s terms of trade, with the index increasing from around 60 in 2000 to over 100 in 2011 (Figure 3). More recently, the terms of trade are declining. The terms of trade is a measure of the relative prices Australia receives for its exports and imports, hence highlights the extraordinary challenge to competitiveness for non-resource trade-exposed industries.

FIGURE 3 TERMS OF TRADE, INDEX

Source: ABS Australian System of National Accounts (cat no 5204.0)
3.3 Resources and shifts in income distribution

In the context of this report, income distribution is concerned with the distribution of income between resource companies, government and labour. Conservative commentators argue that Australian workers are pricing themselves out of the market compared to overseas workers. Perhaps most notorious were the comments by Gina Rinehart when she stated:\footnote{Sydney Morning Herald (2012), World’s media pan Rinehart’s $2 a day African miner comments, 6 September.}:

"The evidence is inarguable that Australia is becoming too expensive and too uncompetitive to do export-oriented business‖...‖Africans want to work, and its workers are willing to work for less than $2 per day. Such statistics make me worry for this country’s future."

Although these statements are generally greeted with a combination of mirth and contempt, it is important to acknowledge that they are rarely challenged by the mainstream media. Australian resource sector remuneration is a reflection of a number of factors including the high skilled inputs, safety and risk, often long working hours, high capital intensity and profitability of the resources sector. The evidence is quite clear that the returns to the resources sector companies are extraordinarily high. Figure 4 compares compensation to employees and gross operating surplus in nominal terms between 1990 and 2012, with the increasing divergence between the surplus produced and what is paid to workers. GOS can be defined as gross output less the cost of intermediate goods and services (to give gross value-added), and less compensation of employees, making no allowance for depreciation of capital.

\textbf{FIGURE 4 TRENDS IN MINING EMPLOYEE COMPENSATION AND GROSS OPERATING SURPLUS ($MILLION) }

\begin{center}
\includegraphics[width=\textwidth]{figure4.png}
\end{center}

Source: ABS Australian System of National Accounts (cat no 5204.0) and Australian Economic Indicators (cat. no. 1350).

\footnote{Sydney Morning Herald (2012), World’s media pan Rinehart’s $2 a day African miner comments, 6 September.}
Figure 5 provides the percentage share of income going to workers and the share going to GOS. In stark terms, the share going to labour declined from 30% in 1990 to 20% in 2012, whereas the share going to Gross Operating Surplus increased from 70% to 80%.

**Figure 5 Trends in Mining Income Share (%)**

Another measure of the returns to resource companies is earnings before interest, tax, depreciation and amortisation (EBITDA). Table 3 summarises the extraordinary increases in these earnings for coal mining and metal ore mining between 2006-07 and 2011-12, and the more subdued growth of earnings from oil and gas extraction.

**Table 3 Selected Mining Industries Earnings Before Interest, Tax, Depreciation and Amortisation ($ Million Nominal)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal mining</th>
<th>Oil and gas extraction</th>
<th>Metal ore mining</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>9,819</td>
<td>17,114</td>
<td>21,011</td>
</tr>
<tr>
<td>2007-08</td>
<td>8,949</td>
<td>18,099</td>
<td>19,936</td>
</tr>
<tr>
<td>2008-09</td>
<td>29,188</td>
<td>21,662</td>
<td>23,738</td>
</tr>
<tr>
<td>2009-10</td>
<td>14,890</td>
<td>16,292</td>
<td>26,142</td>
</tr>
<tr>
<td>2010-11</td>
<td>17,756</td>
<td>20,229</td>
<td>50,624</td>
</tr>
<tr>
<td>2011-12</td>
<td>14,203</td>
<td>20,602</td>
<td>54,384</td>
</tr>
</tbody>
</table>

Source: ABS Australian Industry, 2011-12 (cat. no. 8155.0)

3.4 **Sectoral shifts in the economy**

It is clear that the growth of the resources sector is contributing a growing relative share to Australia’s GDP since 1990. Figure 6 summarises the contribution of major industry sectors to GDP over the period. The figure highlights significant sectoral shifts in the Australian economy over this period with strong growth of advanced services industries. The contribution of
financial and professional services increased from 6 to 10% and 4 to 7% respectively. Conversely, manufacturing’s contribution halved from just under 16% to under 8% over this period. The most significant growth occurred in mining, with its share doubling from 5% of GDP to 10%.

FIGURE 6 INDUSTRY SHARE OF GDP (%)

Source: ABS Australian System of National Accounts (cat no 5204.0) and Australian Economic Indicators (cat. no. 1350)

The strong growth of the resources sector has been underpinned by a massive increase in investment for the construction and operation of new mines, processing of some minerals, and infrastructure including railways, pipelines and port capacity. Figure 7 below compares gross fixed capital formation in major and selective industry sectors: mining, manufacturing, transport, postal and warehousing and rental, hiring and real estate services. All followed a similar trend since the early 1990s to the turn of the century. But over the past decade, investment in mining took off. The extraordinary leap in mining occurred after 2005, with annual investment leaping from $20 billion to over $100 billion in 2012.

Despite increased global uncertainty and real price declines of some key commodities, investment in new projects continued to soar until recently. As reported by the Bureau of Resources and Energy Economics, at April 2013 the investment pipeline for resources and energy major projects had $232 billion of projects at Feasibility Stage and over $120 billion of projects at the Publicly Announced Stage. There are currently 73 projects at the Committed Stage with a combined value of $268 billion. Around 53% of the value of these committed projects was in Western Australia, and 30% in Queensland. LNG, gas and petroleum projects

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have the highest combined value of projects at the Committed Stage. While the number of projects is 14 less than reported in October 2012, the value of committed investment has remained constant because of cost increases to several high-value projects. The decline in the number of projects at the Committed Stage is indicative of the emerging trend of project proponents delaying or cancelling high value resources and energy projects in Australia. In the past twelve months around $150 billion of projects have either been delayed, cancelled or have had re-assessed development plans.

FIGURE 7 COMPARISON OF GROSS FIXED CAPITAL FORMATION IN SELECTIVE INDUSTRIES ($ MILLION)

![Graph showing comparison of gross fixed capital formation in selective industries]

Source: ABS Australian System of National Accounts (cat no 5204.0) and Australian Economic Indicators (cat. no. 1350)

With Australia developing as an increasingly open economy, the strong export performance has assisted, but not overcome, Australia’s chronic balance of payments deficit. Despite weaker prices for some commodities in 2012-13, export earnings from Australia’s resources sector are forecast to reach $184 billion, which is 70% of all Australia’s exports. Volumes of resource exports are forecast to continue to grow, particularly LNG (up 26%), thermal coal (up 14%), iron ore (up 9%) and metallurgical coal (up 8%), although until recently the depreciation of the US dollar impacted returns for contracts signed in US dollars. Further, increased competition in major markets such as iron ore and metallurgical coal is having a negative impact on prices.

Figure 8 shows the contribution of Australia’s largest exporting sectors over the period 2005-06 to 2011-12. Metal ore mining showed the most dramatic increase, with exports increasing from around $21.8 billion in 2005-06 to $75.0 billion in 2011-12. Coal mining exports appeared to fluctuate more, with exports doubling from $24.3 billion to $47.9 billion. Oil and gas extraction, driven by increasing exports of LNG, doubled over this period, and these rates of growth are likely to be sustained. Primary metal and metal production exports are dominated by the resource-intensive aluminium industry.

Another important indicator of major structural change is employment change (Figure 9). Manufacturing employment remains important in the Australian economy but is experiencing a significant decline, from around 1.1 million in 1994-95 to 957,000 in 2011-12. Over the same period, professional services have increased from around 450,000 jobs to 880,000 jobs, highlighting the shift towards a more knowledge-based economy. The resource sector is highly capital intensive and increasingly automated and hence employment outcomes tend to be lower. Nevertheless, employment in resources and energy has also grown significantly, from around 60,000 jobs in the early 1990’s, to 90,000 in 1994-95 and to 240,000 in 2011-12.
Table 4 shows employment trends in major resource industries.

**TABLE 4 RESOURCE INDUSTRIES EMPLOYMENT TRENDS (’000)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal mining</th>
<th>Oil and gas extraction</th>
<th>Metal ore mining</th>
<th>Non-metallic mineral mining and quarrying</th>
<th>Exploration and other mining support services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006–07</td>
<td>26</td>
<td>10</td>
<td>34</td>
<td>12</td>
<td>35</td>
</tr>
<tr>
<td>2007–08</td>
<td>30</td>
<td>10</td>
<td>38</td>
<td>13</td>
<td>36</td>
</tr>
<tr>
<td>2008–09</td>
<td>34</td>
<td>12</td>
<td>40</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>2009–10</td>
<td>34</td>
<td>15</td>
<td>45</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>2010–11</td>
<td>38</td>
<td>15</td>
<td>49</td>
<td>15</td>
<td>44</td>
</tr>
<tr>
<td>2011–12</td>
<td>46</td>
<td>17</td>
<td>69</td>
<td>14</td>
<td>50</td>
</tr>
</tbody>
</table>

Although the resources boom appears to have peaked and some major projects have been deferred, employment has continued to grow in resource sector and supportive construction industries, mainly due to prior advanced projects underway. In 2010, the National Resources Sector Employment Taskforce (NRSET) released a report to investigate employment and skills requirements for the resources sector to 2015. The report used ABS data to estimate projected employment to 2015. The results are shown in Table 5, which shows employment increasing to 216,005 over this period, which is more conservative than Department of Education Employment and Workplace Relations estimates, although the latter may have included more construction jobs in developing new mines and infrastructure.

14 National Resources Sector Employment Taskforce (2010), Resourcing the Future, Commonwealth of Australia, July.
TABLE 5 PROJECTED EMPLOYMENT IN MINING OPERATIONS, 2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>13,977</td>
<td>5,571</td>
<td>19,548</td>
</tr>
<tr>
<td>Professionals</td>
<td>24,080</td>
<td>9,598</td>
<td>33,678</td>
</tr>
<tr>
<td>Technicians and tradespeople</td>
<td>37,833</td>
<td>15,080</td>
<td>52,913</td>
</tr>
<tr>
<td>Community &amp; personal service workers</td>
<td>733</td>
<td>292</td>
<td>1,024</td>
</tr>
<tr>
<td>Clerical and administrative workers</td>
<td>13,791</td>
<td>5,497</td>
<td>19,287</td>
</tr>
<tr>
<td>Sales workers</td>
<td>597</td>
<td>238</td>
<td>835</td>
</tr>
<tr>
<td>Machinery operators and drivers</td>
<td>53,621</td>
<td>21,372</td>
<td>74,993</td>
</tr>
<tr>
<td>Labourers</td>
<td>8,140</td>
<td>3,244</td>
<td>11,384</td>
</tr>
<tr>
<td>Other</td>
<td>1,675</td>
<td>667</td>
<td>2,342</td>
</tr>
<tr>
<td>Total</td>
<td>154,446</td>
<td>61,559</td>
<td>216,005</td>
</tr>
</tbody>
</table>

Source: NRSET

One of the major challenges is to ensure that there are sufficient skilled and experienced workers to meet changes in demand. For example, NRSET estimated that there may be a shortfall of up to 35,000 tradespeople in resources construction and mining operations by 2015. Compared to other sectors, the resources sector has traditionally put insufficient resources into training and supervising apprentices. For example, a finding from a report from the National Centre for Vocational Education Research found the resources sector “employs considerably fewer apprentices than would be expected from its share of trade employment. In fact the sector would have to double its number of apprentices to be on par with other industries.”

As a consequence, during the resources boom many resource companies had challenges in finding sufficient trained and “workforce ready” trades and technical workers. More recently, some of these shortages have been partially addressed. Unpublished data obtained by CFMEU Construction from the NCVER shows that apprenticeship commencements in mining increased from a low base of 3,400 to over 5,300 in the 2 years to March 2011. Apprenticeship completions have risen from 1,319 to 2,257 in the same period. In addition to shortages of trades and technical workers, the Australian Workforce and Productivity Agency has identified shortages of a number of specific professional and technical skill shortages in the resources sector including surveyors, civil engineering professionals, electrical engineers, motor mechanics, automotive electricians, plumbers, air conditioning and refrigeration mechanics, civil engineering draftspersons and technicians and electronic instrument trades.

15 Ibid.
17 CFMEU
The under-investment by the resources sector in skills is one reason driving the surge in the use of temporary foreign workers, including those on what is known as s457 visas. The mining industry is one of the heaviest users of s457 workers, accounting for 8,100 (7.5%) of the 106,860 s457 visas on issue in May 2013\(^{19}\), while mining accounts for only around 2% of employment. While labour shortages, especially in short-term resources construction projects, are a valid reason for the use of temporary foreign labour, the CFMEU and other unions have expressed concern about s457 visa workers being employed on below-market rates of pay and being vulnerable to exploitation in other ways.

### 3.5 Spatial implications of Australia’s resource development

One of the defining features of Australia’s resource development is the spatial distribution of resources. Figure 10 shows the geographical distribution of production across Australia.

![Figure 10: Distribution of Resource Sector Production by State and Territory](chart.png)


Given the extraordinary increases in global demand for resources, resource abundant states and regions have surged ahead. Conversely, states and regions where the resources sector share of total state and regional product is lower have tended to lag. Further, the latter have also experienced the negative impacts of the appreciated Australian dollar, due predominantly to loss of competitiveness of major trade exposed industries such as manufacturing, tourism and...
and international education\textsuperscript{20} exports. Some have termed this the two-speed economy\textsuperscript{21}, with growing prosperity in Northern and Western Australia, and major structural challenges in the industrial states of New South Wales, Victoria and South Australia. In some ways this is an oversimplification. Conventional economic analysis suggests that the appreciation of the currency also brings benefits. Western Australia, Queensland and Northern Territory are less developed and growing their economies in a range of different industries. Many but not all of the growth opportunities in northern Australia are associated with the resources sector. Further, many residents of the resource abundant states and the Northern Territory are not sharing in the benefits of the substantial growth of the resources sector, with many indigenous Australians not sharing in the benefits of the resources boom. In the South East states, New South Wales is characterised by a strong resource base, including the Hunter and parts of the Illawarra Region, and the returns from resource development are high. Nevertheless, when looked at in average terms, there is strong evidence that the distribution of resources, demand for specific resources and their development provides a powerful explanation for differences in economic performance across Australia. Figure 11 summarises annual growth rates for metropolitan areas and regions across Australia for 2011-12.

\begin{figure}
\centering
\includegraphics[width=\textwidth]{figure11}
\caption{Annual Growth Rates \% (Gross Regional Product)}
\end{figure}

The figure shows contrasts the annual growth rate of just under 9\% in regional Western Australia with the sluggish economic performance of Tasmania, regional South Australia and regional Victoria. The Northern Territory also is growing above average. Regional Queensland is growing at about the national average, but good growth in resources exports is not entirely capable of offsetting the pressures in some trade exposed sectors of regional Queensland.

\textsuperscript{20} The downturn in the international education sector is also due to other major factors, notably changes in visa rules that removed easy access to permanent residency for overseas students.

\textsuperscript{21} Glenn Stevens (2011), Address to the Economic Society of Australia, Brisbane, 14 June.
including agriculture and tourism. Another important feature is strong growth in Perth and Brisbane compared to Sydney and Melbourne, suggesting that resource based growth in resource abundant states is increasing the positive spill-over impacts on their respective metropolitan capitals. This incorporates such variables as strong business growth of business and professional firms providing services to the resources sector, increased household incomes (often but not only associated with Fly-In Fly-Out mining operations), strong population growth and property markets.

Table 6 summarises resource sector income by regions and major capitals cities, with regional Western Australia contributing 57% of all resource sector income and Northern Australia (i.e. Western Australia, Queensland and Northern Territory) contributing 82% of all national resource sector income.

TABLE 6 MINING GROSS VALUE ADDED BY REGION ($M)

<table>
<thead>
<tr>
<th>Region</th>
<th>Mining GVA $ Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sydney</td>
<td>573</td>
</tr>
<tr>
<td>Regional NSW</td>
<td>13,652</td>
</tr>
<tr>
<td>Melbourne</td>
<td>426</td>
</tr>
<tr>
<td>Regional Vic</td>
<td>6,030</td>
</tr>
<tr>
<td>Brisbane</td>
<td>872</td>
</tr>
<tr>
<td>Regional QLD</td>
<td>27,012</td>
</tr>
<tr>
<td>Adelaide</td>
<td>371</td>
</tr>
<tr>
<td>Regional SA</td>
<td>4,013</td>
</tr>
<tr>
<td>Perth</td>
<td>2,997</td>
</tr>
<tr>
<td>Regional WA</td>
<td>80,139</td>
</tr>
<tr>
<td>Tasmania</td>
<td>408</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>3,436</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>18</td>
</tr>
<tr>
<td>Australia</td>
<td>139,947</td>
</tr>
</tbody>
</table>

Source: SGS Australian Cities Accounts and ABS Australian National Accounts: State Accounts (Cat. No. 5220.0)
New projects are continually being developed. The strong position of Western Australia in looking for more minerals is highlighted in Figure 12. Annual mineral exploration expenditure increased fourfold since 2004-05, from around $500 million per year to $2 billion in 2010-11.

**FIGURE 12 MINERAL AND PETROLEUM EXPLORATION, AUSTRALIA, $M**

Source: ABS (cat. no. 8412.0)
4 TAXATION AND THE RESOURCES SECTOR

4.1 The resource taxation architecture

In Australia, the basis of resource sovereignty and state regulation of extractive industries is the sovereign ownership of mineral resources which are basically vested in the Crown. This follows the precedent of British law and fundamentally differs from other sovereign jurisdictions such as the United States of America which has a generalised private ownership of mineral resources. The Australian State Governments hold ownership over minerals found within their borders while the Commonwealth Government holds ownership in the Territories and in Australian territorial waters. These various governments have facilitated the exploitation of mineral resources by delegating to private companies and individuals the rights to explore for, and to develop, mineral deposits.

The mining industry in Australia pays special taxes for the use of community owned resources. In addition the mining industry pays taxes levied on businesses in general. General taxes include corporate income tax, payroll and transaction taxes, and labour personal income taxes.

This system is archaic and inefficient. The Labor Government’s attempts to obtain a better share of the economic rents on behalf of Australian citizens were frustrated by well-funded campaigns by resource companies and conservative states. Treasury modelling suggests that, between 1999-2000 and 2008-09 and well before the end of the resources boom, “If our share of the profits had remained at the average of the first half of the decade, we would have collected around $35 billion in additional revenue between 1999-00 and 2008-09 to invest in vital social and economic infrastructure.” The Treasury estimates of the decline in government revenue to 2008-09 are set out in Figure 13 below. By 2014, this would have accumulated to an amount in the vicinity of $50-60 billion, sufficient to pay for Australia’s most pressing educational, health and other infrastructure reforms.

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22 Australia Government, Stronger Simpler Fairer A tax plan for our future
Omnibus corporate taxes

The mining industry is treated similarly to other industries in the economy in terms of general taxes, including company taxation, the GST, payroll tax, state transaction taxes. The actual corporate tax rate paid by mining companies at around 13.9% is much lower than the average for all corporates (21%). This is because the mining companies have access to generous tax deductions for accelerated depreciation on capital expenditure, outlays on exploration, and, until recently, generous tax concessions for R&D\textsuperscript{23}.

Under a pure income tax base, if the mining exploration is successful it will be depreciated over the life of the mining project. If mining exploration is unsuccessful it will be expensed. Under the tax imputation system, corporate tax paid is a withholding tax for the income earned on equity investments by shareholders distributed as dividends as a flat rate tax on retained earnings which flow onto capital gains, which in turn receive concessions at the shareholder level. Interest on debt finance is deductible to the mining producer, and taxable for the saver.

4.2 State and territory resource taxes

There is a complex array of different special taxes levied on the mining industry. State governments apply royalties to resource projects, usually based on a fixed amount per tonne of production or fixed percentage of the value of production. The states and territories have over 60 different sets of special taxes on on-shore mining investments. Most are ad valorem rates, with several designated taxes. One profit based mining tax is levied in the Northern Territory. The ad valorem rates range from zero\textsuperscript{24}, to approximately 7 per cent\textsuperscript{25} to 10 per cent\textsuperscript{26}.

\textsuperscript{23} The Australia Institute (2013), The impact of the mining boom on Australia’s non-mining industries, February
\textsuperscript{24} Gold mining in Victoria
\textsuperscript{25} Coal in New South Wales and Queensland up to $100/t and iron ore in Western Australia
\textsuperscript{26} Coal in Queensland above $100/t.
A variety of resource royalties and payment arrangements are used by the States to price the use of natural resources. These include specific royalties levied as a constant amount per physical unit of production, ad valorem royalties levied as a percentage of the value of production, or profit based royalties levied on the profit derived on sale. The taxation architecture is very complex, covering over 60 different royalty arrangements. Table 7 provides a summary of some features of state mineral royalty arrangements.

**TABLE 7 STATE MINING ROYALTIES**

<table>
<thead>
<tr>
<th>Location</th>
<th>Mineral</th>
<th>Royalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>All states</td>
<td>Generally</td>
<td>Ad valorem royalty, generally ranging between 2.5 and 7.5 per cent of the value of mine output</td>
</tr>
<tr>
<td>All States</td>
<td>Certain low value commodities such as clay and sand</td>
<td>Specific royalty (amount per tonne)</td>
</tr>
<tr>
<td>Queensland</td>
<td>Coal</td>
<td>Base rate of 7 per cent of value. An additional 3 per cent applies to value above $100/tonne</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Most minerals</td>
<td>Hybrid royalty arrangements comprised of an ad valorem and profit-based royalty.</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Most minerals except Petroleum</td>
<td>Profit-based royalty</td>
</tr>
</tbody>
</table>


Figure 14 shows trends in state and territory royalties over the period 2003-2013, showing increases in royalties (in nominal dollars) in resource abundant provinces over this period, more than tripling in WA and doubling in NSW and Queensland. However, this is in the context of far greater increases in industry profits resulting, as seen in Figure 13, in governments’ share of profits declining since late last century, resulting in a squandering of the benefits of the resources boom.
4.3 Commonwealth resource taxes

In addition to omnibus corporate and state taxes, the Australian government raises revenue from the extraction of certain oil and gas natural resources through specific resource taxes and royalties. Petroleum resource rent tax (PRRT) is a profits-based tax that applies to oil and gas production in Australian territorial waters outside the coastal limit (except the North West Shelf exploration permit area and the Joint Petroleum Development Area in the Timor Sea). PRRT applies at a rate of 40% of the profits of a petroleum project, after deducting exploration, development and operating costs. Costs that are carried forward as an offset against income in a future period are calculated at variable rates depending on the type of expense. The long term bond rate (LTBR) plus 15% for exploration expenditure and the LTBR plus 5% for development and operating expenditures. Exploration in what are described as “frontier” areas is currently eligible for an initial 150% offset.

The Commonwealth collects crude oil excise from the production of liquid hydrocarbons from the North West Shelf production area, onshore fields and coastal waters. Crude oil excise is levied on a per barrel basis. The first 30 million barrels of cumulative production from a field is exempt. There is also an annual exemption for each field of 3.1 million barrels once the 30 million barrel limit is reached. Royalties levied on an increasing rate scale are tied to the level of production. The top rate for fields currently subject to crude oil excise is 30 per cent of the gross value of production. The excise scales that apply to production from each field are determined by the date of discovery and/or the commencement of production.
The Australian government collects revenue from the extraction of oil and gas resources through several royalties it shares with Western Australia and also collects royalties on uranium mining in the Northern Territory, which is shared between the Northern Territory Government and the Aboriginal Benefits Trust Account.

The Australian Government introduced the Minerals Resource Rent Tax in July 2012, which applies to the super profits of iron ore and coal companies with profits exceeding $75 million. To date it appears that the MRRT will raise little revenue in its first years of operation due to a decline in mineral prices, poor production cost control in some mineral sectors resulting in lower profits, and overly-generous deductions negotiated by major mining companies. Figure 15 therefore summarises Commonwealth rents on natural assets in the absence of the MRRT, showing an increase in revenue over the period of the resources boom to just under $1.8 billion in mid-2012 (this includes royalties from offshore petroleum and uranium production in the Northern Territory). While this looks like a large increase, it is from a relatively small base and should be seen in the context of the large industry earnings shown in Table 3. That this significant increase in resource rents occurred without harming investment while the resources boom was in full swing is evidence that a shift to profit-based taxation of mining and away from production-based royalties would be beneficial for both the industry and the Australian community.

4.4 Emergence of shadow royalties and the rise of financialised regulatory resource instruments

In Australia a system of private shadow resource royalties has emerged alongside the state royalty system. They are not resource royalties, which is a form of tax paid to government, but...
actually a privately negotiated rent between regulatory licence holders and productive mining companies. They have concentrated wealth from resource development in fewer hands. Privately owned unlisted companies such as Minerology, Fortescue Metals, Hancock Prospecting, Aston Resources, New Hope Coal, and Linc Energy have accumulated huge capital entirely from the trade, sale and contracted shadow royalties of their mining rights endowed by state regulatory instruments. These incredible gains were derived from the rights held in exploration and mining licences rather than as a result of any productive extraction of sovereign owned ores.

An extremely competitive market has developed out of regulatory structures of tradable and fungible derivative royalties, investment trusts and yield plays competing for the rights to strategic regulatory instruments. These regulatory instruments have been transformed into assets which yield massive capital flows to licence holders in the form of unproductive rents on mining production. Extractive industries regulatory derivative financialisation or “royalty financing”\(^{27}\) is the raising of capital based on the valuation of the potential shadow royalty and operates in a multiplicity of ways, including bridge financing,\(^{28}\) seed capitalisation, equity market financing through share floats, completion guarantees\(^{29}\) and strategic capitalization alliances.\(^{30}\)

A new rentier group, through the extraction of shadow royalties, has emerged or been strengthened by the resources boom. They are politically and economically influential in state regulatory systems and are posing a challenge to Australian sovereignty. This group has emerged not just as an economic sub-class but are an important political force in Australian politics. They developed an aggressive political strategy in response to the proposed introduction of the Minerals Resource Rent Tax. Although there are differences between them, the essence of their approach is a lower taxation and weaker fiscal regime for the resources sector.

Privately-owned Mineralogy Pty Ltd contracted a A$5 billion deal with CITIC Pacific Ltd, a Chinese state-backed infrastructure company, to develop a large iron ore deposit in Western Australia’s Pilbara region. Mineralogy, owned by a former Queensland real estate agent and Liberal National Party “communications director” Clive Palmer, contracted on the basis of its mining license CITIC to invest up to $US2.47 billion ($A3.46 billion) in developing two mines and options to develop further projects. Based almost entirely on the amortization\(^{31}\) of Mineralogy’s rental contracts with CITIC, Palmer’s personal wealth has been variously estimated at A$3.85 billion\(^{32}\) and A$800 million\(^{33}\).

Possibly the most active resource rentier in the purchase and trading of regulatory instruments and regulatory financialisation is Andrew Forrest. Using leverage by possessing regulatory instruments held by Anaconda Nickel (now Minara Resources), the rentier accumulated large capital through the Murrin Murrin Joint Venture nickel project, in joint partnership with

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\(^{28}\) Front-end capital raising to capitalize a project.

\(^{29}\) Utilising balance sheet underwriting of project completion guarantees for financial lending institutions and letters of credit.

\(^{30}\) Using the nominal value of potential royalty payments as a substitute for capital to fund buy-outs of other license holders or producing mining and processing corporations.

\(^{31}\) The calculation of the consumption of the value of intangible assets, such as a patent, copyright or a financialized resource regulatory instrument.


\(^{33}\) Forbes, “Australia’s 40 Richest 2013”, accessed 28\(^{th}\) May 2013
Glencore International AG which is now the owner of the production mine. In 2003, the group was renamed Fortescue Metals Group. Since then, the company has grown to possess three times the tenements of its nearest rival in Western Australia’s iron ore rich Pilbara region.

The Hancock Group of Companies are holders of numerous resource regulatory instruments, predominantly in the Pilbara region. Hancock Prospecting, a private company not subject to publicly listed corporation disclosure obligations, was in 2011 estimated to be earning about an $870 million in revenue per year accumulated through shadow royalty and contract profit share agreements. Hancock Prospecting has a 50% share of profits contract at the Hope Downs mine which is operated by the mining producer Rio Tinto. Hope Downs mines approximately 30 million tonnes per year of ore and generates over $2 billion in revenue, and about $700 million in net cash. In addition, the company receives a 1.25% shadow royalty rent from iron ore sales by Hamersley Iron, operated by a Rio Tinto subsidiary, which accumulates approximately $170 million a year. The capital accumulation based on shadow royalties has been enormous whilst the company only employs around 40 people.

Gina Rinehart is a major supporter of Australians for Northern Development and Economic Vision (ANDEV). ANDEV advocates the creation of a ‘Northern Economic Zone’ that will greatly lower tax rates in the extractive industries zone. The program calls for “lower” personal income tax “or tax rebates” for those who live and work in the Northern Zone, no payroll tax, no fringe benefits tax and no stamp duty. It proposes “one-stop-shops for regulation” with approvals being “streamlined” and environmental approvals “fast-tracked”. These “one-stop-shops” would “administer and enforce regulations on behalf of all levels of government.” The other main thrust is the much-increased use of “regional skilled migration visas”. Its manifesto claims that its objective is to make it “easier for skilled migrants to live and work in North Australia.” It also states that “Northern Australia is different from the rest of the country.”

The ANDEV program calls for the establishment of what is a micro resource rentier state which could be characterised as a mining country with weak institutions and a minimalist public sector entirely functioning to facilitate mining projects. ANDEV proposes laws that grant subsoil rights to rentiers, from which spring the extraordinary size and duration of the "resource rents", a virtually non-existent resource fiscal regime, privately owned infrastructure and a regional cross-border fly in and fly out skilled mining workforce. The access to a cross border regional mining workforce is the main thrust of the ANDEV strategy. The approach is consistent with the Charter City strategy, which are “special reform zones that allow governments to quickly adopt innovative new systems of rules, rules that can be markedly different from those in the rest of the country.” This approach fragments national sovereignty through the creation of sub-sovereignties with laws, rules and sovereign powers. The vision for Australia emerging from the rentier sub-class is one of fragmented national sovereignty, excision of the ore rich regions of Australia from employment protections, rights and citizenship integral with national sovereignty and a cross border fly in fly out mining workforce. This is the new phase in the great historical national legal, political and economic challenge of resource sovereignty.

35 Variously designated as Hancock Prospecting Ltd, Hancock Resources, Hanwright Pty Ltd, Hancock & Wright Ltd, and Hancock Prospecting Pty. Ltd.
36 ANDEV http://www.andev-project.org/about-us accessed 4th June 2013
37 Charter Cities http://chartercities.org/about accessed 23rd May 2013
Conclusion

The mining industry does pay considerable taxes and other payments to governments, which is to be expected given the size of the industry, its dominance by multinational corporations, its international competitiveness and the relative profitability of the sector. However, the question remains as to what is the achievable level of taxation that increases benefits to other parts of the Australian economy and community while still enabling investment and reasonable profits.

The appropriate royalty and tax regime for the Australian resources sector is clearly unfinished business. The opportunistic increases in royalties by some State Governments seeking to exploit weaknesses in the federal Minerals Resource Rent Tax demonstrates that the overall regime, and State royalties in particular, are archaic, complex and inefficient.

There are also considerable issues with the various allowances and deductions that enable the resources sector to have a lower achieved corporate tax rate than any other industry.

Australia has begun to shift from production-based resource revenues to profit-based taxation of resources. Ultimately this will be more effective and efficient in raising public revenues from the industry while maintaining an hospitable investment environment. However, we have a long way to go in rationalising resources sector taxation, and a key requirement will be reconciling State and federal Government objectives.

The seizing of economic rents via shadow royalties and similar mechanism (in simple terms, the generation of astronomical profits and wealth from ownership of leases rather than productive activity by a very small number of so-called entrepreneurs) is a wasteful burden on the industry. While some level of financial intermediation is necessary for the smooth operation of capital markets, the level that has occurred represents sub-optimal capital allocation and impedes the development of actual mines. While there is no neat solution to this problem, the greater deployment of profits-based taxation would reduce levels of speculation during resources boom periods.
5 ADDRESSING THE SOCIAL INFRASTRUCTURE DEFICIT IN RESOURCE REGIONS

5.1 Introduction

The CFMEU and its members are concerned about the costs of rapid growth of resource abundant regions and smaller mining communities. In terms of sharing the benefits, the CFMEU would like to see a fair share of investment going back into resource communities and governments, industry, regional agencies and unions working together to strengthen the sustainability of resource communities. These regions generate enormous wealth but lag in terms of social infrastructure and services. Critical issues include the emergence of a social infrastructure deficit and the impacts this has on local communities and workers. The growth of Fly-In Fly-Out (FIFO) and Drive-In Drive-Out (DIDO) and the benefits and costs to communities has been subject to intense public debate. Growth of social infrastructure and services is often not well aligned with the growth of mining extraction and physical infrastructure.

5.2 Background

It is widely acknowledged that Australia’s resources boom over the past decade has made a significant contribution to national growth and export performance, and played an important role in stimulating the economy at the macro level following the onset of the Global Financial Crisis. The economic activity generated by resource developments can have benefits for communities, such as bringing in investment, increased employment opportunities and revival of local industry sectors.

However, the view exists that the benefits of the resources boom have not been broadly shared, with many mining communities suffering from underinvestment in areas such as transport, hospitals, schools and small business development. The lack of investment in social infrastructure is commonly reported throughout various sources of literature on this topic. Many resource regions are experiencing increasing pressures on, and insufficient supply of, social infrastructure, having direct and indirect socio-economic implications for local communities and workers. These impacts cover a raft of issues ranging from physical and mental health and wellbeing, cost of living pressures, labour supply and small business development.

38 Regional Australia Institute (RAI) (2013), Benefits of the Boom? Effective Local Strategies are the Key to Regions Capturing Long Term Benefits from the Resource Boom, Regional Policy Briefing.

5.3 Characteristics of mining communities

The Australian Bureau of Statistics (ABS) has recently analysed “booming” mining towns. In 2011 there were ten urban centres (Figure 16) which were described by the ABS as “booming”, based on two criteria:

– at least a sixth of all employed people who were staying in the urban centre on Census Night worked in the mining industry in their main job in the week before the Census; and

– an average annual population growth (based on Census Night counts) of at least 2% between 2006 and 2011.

For all ten of these urban centres, their populations increased by at least double the national rate during this period, ranging from 3.4% per year to 8.6% per year. Seven of these ten urban centres were also high growth mining towns between 2001 and 2006. Apart from Roxby Downs (near a large copper, uranium, gold and silver ore body in South Australia) and Weipa (on the west coast of Queensland’s Cape York Peninsula, mining mainly bauxite), mining towns experiencing strong population influx between 2006 and 2011 were located in either the Pilbara region of north-west Western Australia (mainly iron ore, oil and gas) or the Bowen Basin in central-eastern Queensland (mainly black coal).

FIGURE 16 LOCATION OF “BOOMING” MINING TOWNS

The ABS Census also highlighted higher rates of people not residing at home within these booming mining towns and this is shown on Figure 17. 41% of people who spent Census Night...
in Middlemount were not at home on Census Night (6% nationally). In Weipa the figure was steady at 20%, Emerald and Claremont 15%, Dysart 35%, Roxby Downs 25%, and Moranbah 23%.

**FIGURE 17 PROPORTION OF THE CENSUS NIGHT POPULATION WHO WERE VISITORS**

These ten mining towns also had more men and fewer older people compared to the national average. Around 15% of women were directly employed in the mining industry compared with 40% of men. However, with many men working in the mining industry and a tight labour market, women in these towns were more likely to be in the labour force than the rest of Australian women (75% compared with 59%). In addition, many non-mining jobs were dominated by women to a greater extent than in the rest of Australia. For example, the ABS data shows that, in high growth mining towns, 93% of bank workers were women, compared with 72% in the rest of Australia.

In addition, ABS data shows some of the high growth mining towns have relatively large Aboriginal and Torres Strait Islander populations. For example, 19% of Weipa’s 2011 Census-night population were of Aboriginal or Torres Strait Islander origin. The Pilbara towns of Port Hedland, Newman and Karratha also had relatively large Aboriginal and Torres Strait Islander populations. Aboriginal and Torres Strait Islander representation in Roxby Downs and the Bowen Basin towns were closer to the 3% national average.

Whilst the ABS has identified ten booming mining towns, mining activity is occurring in a range of regions within Australia and these are broadly described below:

1. **Single mine isolated areas** – these include places such as Roxby Downs in South Australia and Telfer in Western Australia. These towns are often purpose built with a highly transient population.
2. **Multiple mine but still isolated areas** such as the town of Newman in the Pilbara Region of Western Australia. These towns are also often purpose built with a highly transient population.

**FIGURE 18 NEWMAN, PILBARA REGION, WESTERN AUSTRALIA**

3. **Established agricultural regions** with existing towns and settlements now attracting increased mining activity. Examples include the Western Downs Region, Southern Downs Region and the Surat Basin in Queensland. Many of these places experience tension/competition between the agricultural and mining sectors over land use, resources such as water and broader socio-economic issues.

4. **Established regions** with mining alongside established and viable other industries such as the Illawarra and the Lower Hunter regions of New South Wales.

In this framework, the issues around the provision of social infrastructure to these mining communities including the issues of service provision and how the deficit is being addressed can be better analysed. The responses will be relevant to the type of community where the mining activity is located.

5.4 **The role of social infrastructure and its importance**

A community’s health and wellbeing is enhanced by connections to place, a sense of belonging and relationships established within the community. Urban and social infrastructure provides an important role in providing places for people to meet and interact and essential services such as health and education. The provision of housing creates a sense of sustainability and permanency.

Investment in social infrastructure is essential to the health, wellbeing and prosperity of communities. There is also substantial evidence and growing recognition that the economic benefits of providing social infrastructure far out-weigh the costs of provision.

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40 Western Australian Planning Commission (WAPC) (2012), State Planning Strategy, Western Australian Government.
41 Casey, S (2005), Establishing Standards for Social Infrastructure, commissioned by the University of Queensland Boilerhouse Community Services and Research Centre.
According to research published in the British Medical Journal, for every $1 invested in community networks and services, $10 were saved in costs on poor health, reduced crime and better employment outcomes, amongst other things\textsuperscript{42}. Other research conducted for Sport and Recreation Victoria estimated that an investment of $80 million over four years resulted in a total societal benefit of $400 million and over 48,000 jobs\textsuperscript{43}.

There are productivity implications of not funding social infrastructure, which will eventually constrain economic growth. The cost of failing to plan and invest in adequate social infrastructure is becoming a major challenge for both the private and public sectors\textsuperscript{44}.

The provision of adequate social infrastructure is particularly important in resource regions, which are often characterised by vast distances between communities, individual and community pressures associated with high and demanding employment in the resources sector, challenging lifestyle factors, disadvantage, and limited access to communications technology\textsuperscript{45}. Social infrastructure plays a significant role in creating liveable communities, providing a range of benefits to residents and visitors. These benefits include:

- Improving health and wellbeing, both physically and mentally;
- Helping to build communities through social inclusion;
- Helping to create social connections and networks;
- Providing individuals with the opportunity to pursue their interests;
- Promoting participation and volunteering;
- Providing opportunities for family bonding;
- Strengthening local economies and contributing to economic growth - through population retention, attraction of new residents and investment;
- Reductions in anti-social behaviour;
- Development of social capital\textsuperscript{46}; and
- Affordable living, through the provision of social housing that meets the needs of people with different incomes and those at different stages of their lives (older people, single people and families)\textsuperscript{47}.

5.5 What is social infrastructure?

Social infrastructure can be defined as “the community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximise their

\textsuperscript{43} SGS Economics and Planning & HM Leisure Planning (2009), Investing in sport and recreation facilities: Does it pay off?, prepared for Sport and Recreation Victoria, Melbourne.
\textsuperscript{44} Elton Consulting (2012), Tomorrow’s healthy and productive communities: The case for community infrastructure in outer metropolitan growth areas, prepared for the National Growth Areas Alliance.
\textsuperscript{45} Shire of East Pilbara (SoEP) (2012), Shire of East Pilbara Community Wellbeing Strategy, Local Government of Western Australia.
\textsuperscript{46} Social capital refers to the institutions, relationships and norms that shape the quality and quantity of a society’s social interactions and contribute to economic and social development, see The World Bank (1998), What is Social Capital?, Washington.
There are three broad categories of social infrastructure:

- Universal facilities and services such as education, training, health, open space, recreation and sport, safety and emergency services, religious, arts and cultural facilities and community meeting places;
- Lifecycle-targeted facilities and services such as those for children, young people and older people; and
- Targeted facilities and services for groups with special needs, such as families, people with a disability and Indigenous and culturally diverse people.

In the context of mining communities, provision of housing that is appropriate and affordable is also an essential part of the social infrastructure of a community. Social housing is also acknowledged as an important component of social infrastructure. In the Australian context the term is commonly used to refer to housing provided through public and community housing, including Indigenous housing, for people on low incomes. This typically encompasses housing provided through cooperatives, housing associations, local governments, and religion-based organisations.

Social infrastructure planning and delivery is generally shared between local governments, State agencies, Commonwealth agencies and community organisations, and participation from the private sector (i.e. mining companies and developers). As articulated in the Queensland Social Infrastructure Planning Guidelines, planning for social infrastructure needs to respond to local and regional needs, capacities and aspirations, and relies heavily on local knowledge and social capital within communities and agencies. For this reason, local governments and regional agencies are leaders and key stakeholders in planning and providing social infrastructure. They can fulfil a number of roles, including strategy development, integrated planning, service delivery, monitoring, resourcing and facility provision.

Financial investment in social infrastructure is largely provided by local government through rates and charges. State Government agencies are also responsible for a wide range of social infrastructure such as housing, emergency services, health, and education and training. State Government agencies can fulfil a number of roles in the planning and delivery of social infrastructure, for example strategy development, direct delivery of programs and services, capital works programs, funding and partnership arrangements.

5.6 Social Infrastructure Provision – Resource Regions vs Urban Areas

Resource regions are often a distinct subset of regional communities. For regional communities with small populations, social infrastructure provision has challenges. With a smaller population base, revenue generated from rates and charges is small, especially compared with that of urban areas. These communities are therefore more reliant on having to compete for State and Federal Government financial assistance grants and other funding arrangements.
Consequently, these communities often have limited or inadequate social infrastructure, in turn limiting the potential benefits that can be gained by the community\textsuperscript{52}.

At the other end of the spectrum, some mining towns face the challenge of rapid population growth and an urgent need to expand and upgrade social infrastructure, which is not matched by timely revenue growth. For example, the Newman Hospital in the Pilbara Region of Western Australia was built for a population that was half the size of what exists today, and without accounting for the substantial number of non-residents workers that now visit the town year-round\textsuperscript{53}.

Newman’s rapid population growth and influx of non-resident workers is exerting significant stress on health facilities and services.

\textbf{FIGURE 19 NEWMAN HOSPITAL, PILBARA REGION, WESTERN AUSTRALIA}

\textbf{FIGURE 20 JIGALONG WELLBEING CENTRE, PILBARA REGION, WESTERN AUSTRALIA}


\textsuperscript{53} SoEP (2012), op. cit.
5.7 Nature of workforce

Social infrastructure analysis needs to be set within the context of the local workforce. The resources sector’s workforce can be split into three broad types:

1. Temporary (such as construction);
2. Semi-permanent; and
3. Permanent.

Temporary Workforce

The resources sector’s temporary workforce refers to employees that are required for a temporary period in order to complete a task or project stage (i.e. construction phase of a mining project). The temporary workforce is typically made up of fly-in fly-out (FIFO), drive-in drive-out (DIDO), bus-in bus-out (BIBO) and ship-in ship-out (SISO) workers.\(^5\) They are generally employed by contractors on a temporary basis, predominantly as part of the construction phase of a mining project. FIFO workers generally have all accommodation and catering needs provided and have few interactions with the local community.

Semi-permanent Workforce

The resources sector’s semi-permanent workforce refers to permanent but non-resident employees. The semi-permanent workforce is typically made up of fly-in fly-out (FIFO), drive-in drive-out (DIDO), bus-in bus-out (BIBO) and ship-in ship-out (SISO) workers. They are generally employed directly by mining companies on a permanent basis, usually as part of the operational phase of a mining project.

\(^5\) FIFO is the most commonly understood acronym and will be used throughout this paper, for the purpose of referring to non-resident long distance commuters, regardless of transport mode.
They spend large amounts of time in host communities during rostered working periods, typically residing in workforce accommodation camps/villages or short stay accommodation (i.e. motels, caravan parks). It is not usual for these workers to be engaged in local community events and social activities (i.e. sporting events, local clubs and organisations) or make use of community infrastructure and social services.

**Permanent Workforce**

The resources sector’s permanent workforce refers to local resident employees, who return to their home after each shift. They include long term residents or those who have chosen to relocate on a permanent basis in order to be closer to work.

**FIFO Workforce**

FIFO workforce practices in the resources sector are operations in which workers, but not their families, are provided with transportation, food and accommodation at or near the mine site. Employee work patterns consist of a rostered number of days working at the site, followed by a rostered number of days off at their home or another place. The provision of transportation and accommodation, together with a regular rostered ‘on’ and ‘off’ work pattern, is what differentiates FIFO from other work involving periodic absences from home.

The take-up of FIFO employment within the labour market is growing and is expected to continue to increase as new projects are commissioned and existing activities expand. Companies see it as a cost effective alternative for mining companies (especially during the construction stage) in reducing the costs associated with infrastructure provision and development approvals for construction, particularly where mines have a short life-cycle. FIFO is also seen as important for addressing skills shortages, a problem exacerbated in regional and remote areas due to the smaller pool of skilled labour.

In 2005 the Chamber of Mines and Energy Western Australia conducted a survey, of over 100 mine operators and over 18,000 resources industry personnel and found that in Western Australia:

- 76.5% of all personnel were employed directly by mining companies;
- 23.5% of all personnel were employed by contractors;
- 53% of mining employees (contractors and direct employees) were employed on a residential basis;
- 47% of mining employees were employed on a FIFO basis, including 4.7% utilising DIDO;
- 62.5% of directly employed personnel were residential and 37.5 per cent were FIFO;

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56 The Chamber of Mines and Energy of Western Australia (CMEWA) (2011), Submission to the House of Representatives Standing Committee on Regional Australia: Inquiry into the Use ‘Fly-In, Fly-Out’ (FIFO) and ‘Drive-In, Drive-Out’ (DIDO) Workforce Practices in Regional Australia.
57 Skills Australia (2011), Submission to the House of Representatives Standing Committee on Regional Australia: Inquiry into the Use ‘Fly-In, Fly-Out’ (FIFO) and ‘Drive-In, Drive-Out’ (DIDO) Workforce Practices in Regional Australia, Submission Number: 102.
58 The Chamber of Mines and Energy Western Australia (CMEWA) (2005), Fly in fly out: a sustainability perspective: a discussion of the triple bottom line impact of fly in / fly out operations in Western Australia’s resources sector.
In general permanent workers are integrated with the community in terms of purchasing or renting housing and participating in community activities and services such as local schools and sporting clubs. They are also more likely to have family members in the community and have a sense of belonging to that community.

5.8 Defining the Social Infrastructure Deficit for housing

The provision of adequate housing supply, the type of housing and its affordability are major issues in mining communities and for the purposes of this paper, housing is considered part of the social infrastructure provision.

Communities with nearby resource developments can experience significant volatility in their housing markets as expanding workforces cause a rapid increase in demand. This volatility is exacerbated by an inability to bring new housing to the market quickly. The House of Representatives Standing Committee on Regional Australia states that the primary cause of the current accommodation crisis in resource communities is a lack of adequate planning and appropriate land release.

A 2011 Bowen and Galilee Basins Population Report by the Queensland Office of Economics and Statistical Research found that:

- One in five people living in the Bowen Basin in July 2011 was a FIFO worker;
- The Bowen Basin’s full-time equivalent population grew by 7,220 (or 7%) between 2010 and 2011;
- The Isaac region contained around two-thirds of the Bowen Basin’s non-resident population in July 2011; and
- Fewer than half (43 per cent) of all mining operations workers in the Bowen Basin were residents of the same local government area where they worked in July 2011.

These and many other data sources document the large and growing presence of FIFO and other Long Distance Commuting practices in resources. There are substantial social relationship, fatigue and mental health issues associated with FIFO, and the issue has been the subject of a lengthy parliamentary inquiry (“the Windsor Report”). There is currently no national framework for managing the challenges of FIFO so the recommendations of the Windsor report merit special consideration.

In general permanent workers are integrated with the community in terms of purchasing or renting housing and participating in community activities and services such as local schools and sporting clubs. They are also more likely to have family members in the community and have a sense of belonging to that community.

60 See, for example, Lifeline WA (2013), FIFO/DIDO Mental Health Research Report
61 House of Representatives Standing Committee on Regional Australia (2013), Cancer of the bush or salvation for our cities: Fly-In, Fly-Out and Drive-In, Drive-Out workforce practices in regional Australia, Australian Government, Canberra
63 House of Representatives Standing Committee on Regional Australia (2013), op. cit.
For example, the case study below highlights that in Newman in the Pilbara there is a requirement for an additional 1014 dwellings by 2015 which given its location could be problematic.

**Case Study - Unmet Housing Demand in Newman, Shire of East Pilbara**

ABS data shows that over the 10 years from 2001 to 2011 the population of Newman increased by 91% from 3,535 to 6,759. The combination of rapid population growth and slow supply responses have resulted in significant unmet housing demand. Information published by the Department of Housing\(^{64}\) (2010) shows that Newman had a total unmet demand of 434 dwellings in 2010. Based on the current rate of demand growth, an additional 580 dwellings would be required by 2015, meaning a total future demand of 1,014 dwellings by 2015.

The combination of rapidly increasing housing demand and slow supply response are pushing up rental costs and housing prices, with many resource regions having some of the highest real estate prices and rentals in the country\(^{65}\). In 2011, the Pilbara Region of Western Australia was Australia’s most expensive region to rent a house, where the median rental cost was $1,650 per week\(^{66}\). The Pilbara Report 2012\(^{67}\) notes that the average rental costs in the Pilbara Region are around four times higher than that being paid in the Perth Metropolitan area. In Queensland’s Bowen Basin, rental costs are similarly inflated, with Dysart reporting the highest median rent in the state in 2011 at $2,000 per week.

Figure 22 shows the variation in private dwelling rents across the high growth mining towns and shows the disparity between renting from an employer and from a private landlord. Rental prices from employers are well below the national average, indicating high rental subsidies. Private landlords on the other hand charge exorbitant rents in some centres; up to $1,300 per week in Karratha.

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64  Department of Housing (2010), in Pilbara Planning and Infrastructure Framework, Western Australian Planning Commission.

65  Centre for Social Responsibility in Mining (CSRM) (2012), Local government, mining companies and resource development in regional Australia, Sustainable Minerals Institute and The School of Social Science, University of Queensland.

66  The Chamber of Minerals and Energy Western Australia (2011), op. cit.

According to RDA Pilbara\(^68\), the cost of building a new home in the Pilbara Region is also dramatically higher compared to other non-mining regions. For example, in 2012 the cost of building a standard four bedroom two bathroom house in a Pilbara mining town was approximately $400,000-$500,000 (excluding land costs). However, the same standard dwelling in the Perth metropolitan area would have cost approximately $200,000-$250,000 to construct - around half the cost.

The lack of available and affordable housing has significant consequences for communities. Firstly, housing is unaffordable for many lower to medium paid workers, particularly those who are unable to secure employer provided housing. Consequently many existing residents who are unable to afford high rents or house prices are likely to be displaced; having to move to another community, live within improvised or sub-standard housing or becoming homeless\(^69\). For example, in Port Hedland some local Aboriginal people are forced to live in tents and makeshift camps, because they are unable to find suitable and affordable housing\(^70\).

The ABS 2011 Census (Figure 23) showed that people staying in the ten growth mining towns were much more likely to be staying in non-private dwellings such as hotels, motels and staff

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\(^{68}\) Ibid.

\(^{69}\) RAI (2013), op. cit

quarters. In some, more than a quarter of the 2011 Census Night population was housed in staff quarters (e.g. 40% in Middlemount, 32% in Dysart, and 30% in Roxby Downs).

FIGURE 23 TYPE OF HOUSING IN WHICH PEOPLE SPENT THE NIGHT OF 2011 CENSUS

Legend - (a) People staying in the listed high growth mining town/Australia on Census Night (b) Mainly staff quarters, hotels, motels, and bed and breakfast accommodation in the high growth mining towns.

Secondly, a lack of affordable housing makes resource towns an unattractive option for new residents\(^7\). These findings are supported by the 2011 ABS Census (Figure 24) which shows under 10% of people living in high growth mining towns own their dwelling compared to 28% nationally and around 19% have mortgages compared to 40% nationally. This is especially an issue for attracting new families into resource regions, with single income families finding it particularly difficult to secure suitable housing at an affordable price\(^2\).

Finally, a lack of affordable housing makes it difficult to attract and retain workers both from within and outside the region, and in some instances employers are forced to house employees in their own homes\(^3\). Consequently, staff shortages and high staff turnover are common issues experienced in resource communities, with a debilitating effect on small business operations. For example the Small Business Centre West Pilbara states that since 2007, the number of small businesses in the mining town of Karratha has only marginally increased while the population more than doubled\(^4\).

\(^7\) House of Representatives Standing Committee on Regional Australia (2013), op. cit.
\(^3\) Ibid.
\(^4\) RDA Pilbara (2012), op. cit.
FIGURE 24 HOUSING TENURE TYPES IN MINING TOWNS VS AUSTRALIA

Legend - (a) Comprises people staying in the listed location on Census Night in a private dwelling owned with a mortgage or a private dwelling being purchased under a rent/buy scheme. (b) Comprises people staying in the listed location on Census Night in a private dwelling being rented or a private dwelling being occupied rent-free. (c) A real estate agent, an unrelated person outside the household, or a related person outside the household. (d) A government employer (including the Defence Housing Authority), or a non-government employer. (e) A state or territory housing authority, a housing co-operative, a community group, a church group, a residential park, a caravan park or a marina.

5.9 Other Social Infrastructure

Housing is not the only form of social infrastructure deficit commonly reported for resource regions. As workforces in resource regions expand, rapid population growth is exerting increasing pressures on other social infrastructure such as health and social services, education, community safety, sport and recreation, arts, culture and cultural heritage and employment and training.

The range of social infrastructure required is not just related to health and education but as the Case Study below highlights, there are a wide range of facilities and services required to support communities.

**Case Study – Bowen and Abbot Point: Community Infrastructure Assessment**

In light of rapid resource sector growth in the Bowen Region, the Whitsunday Regional Council...
and the former Queensland Department of Infrastructure and Planning commissioned the Bowen Abbot Point Accommodation and Community Infrastructure Study (BAPACIS)\(^76\). As part of the study, a comprehensive Community Infrastructure Assessment was prepared, identifying the existing and likely future community infrastructure requirements in the Bowen District based on resident and non-resident population growth scenarios, and strategies to address the gaps in community infrastructure over the next 10 years.

The study found that there are a number of gaps in the provision of community infrastructure in the Bowen District, caused by existing supply and demand issues, as well as by likely future requirements. The report identifies the following community infrastructure gaps in the Bowen District:

- Local and district level medical and allied health services;
- Local and district level aged care services and facilities;
- Targeted services and facilities to cater for the needs of non-resident populations, including workers associated with mining, industrial and infrastructure development, seasonal workers and tourists;
- Local and district level family orientated services and facilities such as child care centres and child friendly public areas;
- District level employment and training programs that up-skill local people for future employment;
- District level cultural facilities and other tourism infrastructure;
- Target services and facilities that cater for the needs of specific interest groups, including young people and Indigenous people; and
- Funding for local and district level individual and family support services, including domestic and family violence support and crisis support\(^77\).

**Health**

Of the issues articulated throughout various sources of literature on this topic, the deficit in health services and facilities in resource communities is one of the most cited. This is due to a combination of factors such as existing supply and demand issues, increasing requirements based on population growth, increasing expectations by the population, and underinvestment\(^78\). Key issues include the need to establish new facilities, expand and upgrade existing facilities, provide a broader spectrum of community and primary health services and the inability to attract qualified and trained health professionals to these communities. These gaps in service provision are becoming more pronounced with increasing demands placed on health services and facilities by non-residents (FIFO, seasonal workers and tourists) and new incoming populations, with anecdotal evidence indicating longer waiting times and significant additional workload burdens placed on doctors\(^79\). The two case studies below highlight the pressures on the health system in the Pilbara and in central Queensland.

\(^76\) Whitsunday Regional Council and Queensland Department of Infrastructure (2010), Planning Bowen Abbot Point Accommodation and Community Infrastructure Study

\(^77\) Egginton (2009), op. cit

\(^78\) Egginton (2009); CSRM (2012), op. cit.

\(^79\) House of Representatives Standing Committee on Regional Australia (2013); Egginton (2009), op. cit.
Case Study - Pressures on Healthcare Services in Newman, Pilbara Region

A 2012 Community Wellbeing Study for the Shire of East Pilbara in the Pilbara Region of Western Australia describes some of the pressures on healthcare services in its key centre of Newman. The study describes the health of the population, highlighting issues such as comparatively higher rates of deaths caused by circulatory system diseases, higher rates of death caused by respiratory system diseases and higher rates of death caused by diabetes. Consultation undertaken as part of the study indicated that improved healthcare facilities and services tops the list of community priorities for local residents.

The study notes that Newman Hospital, the main health facility in the Shire, was built to service a population that was 50% smaller than what exists in Newman today, and without accounting for the substantial number of non-residents workers (i.e. FIFO) that use the service. With a FIFO population of about 4,000, this exerts significant pressure on local healthcare services. The study identifies the following key deficiencies:

- The need to upgrade and expand the Hospital with more staff and resources to meet current and future demand;
- The need to provide a broader spectrum of community and primary health services, particularly drug and alcohol support, mental health, maternal health, gynaecology and psychiatric health services;
- The need for greater access to allied health, dental and Indigenous health services.

Case Study - Pressures on Healthcare Services in Moranbah, Central Queensland

Data collected by Moranbah Medical Centre in 2011, illustrates the additional pressure that FIFO workers are placing on Moranbah Medical’s services. It showed that around 35 per cent of all patient presentations over the course of a month identified their place of usual residence as a place other than Moranbah. Even when excluding the seven per cent of patients that lived in nearby communities such as Coppabella, Nebo and Dysart, 28 per cent of patients identified their usual place of residence as one well beyond the catchment area for Moranbah Medical’s services.

The data also showed that the proportion of non-resident patients (excluding those from the nearby communities of Clermont and Dysart) rose from 18 per cent in June 2007 to 23 per cent in June 2011, with a further increase to 28 per cent in September 2011. The information prepared by Moranbah Medical also suggests that not only does a FIFO workforce exert significant pressure on medical service providers, it restricts access to these services for local residents.

Sport and Recreation

Sport and recreation activities such as Sports Clubs and facilities and informal recreation activities (including parks, pools, cycleways etc) are important for promoting social interaction, physical activity and alternative activities apart from work. Participation in these activities could also help curb violence amongst young men. Sports clubs generally require dedicated

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FIFO and ‘Drive-In, Drive-Out’ (DIDO) Workforce Practices in Regional Australia, Submission Number: 2.
volunteers to oversee the organisation and its activities. Informal recreation is generally provided by local government or private operators such as gym owners.\(^1\)

However investment in some of these facilities is lacking in these communities due to funding constraints, lack of training and shortage of volunteers. Twelve hour shifts and rotating rosters make volunteering for any community activity more difficult.

**Community Hubs**

Community hubs generally refer to a clustering of activities around a central main use such as a school, library, major recreation facility or even a shopping centre. These can provide a range of services (arts and culture, child care, meeting rooms etc.) and be central to providing a safe place for residents to meet and engage in a range of activities.

**Education**

The deficit in educational services and facilities in resource regions is also commonly reported throughout the literature on this topic. For primary and secondary education, key issues include the lack of choice and limited school curriculums. Opportunities for tertiary education is even more limited, where people are restricted to distance education or choosing from a small selection of courses available face-to-face.\(^2\) The Pilbara Case Study below highlights the importance that education has on where families choose to live.

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**Case Study – Education in Newman, Pilbara Region, Western Australia**

According to the ABS 2011 Census the mining town of Newman, in the Pilbara Region of Western Australia, is under-represented by youth aged 15-19 years. Information gathered through consultation and research conducted as part of the Shire of East Pilbara Community Wellbeing Strategy highlights a tendency for this age group (and sometimes their families) to relocate to larger cities to undertake secondary education. The trend is largely driven by the wider choice of schools (i.e. private, public, boarding, etc) and curriculums offered in these larger cities. Local residents want more educational options and resources (having only one public secondary school) and more subjects in areas of the arts and information technology.

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**Aged Care**

Gaps in aged care services and facilities are characteristic of many rural and remote regions, including resource regions.\(^3\) For example, in the Bowen District, there is an increasing need for specialist aged care services. Consequently, the unmet demand for these services is creating unintended impacts on public health facilities in the district, having to provide services that are not specifically in their remit.\(^4\)

Similarly, Haslam McKenzie\(^5\) highlights residents’ dissatisfaction with key social services for the aged in the Pilbara Region of Western Australia. With significant gaps in the provision of local housing, public transport, healthcare and other services that cater to their needs, the elderly

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\(^1\) House of Representatives Standing Committee on Regional Australia (2013), op. cit.

\(^2\) SoEP (2012); House of Representatives Standing Committee on Regional Australia (2013), op. cit.

\(^3\) Aged and Community Services Australia (ACSA) and National Rural Health Alliance (NRHA) (2004), Older People and Aged Care in Rural, Regional and Remote Australia, Discussion Paper.

\(^4\) Egginton (2009), op.cit.

\(^5\) Haslam McKenzie, F (2008), FIFO and regional development, Housing and Urban Research Institute of Western Australia, Curtin University of Technology.
are often faced with the decision of whether to relocate in order to access services to meet their needs.

A higher proportion of the population is elderly in rural and remote areas compared to larger cities, to a large extent, making the consequences of an ageing population much greater in rural and remote Australia.

ACSA and NRHA identify factors such as social isolation and limited access to transport, residential and community care and health services, that make it especially difficult for elderly people living in rural areas.

Long Term vs Short Term Demand

Keeping up with demand for social infrastructure is also a longer term challenge for rapidly growing resource communities. Existing gaps in social infrastructure provision are becoming more pronounced with increasing demand from non-residents (FIFO, seasonal workers and tourists) and rapidly increasing new in-coming populations. Identifying the impact of the development over the short and long term is also important – see case Study below.

For example, the Pilbara Regional Council (2011) highlights the strain placed on services accessed by both residential and FIFO populations:

“Community services such as GPs, emergency rooms, ambulances, hospitals, pharmacies, nursing services, dentists and police confront significantly increased levels of demand as FIFO workers are as likely to use their services as local residents”.

Case Study - KPMG Infrastructure Study, Central Queensland

In 2011 KPMG was engaged by Isaac Regional Council in Central Queensland, to identify expected infrastructure and services gaps resulting from the rapid growth in mining activity and FIFO workforces at the regional and local community level. The study involved developing a model which measures the socio-economic impact of significant mining and infrastructure projects on the Isaac's community infrastructure and services. The study investigated 15 built infrastructure and 23 soft infrastructure (community service) benchmarks that mining operations in the region might affect.

The findings of the study revealed that even though FIFO workers have a minimal requirement for many community services such as gyms, cafes, restaurants and museums, the need for other services and infrastructure like roads, healthcare services and police services is much greater. The study concluded that “based on the expected growth in the FIFO workforce population resulting from growth in mining operations in the region, there would be an under supply of services and infrastructure especially in the area of health and allied services (general practitioners, nurses, hospital beds, paramedic officers, pharmacists)”. The other areas of under-supply identified included police officers, post offices, hotel/motel beds, cinemas and landfill sites.
5.10 Impact on Communities and Workers

Resource developments can have wide ranging impacts on both the host communities and the workers themselves. Most research indicates resource developments and FIFO arrangements have adverse rather than beneficial implications at a community and individual level. This section provides a snapshot of commonly reported issues associated with social infrastructure deficit, along with broader issues, experienced by host communities and workers in resource regions.

Social Isolation

Social isolation and regular separation from family support and informal social interactions, along with the lack of the sense of belonging to a community can have negative impacts on the wellbeing of FIFO workers. This is exacerbated by the fatigue that mine workers experience when working long shifts and and/or spending large amounts of time commuting.

Health and Wellbeing

The inquiry into FIFO workforce practices by the House of Representatives Standing Committee on Regional Australia highlights the health impacts of FIFO work, some of which are directly related to the social isolation of the FIFO experience. Some of the impacts cited include:

- The use of alcohol and other drugs;
- Poor diet and physical inactivity;
- Increased sexually transmitted and blood borne infections;
- Mental health issues;
- Fatigue related injury; and
- An increase in injury related to high-risk behaviour.

The Shire of East Pilbara Community Wellbeing Strategy notes similar factors that are commonly reported among FIFO workers such as social dislocation and loneliness, high stress work related pressures, relationship strain, substance abuse and other risk taking behaviours and mental health problems. Not only does this exert significant pressure on medical service providers, it also restricts access to these services for local residents due to longer waiting times and the additional workload placed on doctors.

Labour and Skill Shortages / Impacts on Local Businesses

The shortage of affordable housing, along with several other factors, makes it difficult for businesses and other organisations to attract skilled professionals. Additionally, small businesses external to the resources sector find it difficult to compete with the remuneration packages offered by major resource companies. The House of Representatives Standing Committee on Regional Australia report supports this claim, stating “poaching of staff is not only affecting local businesses and services, local councils are also seeing their staff leave in

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90  House of Representatives Standing Committee on Regional Australia (2013), op. cit.
92  House of Representatives Standing Committee on Regional Australia (2013), op. cit.
95  House of Representatives Standing Committee on Regional Australia (2013), op. cit.
favour of the high wages offered by the resource industry”. Unsurprisingly, staff shortages and high staff turnover are common issues experienced in resource communities.

**Relationships and Family Breakdown**

A 2004 FIFO Research Project commissioned by the Pilbara Regional Council acknowledges that incidences of relationship and family breakdown are higher among families in which at least one member is employed in the mining industry. This includes both FIFO and permanent resident employees. The report identifies the following key causal factors:

- Inadequate communication and access to communications technology;
- Changes to working and living arrangements such as longer working hours, reduced time spent with family members and changing responsibilities; and
- Changing emotions and behaviours associated with social isolation, loneliness, depression, lack of social support and risk taking behaviours.

Along with the direct impacts on relationships and the families involved, the problem is often compounded by a lack of social infrastructure for crisis support, for example:

- The lack of short term housing and emergency accommodation means one spouse (and often children) are forced to relocate, leaving little opportunity for resolutions / reconciliation; and
- Ongoing mental health issues, which is particularly challenging where limited services are available.

**Latch Key Kids / Youth**

The term “latch key kids” refers to children who are left at home with limited or no supervision, or children who return from school to an empty home because their parent(s) or guardian(s) are away at work. This scenario is common in mining towns, where high numbers of adults are employed or in some way connected to the mining industry, which typically means longer working shifts. This situation is exacerbated where there is a lack of social infrastructure to provide structured or supervised activities for youth.

**Jobs and Investment**

The types of economic activity generated by resource developments can have significant benefits for host communities. Direct and indirect benefits for host communities can include, for example:

- Revenue from sale of the resources, and local investment by resource companies towards infrastructure projects and other community development programs.
- Employment and work-related training opportunities for local residents, including employment programs which encourage Indigenous participation and support key elements of traditional lifestyle and culture. For example, research in Western Australia indicates that for every ten jobs created by a resource project, two will be sourced from the host region.

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96 Pilbara Regional Council (2011), op. cit
98 SoEP 2012, op. cit
99 RAI (2013), op. cit
100 RAI (2013), op. cit.
− Opportunities for local businesses to supply goods and services to mining projects\textsuperscript{101}.
− Increases and improvements in infrastructure and service provision. For example, high FIFO employment has improved air services to regional and remote communities, which benefits the broader community, and in some cases local governments where they are the owners and operators of regional airports. The Shire of Roebourne for example, operates Karratha Airport, the busiest regional airport in Australia, and receives revenue of about $30 million per year as a result of the high traffic, most of which is from a FIFO workforce\textsuperscript{102}.

**Cost of Living Pressures**

Limited local markets and higher costs for goods, services and housing are characteristic of many resource regions. Factors such as demand outstripping supply, economies of scale and a supply chain that often depends on imports from other cities, States or countries, all contribute to higher costs (and delays). These all have an impact on attracting and retaining workers, tourists and on encouraging permanency residency in resource regions.

**Tension between Host Communities and Temporary Workforce**

Tension between the local community and the temporary workforce in resource communities is not uncommon. This tension can be derived from a lack of social integration between the two communities, as well as by a lack of cohesion in urban form between temporary and permanent dwellings\textsuperscript{103}.

Commonly reported negative perceptions of FIFO arrangements by host communities include:\textsuperscript{104}
− they create negative social consequences for individuals, families and the communities where they live (eg. alcohol abuse);
− they give little back to host communities (eg. income expenditure), businesses in the regions fail to benefit from FIFO as most of the benefits go to service and supply companies in larger cities; and
− FIFO arrangements contributing to population decline.

5.11 **Response to housing**

Mining companies and governments have attempted to address housing issues in resources communities using various strategies and programs. Different responses are required depending on the nature of the operation – whether FIFO or part of an existing community.

To overcome housing problems, local governments such as Whitsunday Regional Council in Queensland and Geraldton-Greenough in Western Australia have implemented polices that specify or guide the location, size, type and design of temporary worker accommodation camps to ensure amenity is maintained and community cohesion is maximised. However, some local governments have resisted the use of temporary dwellings. For example, Moranbah (through previous Belyando Shire Council policies) adopted an approach aimed at attracting families as

\textsuperscript{101} RAI (2013), op. cit.
\textsuperscript{102} CMEWA, (2011), op. cit.
\textsuperscript{103} Pilbara Regional Council (PRC) (2004), Best of Both Worlds? Fly in – Fly Out Research Project, Local Government of Western Australia.
\textsuperscript{104} Storey (2001), op. cit.
permanent residents and achieving high standards of housing, while simultaneously resisting housing options that implied impermanence of dwellings.

In Queensland, the preparation of an Integrated Housing Strategy is required as part of the EIS process. This requires the mining company to demonstrate how it will address temporary housing but also contribute to permanent housing in the affected community. The Pilbara Cities Report\(^\text{105}\) suggests a variety of ways to address housing affordability and supply issues such as:

− cheaper materials and structural forms that can be mass-produced or prefabricated;
− more varieties in housing types, including denser housing that can achieve greater efficiencies on the one site;
− governance arrangements that enable more market-oriented housing release; and
− requirements for affordable housing in all developments through social housing; this can be achieved by requiring that a certain proportion (e.g. 15%) be sold to a community housing provider like Foundation or Access Housing, or through funding support for any bid from a not-for-profit, accredited, affordable housing provider. Some public housing also needs to be provided.

In addition, temporary housing can be accommodated within the urban fabric of a town or centre by ensuring that the road pattern layout can transition into more permanent layout once the temporary accommodation has been removed.

### Case Study – QCLNG Integrated Housing Strategy: Affordable/Social and Community Housing

The Queensland Curtis Liquefied Natural Gas (QCLNG) project involves expanding Queensland Gas Company’s (QGC) coal seam gas operations in the Surat Basin in south-western Queensland. As part of the project, QGC was required to produce an Integrated Housing Strategy (IHS) in compliance with the Co-ordinator General’s Environmental Impact Statement (EIS) conditions for the project. The QCLNG IHS establishes the framework and guidelines for all matters relating to housing and accommodation involving all QGC employees, including affordable/social and community housing.

With the aim to mitigate its potential adverse outcomes on low income households, the QCLNG IHS identifies the following strategies:

− Facilitating the provision of new housing stock for the workforce to reduce demand pressures;
− Investment of $1 million across the project area to support Indigenous community access to affordable housing;
− Funding a Rental Assistance Program via the Community Advisory Service in Gladstone to the value of $1.2 million;
− Collaborate with other proponents to fund the (former) Urban Land Development Authority (ULDA) to fast track the development of 250 plus lots; and
− Collaborate with other proponents to fund social/affordable housing development organisations to develop social and affordable dwellings in both the Gladstone and Western Downs areas\(^\text{106}\).
5.12 Addressing the social infrastructure deficit

Mining companies have sometimes attempted to address the social infrastructure deficit in resources communities using various strategies and programs. For example different funding mechanisms have allowed expenditure in essential social infrastructure such as - Royalties for Regions, BHP Community Development Fund (Newman) and the Clermont Mine Community Development Fund. Some responses have included a more integrated approach to Social Infrastructure with preparation of Social Impact Management Plans that identify the needs of residents and which agencies should be responsible for providing the infrastructure.

However understanding the demand for social infrastructure generated by new resource projects and who is responsible for its provision is complex. For some projects, the social infrastructure impact can fall between two or more local governments and the method to calculate the need is not universally agreed\(^\text{107}\). In addition an understanding of the baseline of existing social infrastructure provision in some communities is unknown whilst in others there is already an existing shortfall in supply for example with medical specialists. Also some local governments are not equipped to negotiate complex agreements with large mining companies.

The research suggests that having developed principles and agreed frameworks around the provision of social infrastructure is critical to achieving good outcomes. The role of state governments is critical for providing consistent application of social infrastructure provision across a range of projects and for being able to take a broader regional view. The Queensland Division of the Planning Institute of Australia (PIA) suggests the following principles and frameworks are important to support the sustainable growth of the resource sector\(^\text{108}\):

- Resource communities should be developed in a sustainable manner that takes a long term view;
- Resource extraction should result in net social, economic and environmental benefits to local communities;
- Planning for resource communities should provide a range of settlement types – for example, expansion of towns, facilitating FIFO and DIDO and providing for temporary accommodation;
- Regional plans and local government planning schemes should provide the framework for accommodating growth; and
- Social impact assessments must be provided for the resource extraction.

The Queensland Division of the PIA also recommends supporting local governments and professionals to build capacity in assessing resource projects and building regional planning capabilities.

Work undertaken by KPMG\(^\text{109}\) further supports the important role of the State Government through the Lead Agency Framework which should provide leadership around balancing the economic imperatives against the need to ensure the public interest is met especially around service delivery co-ordination. This is happening to some extent with the Royalties for Regions WA Program and the Qld Office of the Co-ordinator General. In Qld improved governance relationships by the Office of the Co-ordinator General with key State agencies providing social


\(^\text{109}\) KPMG (2012), op. cit.
infrastructure and with local governments is ensuring there is more co-ordination with service delivery.

**Case Study – Clermont Preferred Futures Strategy**

The Clermont Preferred Futures Strategy is a partnership between Isaac Regional Council in Central Queensland, Rio Tinto Coal Australia and community representatives. The Strategy outlines the community’s vision for the future, and provides mechanisms for community groups and organisations to develop strategies, to ensure the community thrives beyond the life of mining operations in the area. The Strategy has been integral to many decisions made by Rio Tinto in relation to managing impacts on the local community’s economic and social wellbeing.

Isaac Regional Council takes responsibility for the implementation of the strategy, with a paid project officer and a steering committee – the Clermont Preferred Futures Committee. Rio Tinto and other community representatives support Isaac Regional Council through the steering committee.

Isaac Regional Council and community representatives collaborate through the committee by sharing resources and developing integrated strategies for the Clermont community. The committee’s activities focus on social infrastructure, community development, lifestyle, liveability and economic diversification.

Key deliverables to come out of the Strategy include:
- An Urban Design Framework - a tool used by the community, council and industry to progress liveability, population growth and new industry attraction; and
- To assist with affordable housing issues, Rio Tinto Coal Australia donated land in the centre of town to Isaac Regional Council, on which Council have committed to building 25 affordable housing homes. The Council has formed an Affordable Housing Trust which will manage the complex.

The Clermont Community Development Fund was established in 2009 by Rio Tinto to support communities in the Clermont region to build community capacity to address development challenges and take advantage of emerging opportunities. Since its inception, this fund has contributed more than $1.8 million to projects aimed at providing positive benefits to the local community. This is a relatively small commitment, given that the company spent $1.3 billion in building the mine.

### 5.13 Social infrastructure provision and funding

Social infrastructure is largely provided by local government through rates and charges, along with the assistance of State Governments. For regional communities with a small population base, revenue generated from rates and charges is small, meaning they are more reliant on competing for State and Federal Government financial assistance grants and other funding arrangements. At the other end of the spectrum, some mining towns face the challenge of rapid population growth and an urgent need to expand and upgrade social infrastructure,

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which is not matched by timely revenue growth. Consequently, communities in resource regions often have limited or inadequate social infrastructure, in turn, limiting the potential benefits that can be gained by the community.

Governments are concerned about this backlog. In Western Australia, under the ‘royalties for regions’ program, 25 percent of the State’s mining royalties are paid into a special fund each year and hypothecated for expenditure on regional investment. This was one of the planks of the National Party in the 2008 state election campaign, and was established after the election. The fund will amount to $6.5 billion. Funds have been allocated to expand infrastructure in the three Pilbara cities of Port Headland, Karratha and Newman; invest in major irrigation works in the Ord-East Kimberley region; implement priority projects from the Gascoyne Regional Development Plan 2010-2020, as well as a range of other social and physical infrastructure projects. The regional expenditures in Western Australia are not only concerned with resource-based regions but all non-metropolitan regions in the state.

In housing, the Western Australian Government has responded to the crisis with a funding allocation over five years for the Royalties for Regions Regional Infrastructure and Headwords Fund (Housing for workers), with the aim of delivering increased affordable housing opportunities for key workers in regional Western Australia.

In a small way, the NSW Government is hypothecating resources from state royalties to mining impacted regions. The Government has introduced the Resources for Regions program. The objective of the program is to relieve infrastructure constraints and support communities in regional areas affected by mining, with funding for local infrastructure of up to $160m over four years.

### 5.14 Conclusion

Key points to come out of this section are summarised as follows:

- For rapidly growing communities with nearby resource developments, the combination of increasing housing demand and slow supply response makes housing unaffordable for many, especially for low income earners. The lack of affordable housing in resource regions makes it difficult to attract and retain residents and workers, and has wide ranging implications for small business operators external to the resources sector.

- Resource regions are experiencing increasing pressures on, and insufficient supply of, social infrastructure. Social infrastructure deficits in health, education and aged care are commonly reported, among others, with significant consequences for the health, wellbeing and prosperity of communities. Gaps in service provision are becoming more pronounced as non-resident workforces and new in-coming populations increase.

- Resource developments can have wide ranging impacts on both the host communities and the workers themselves. The types of economic activity generated by resource development can have significant benefits for host communities, such as increased investment and employment opportunities.

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Conversely, there are also significant adverse implications for resource communities and workers. Social isolation and the broader effects on health and wellbeing are common for those employed in the resources sector, particularly FIFO workers. Those employed in the resources sector also experience comparatively higher incidences of relationship and family breakdown, with the problem often compounded by a lack of social infrastructure for crisis support (i.e. lack of emergency accommodation).

Labour and skills shortages are also prominent in resource regions, particularly for small business operators that find it difficult to compete with the remuneration packages offered by major resource companies. Cost of living pressures are also evident, with higher costs for housing, goods and services.

State governments and mining companies have historically focused on enabling projects without enabling “places”. This inevitably results in social infrastructure being implemented late and inadequately.

While social infrastructure in most situations is the responsibility of local, State and federal governments, its provision in remote mining areas is largely in response to the needs of the mining industry. Given the severe constraints on funding of all levels of government, and the large private surpluses often achieved by mining companies, there needs to be greater recognition by industry and governments of the funding or direct investment role of the industry in social infrastructure.

The deficit in social infrastructure in mining communities and the impacts on existing communities and the mining workers has been well articulated. Quantifying this deficit and the current gap is difficult. However the deficit is significant – in terms of physical infrastructure, operating and maintenance costs and also the indirect costs on communities such as impacts on health and wellbeing and criminal activity. These regions should be sharing in more of the benefits of Australia’s resource endowments.

6 RESOURCES AND INDUSTRY DEVELOPMENT

This chapter is concerned with how the benefits of resource development can be spread to other industries. Two dimensions are considered, firstly the chapter analyses the macroeconomic dimension; particularly how the appreciating exchange rate negatively impacted industrial competitiveness across the economy; and, secondly, consideration is given to how inter-industry relationships between the resource sector and key sectors such as manufacturing, professional and business services can be deepened to maximise the investment and employment spinoffs to other industries.

6.1 Macro-economic implications of an over-valued exchange rate

The appreciation of the Australian dollar turned Australia into a high cost country over a short period. This has little or nothing to do with labour and other costs. Most commentators accept that the resource boom was at least a significant contributor to the loss of competitiveness in key sectors. According to analysis by Treasury economists:

"Over the past decade, the Australian dollar (AUD) has appreciated strongly against the US dollar (USD), rising from less than US $0.50 in 2001 to a peak of over US $1.10 in 2011. While the rise can be attributed to a number of factors, the mining boom has been the key driver of the appreciation over this period."

The cost of an over-valued currency during a period of global economic and financial crisis has been extraordinarily high. Since the GFC Australia has lost 100,000 jobs in manufacturing. Jobs have been lost in well-established industries including steel, automobile, petroleum refineries and processed foods. Given that Australia, unlike other OECD countries, avoided the worst of the global economic downturn due to the government’s Economic Stimulus package (with a heavy focus on manufacturing inputs into infrastructure projects), and the extraordinary bounce back of the Chinese economy and Australian resources sector, it is broadly accepted that the high dollar is the main reason for the loss of jobs in manufacturing.

Over the past two decades the increasing level of global trade and reducing trade barriers intensified competitive pressure on Australian manufacturing industries. One factor which is cited as being key to understanding the competitiveness of the local manufacturing industries (in terms of direct exports and competing with imported goods) is the strength of the Australian dollar.

To examine this, it is useful to refer to the Trade Weighted Index. As Australia trades with a variety of countries using a number of different currencies the Trade Weighted Index (TWI) is used to understanding competitiveness of Australia. All other things being equal, Australia
becomes more competitive on international markets if the value of the TWI falls. The Reserve Bank of Australia calculates the TWI as an average movement in the Australian dollar against of a representative basket of currencies of Australia's trading partners. The currencies included in the calculation of the TWI make up at least 90% of total Australia trade in goods. The TWI follows broader economic cycles. In periods of slow global growth (early 1990s, early 2000s and 2009) the TWI falls as the Australian dollar depreciates. Between 2002-03 and 2011-12, the TWI increased by over 40 per cent. Over this same period, manufacturing gross value added has stagnated (Figure 25).

FIGURE 25 MANUFACTURING GROSS VALUE ADDED $ MILLIONS – VOLUME MEASURE

To gain a better understanding of the relationship between the TWI and manufacturing gross value added a simple econometric model has been constructed (Appendix A). The results show that GDP growth has a positive relationship with manufacturing gross value added. That is, greater demand in the economy quickly flows into increased demand for locally manufactured goods. As expected, changes in the TWI have a negative relationship with gross value added. A one unit increase in the Trade Weighted Index (that is the Australian Dollar has increased in value) reduces the growth in Manufacturing gross value added by 12 per cent. In broad terms, all other things being equal, a one unit increase in TWI will reduce manufacturing gross value added by around $100 million dollars in the following year. This reduction of $100 million would reduce employment in the industry by about 900 jobs.

Using this econometric model, the 40 per cent increase in the TWI observed over the past decade would have reduced Manufacturing gross value added by around $4.0 billion and reduced employment by 36,000 jobs.
The model also illustrates the regional dimension. In addition to the impact of the TWI and GDP, both Melbourne and Adelaide manufacturing gross value added fell faster than the rest of the country. This reflects the structure of manufacturing industries in those cities and their historical focus on car manufacturing. While Regional Queensland and Regional Western Australian grew faster than the rest of the country, it is probably due to the positive spillover effects from the resources boom offsetting some of the losses due to an over-valued exchange rate.

6.2 Strengthening inter-industry relationships

Government policies emphasise the dichotomy between the resource sector and other sectors, with encouragement to shift capital and labour resources away from traditional sectors such as manufacturing and other non-resource sectors and towards resources. This is seen as positive structural change with capital shifting to more competitive sectors. But successful resource abundant economies seek ways to maximise the spillovers from resources development to other sectors. As new areas are opened up for resource exploration and production in Australia, this should create new economic, environmental and environmental challenges and, if solvable, opportunities for Australian companies and research expertise in mining and maritime industries.

Unlike countries such as Singapore and the Republic of Korea, Australia has not in the past implemented policies to maximise spillovers to high value added components of other industries. Hence, resource development, rather than being integrated with other industries, actually undermines non-resource industries. As one commentator puts it “This creates a vicious cycle; every time there is a boom in the resource sector, the rest of the non-resource parts of the economy are actually forced to shrink”116. One important feature of the resource boom of the past decade is that as major new export resource projects were developed, the opportunities to undertake major design and fabrication projects in Australia actually declined117.

It is important to conceptualise the resource sector as a cluster, with local investment and employment opportunities driven by interaction between resource companies and operators, research and development institutions, upstream inputs including design, project management and engineering, and financial and business services, and manufacturing components and fabrication and construction, and downstream processing of minerals. Australia has developed some world class companies providing services to the resources sector, such as WorleyParsons and Clough Engineering. However, these are the exception rather than the rule. A comprehensive policy framework is needed to create and sustain a world class competitive cluster in the resource sector and to build more world class companies.

Given our resource endowments and skilled workforce, Australia has not had great success in attracting processing plants that process local resources and energy. There are exceptions including processing of low mineralised bauxite, nickel and gold and liquefaction of natural gas, although the shift to offshore floating LNG plants constructed in Korea or other international

117 See for example, WA Parliament Economics and Industry Standing Committee (2010), The potential for the development of a centre of excellence in LNG industry design in Western Australia – a discussion paper, report No. 3 in the 38th Parliament
competitors may, in the absence of policy intervention, spell the end of Australian capability. According to the Economics and Industry Standing Committee of the WA Parliament:\(^{118}\):

“Over the years there have been great expectations of, and a great deal of effort put into, attracting an array of processing facilities including pellet plants, steel mills, aluminium refineries, petrochemical plants and advanced material plants. Few such plants have been realised and investments have often been short lived.”

An important case study can be provided by the Australian oil and gas industry. In a report to the Western Australian Department of Commerce on the state’s engineering design opportunities in the oil and gas sector, Dr. Martin West\(^{119}\) cited a number a number of trends relevant to Australian engineering inputs. The upfront engineering design inputs are relevant because up-front design of resource projects, although often a small proportion of total costs, has a significant impact of spillover manufacturing and construction opportunities. Key trends include:

- Substantial global increases in forecast demand for gas, with Western Australia one of the world’s most attractive gas provinces.
- Increased costs associated with lack of skilled workers and high exchange rate.
- Increasing complexity and new technologies required to support exploration, extraction and processing in difficult environments.
- Resource companies are making increasing use of specialised Engineering, Procurement and Contract Management (EPCM) companies, resulting in greater use of companies that draw on global sources, often with long term relationships with the resource companies, and they have a significant influence on the fabrication. Many of these companies rely on financing that comes with minimum foreign content requirements. For example, Clive Palmer’s China First project, which requires 50% Chinese content as part of China Export-Import Bank financing requirements\(^{120}\).
- Growth of modular construction, with pre-fabrication and pre-assembly undertaken away from a job site and then transported to the site. The important point is that it is easier for design and manufacturing to be combined in one location.
- Internationalisation of supply chains means key high-value added inputs can be undertaken anywhere. In relation to detailed design of projects, more work is being moved to skilled and low cost centres such as India, Thailand, China and South Korea. Globally, the highest end design and engineering work is undertaken in a handful of engineering hubs, specifically Houston, Reading U.K. and Yokohama.

Norway is considered best practice, not only in terms of resource taxation policy, but also in terms of strengthening local industry capabilities in key industries providing inputs into the resource sector. Policies to maximise spillovers included building on Norway’s strengths in maritime industries and linking this to extension of opportunities for manufacturing and service firms engaged in offshore engineering. Norway maintains an open approach to innovation, and initially made use of international expertise, but was able to develop strong and competitive local capabilities in a range of activities including exploration, drilling and production as well as secondary activities such as shipbuilding, rigs, construction and assembly of platforms, and downstream activities including refining, pipeline manufacture and

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\(^{118}\) Economics and Standing Committee (2010), The potential for the development of a centre of excellence in LNG industry design in Western Australia – a discussion paper, report No. 3 in the 38th Parliament.

\(^{119}\) Dr. Martin West (2011), Assessment of the Engineering Design Capability and Capacity in the Oil and Gas Sector in Western Australia, a report to the Western Australian Department of Commerce

\(^{120}\) The Australia Institute (2011), An Analysis of the economic impacts of the China First mine
Priority was given to encouraging the growth of expertise in offshore extraction rather than only relying on overseas specialists, establishing a number of knowledge centres in selective regional locations and increase investment in problem solving research and education. The Norwegians also increased exposure of specialists by offering overseas scholarships and creating a number of centres of excellence. Norway implemented industrial policies, many linked to resource development, which put emphasis on knowledge, technological progress, and human capital. In a study of innovation in Norwegian natural resource industries; using case studies of petroleum and aluminium, Sæther et.al. found that Norway’s success was based on (i) the use of concession laws to seize value creation and technological development from foreign direct investments, (ii) the establishment and prioritisation of state-owned companies and (iii) the more or less intentional formation of a national innovation system.

Norway is relevant to the Australian experience. Both are small and developed economies with strong resource endowments. But Norway has taken a longer view regarding strengthening inter-industry relationships by leveraging its natural resource base. Australia has developed a short term market oriented approach and left it predominantly to large global corporations and has not been pro-active in developing interventionist policies to strengthen local industry competitiveness.

In its recent Industry and Innovation Statement, the (former) Australian Government has given more attention to ensuring that local companies share in opportunities to win contracts from large resource projects. One of the challenges for small economies such as Australia is to ensure that local companies are integrated into global supply chains, and specifically major corporations engaged in local projects. The Australian Government has given greater emphasis to expanding opportunities to increase participation of Australian companies in major projects. Major projects valued at $500 million or more will be required to develop plans for local procurement. Projects with expenditure of $2 billion or more will be required to embed staff in their global teams to promote Australian firms and develop plans setting out how they will use Australian firms.

Conclusion

Given the relative success of the Norwegian experience in managing resource industry development, flow-on benefits to other industries and public revenues for the long term compared to the short-term hands-off approach taken by the UK and Australia, Australian

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Governments should investigate and consider adoption of appropriate elements of the Norwegian model.

While the recent shift by the Australian and Queensland Governments towards encouragement of inter-industry linkages and greater local industry participation in resource projects is welcome, it is a belated development. Achieving maximum local/national benefits from growing industry sectors should always be a public policy priority.
APPENDIX A

A panel regression of manufacturing gross value added in all major capital cities and regional sections of the state between 1989-90 and 2001-12 was constructed. Changes in Manufacturing gross value added are deemed to be the function of a:

- Constant (which captures background growth in Manufacturing gross value added);
- changes in GDP (which captures broader movements in the economy);
- changes in the TWI in the previous year (the previous year is used as the price impacts of movements will take time to flow through the economy);
- Regional Dummy (which captures a range of location specific factors such as composition of the Manufacturing Industry in that region). Only four regions had dummy variables which were statistically significant; Melbourne, Adelaide, Regional Queensland and Regional Western Australia; and
- A random error term.

FIGURE 26 PANEL REGRESSION ECONOMETRIC STATISTICS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.0072</td>
<td>0.004343</td>
<td>-1.65745</td>
<td>0.0989</td>
</tr>
<tr>
<td>Change in TWI</td>
<td>-0.12354</td>
<td>0.038675</td>
<td>-3.19441</td>
<td>0.0016</td>
</tr>
<tr>
<td>Change in GDP</td>
<td>0.52753</td>
<td>0.13688</td>
<td>3.853966</td>
<td>0.0002</td>
</tr>
<tr>
<td>Melbourne Regional Dummy</td>
<td>-0.01217</td>
<td>0.004766</td>
<td>-2.55252</td>
<td>0.0114</td>
</tr>
<tr>
<td>Adelaide Regional Dummy</td>
<td>-0.01555</td>
<td>0.006017</td>
<td>-2.58441</td>
<td>0.0104</td>
</tr>
<tr>
<td>Regional QLD Dummy</td>
<td>0.024052</td>
<td>0.006801</td>
<td>3.536457</td>
<td>0.0005</td>
</tr>
<tr>
<td>Regional WA Dummy</td>
<td>0.028684</td>
<td>0.006016</td>
<td>4.768291</td>
<td>0</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.246767</td>
<td>Mean dependent var</td>
<td>0.015012</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.225549</td>
<td>S.D. dependent var</td>
<td>0.052018</td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>0.04624</td>
<td>Sum squared resid</td>
<td>0.455432</td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>11.63015</td>
<td>Durbin-Watson stat</td>
<td>1.9032</td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* White cross-section standard errors & covariance (d.f. corrected)
To share the benefits of resource development, resource taxation is one central issue. How to develop an effective system for managing and allocating resource revenues is another. How much should resource companies contribute for their extraction and sale of resources that belong to all citizens? Australia has established the principle of a minerals resource rent tax as the most efficient way of maintaining a viable industry and ensuring revenues are broadly shared, although tax receipts to date remain very small. The other critical issue is what to do with the proceeds of resource taxation. Should they meet only immediate policy priorities, such as balancing the budget, or should resource revenues be managed in a way to contribute to longer term economic, social and environmental goals? The proposition to develop a Sovereign Wealth Fund is concerned with how to ensure the benefits are broadly shared across the current generation and between current and future generations.

This report examined the imbalances associated with resource development at three levels: macro-economic, industry/sector and community, highlighting that the benefits of the resource boom have been uneven. Are there better ways to share the benefits of Australia’s substantial resource endowments? This includes ensuring resources owned by Australian citizens contribute to national prosperity and employment growth, help maintain macro-economic balance, maximise spinoffs to other sectors, and promote balanced development of resources communities. This report has shown that the massive profits from resources owned by the Australian people have not been broadly shared. The benefits have been skewed heavily in favour of individuals that control leases and multinational resource companies that repatriate much of their profits overseas. With more than 80% of Australia’s minerals production foreign owned, the economic rents of resources boom 2003 to 2013 have been predominantly appropriated by a small group of global resources companies and their shareholders and individuals that control leases.

The general consensus is that the resources boom 2003-2013 did increase mining incomes and employment in the resources and related sectors and resources investment increased some opportunities for local suppliers. Further, the high Australian dollar resulted in cheaper imports and reduced inflationary pressures. But as we have seen, there were many downsides to the 2003-2013 resources boom. The appreciation of the dollar, partly as a consequence of high demand for resources and improved terms of trade, resulted in income and employment losses in trade-exposed industries, particularly manufacturing, rural industries, tourism and international education. Secondly, the acceleration of demand made it more difficult to align investment in social and other physical infrastructure in resource regions and towns with production and employment growth, leading to stress on housing, services and amenities. Thirdly, the cyclical nature of the current resource boom (and previous booms and busts) creates challenges in ensuring that the temporary increases in resource-based revenues, investment and jobs can contribute to longer term economic, social and environmental goals.
This report cited a number of ways that benefits of resources booms can be broadly spread to provide benefits to industries and communities, including better integration of resources sector with industry and skills development, better planning and re-investment into resource communities, and improved management of exchange rate policy to restrict imbalances associated with the skewed development of the resources sector.

A core objective of policy reform is to increase the public returns from resource development. The massive economic rents being transferred to resource corporations provided the rationale for introducing what became the Minerals Resource Rent Tax (MRRT). The proposition to introduce the MRRT was confronted by a factually incorrect and hysterical advertising campaign by the mining industry. The politicisation of an important national reform to broaden the tax base and to better share the benefits of resources owned by the Australian people highlights the power of elite business interests to influence national outcomes. Nevertheless, the Minerals Resource Rent Tax (and the amended Petroleum Resource Rent Tax) are important foundations to efficiently tax the economic rents in petroleum, coal and iron ore industries (but not yet in other resource industries). The next stage beyond the implementation of the MRRT and PRRT should be to give consideration to the establishment of a Sovereign Wealth Fund, or Australia Development Fund. (The intention of the Government elected in September 2013 to abolish the MRRT is a deplorable step that will exacerbate Australia’s public budget problems.)

As outlined in Chapter 2, Sovereign Wealth Funds (SWFs) are government owned and controlled special purpose funds. Sovereign Wealth Funds are becoming more prominent in emerging and resource-based economies. They are state-owned investment funds composed of financial and other assets such as stocks, bonds, property, precious metals, or other financial instruments. Most SWFs are funded by foreign exchange assets. They divert assets from official reserves to other low risk assets with higher expected rates of return. SWFs tend to have some flexibility about where they invest, compared with traditional international reserves that limit investment to very low-risk assets. SWF’s invest in a broad range of assets, including public and private securities and equity markets.

Over the past decade, there has been a rapid increase in funds handled by Sovereign Wealth Funds in global financial markets. In 2009, estimates of SWF assets ranged from US$1.5 trillion to US$3 trillion. In a report for the Peterson Institute of International Economics, Truman, using a broad definition including pension funds, identifies 54 SWFs in 37 countries and estimates the total asset holdings of these funds at US$5.3 trillion. Although impacted by the Global Financial Crisis, they tended to be a much safer option and performed better than private sector financial assets.

It could be argued that Australia’s Future Fund, established in 2006, is a form of Sovereign Wealth Fund, but it is limited to meeting superannuation liabilities to Commonwealth public servants. The Future Fund currently has assets of around $84 billion, with funds received predominantly from the sale of Telstra.

The proposition advanced here is that Australia should establish a Sovereign Wealth Fund, what we term the Australia Development Fund, which would initially collect, manage and invest receipts from the use of extractive and trading operations associated with Australia’s non-

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renewable resources. There is no reason why the activities of the Future Fund could not be incorporated into the Australia Development Fund. Further, there is no reason why a SWF needs to be limited to resource development. Revenues to support SWFs can be generated from non-resource sectors as well as the resource sector. Some countries, including high growth export-oriented Asian economies such as China, Singapore and the Republic of Korea, have established SWF’s using surplus international reserves. Many countries with strong resource endowments have established commodity based funds with commodity export receipts from state owned industries in the resources sector, or through taxation of private commodity exporting firms including via resource rent taxes.

For commodity based funds perhaps the strongest case to establish SWFs in resource based economies is that they support the transfer of some of the revenues from non-renewable resources into long term wealth creation. Revenues accumulated through SWF’s are re-invested in areas that support long term growth including economic and social infrastructure, environmental sustainability and emerging industries, as well as shorter term fiscal priorities. According to Arreaza et. al.126 “The idea ... is to replace a real asset in the ground subject to depletion – for example – oil and gas – with a financial asset, to ensure that resource wealth may be distributed across generations and to smooth out the consumption path. Hence, these funds may serve, on the one hand, as a fiscal stabilisation tool, and, on the other, as a savings vehicle.”

One important issue that needs to be addressed is the relationship between Australia’s current resource rent taxation regime and a Sovereign Wealth Fund. Despite a number of diverging political views in relation to the Minerals Resource Rent Tax and PRRT, the important point is that legislation has been introduced by the Australian Government at a national level to generate and make use of receipts from the economic rents associated with large and profitable coal, iron ore, oil and gas projects. A Sovereign Wealth Fund would be more focused on the management and allocation of the public revenues associated with resource taxation to contribute to national prosperity over the long term. The SWF would not be so concerned with recurrent expenditure but with managing macro-economic objectives, increasing resources for future generations, sustainability, the quality of human capital and industry competitiveness. A critical point to note here is that resource rent taxes are by definition volatile – the receipts will fluctuate heavily depending on the minerals cycle – so expenditures of the revenues raised should not be focussed on recurrent government budgetary commitments.

One of the advantages of establishing an independent agency to manage the SWF is that it could take into consideration a range of fiscal, macroeconomic and inter-generational equity issues. Some of the reasons for establishing an Australian Sovereign Wealth Fund include:

− Protecting the economy from cyclic over-injection of revenues from depletable resources.
− Managing public surplus funds to ensure a return from prudential management of financial assets.
− Contributing to fiscal discipline through increasing government revenue during economic downturns.
− Save money abroad to dampen currency appreciation.
− Increasing savings that could benefit future generations associated with current extraction of non-renewable resources.

Supporting industry and broader economic restructuring, and putting funds aside to strengthen skills and technological capabilities.

Accelerating the transition to a sustainable economy, including diffusion of energy-efficient technologies.

An important issue is whether a Sovereign Wealth Fund could improve macroeconomic management including dampening exchange rate appreciation and improving fiscal management. By purchasing international equities, the SWFs could be used to dampen currency appreciation, due to excess foreign funds flowing into the economy and bidding up the currency. To limit appreciation of the local currency, one option is to save foreign earnings outside the country and bring in foreign income only gradually over time. In a study of oil funds in 15 countries over a 30 year period, Shabsigh and Ilahi conclude that they provide self-insurance against macroeconomic volatility, particularly inflation, although the relationship between oil funds revenues and currency management is weaker.

The Norwegian Government has long been considered a global leader in ensuring that resource development, specifically the country’s large oil and gas resources, contribute to national prosperity and ensure that the benefits are shared across generations. The Norwegian Government generates substantial public revenues from its resource industries, not only due to a 50% resource rent tax but also to government equity in the industry, particularly through Statoil, the state-owned petroleum company. From the early 1970’s, the Norwegian Government took a pro-active approach to integrating resource development into the Norwegian economy. Over time new policies and institutions have been created that supported a virtuous cycle of growth in the Norwegian economy. The Government established Statoil, with the objective of taking care of the business interests of the Norwegian state, providing opportunities for local manufacturing and engineering service companies to receive benefits, and established an oil fund, which is a Sovereign Wealth Fund. The main oil fund is known as the “Government Pension Fund – Global”, although the proceeds come from the petroleum industry. The Government Pension Fund – Global is managed by an arm of the Norwegian central bank on behalf of the Ministry of Finance. It is one of the world’s largest investors. It invests 60% of its portfolio in international equities, currently holding 1% of global equity markets, and 2% of all European equities.

From the initial net transfer of funds in 1996, the Norwegian Central Bank has forecast the fund will increase to around NOK 4,000 billion (A$660 billion at current exchange rates) by 2015. In addition to the Global Fund, the Norwegian Government has also established the smaller “Government Pension Fund – Norway”, which invests funds from the same source in Norwegian businesses. Key objectives of these funds include, firstly, achieving a high rate of return to enable future generations to receive benefit from the country’s petroleum endowments; and secondly, high priority is given to ethical management, including environmental and social investments and good corporate governance. The latter includes looking at ways of making climate change a factor in investment decisions, promoting investments that avoid the negative impacts of climate change.

The commitment by the Norwegian Government to set a proportion of receipts from resource development aside can be contrasted with the United Kingdom, with both countries sharing


128 According to the Sovereign Wealth Fund Institute, the Norwegian funds were worth around US$804 billion in November 2013.
the massive petroleum endowments of the North Sea. In contrast to Norway, the Thatcher Government in the UK concentrated on using the proceeds to fund tax cuts in the 1980s rather than setting some of the proceeds aside to build the nation’s capital stock. A report by the Scottish Government provides an estimate what a fund would now be worth if the UK had set aside a portion of the oil receipts over the 30 year period from 1980 and place them into an oil or sovereign fund. If 10% had been set aside, the fund would have been worth £24 billion (A$36 billion) at a 3% rate of return. If 20% had been allocated, the fund would have been worth £66 billion (A$100 billion) at a 5% rate of return.

Conclusion

Because of the unpredictability and volatility of commodity prices, it is often hazardous for economies to spend all the money they receive from resource taxation in a single year. According to Arreaza et. al. “In general, economies cannot absorb reserve windfalls without experiencing disruptive economic consequences, such as exchange rate appreciation, relative price distortions, liquidity expansion, financial imbalances, domestic asset bubbles, inflation, or the exacerbation of cyclical volatility.” ... “It may also involve opportunity costs, since foreign currency must be invested in liquid, low risk and henceforth low yield instruments that are readily available to central banks to balance payment requirements. SWFs are increasingly becoming an appealing alternative for countries to accumulate foreign exchange assets to cope with these issues.”

In some years, surplus funds are generated and in other years receipts can nose-dive. Not all economies have the absorptive capacity to properly utilise funds generated in a single year. Indeed, one of the features of the resources industry is the difficulty in estimating revenues on an annual basis. One of the advantages of a SWF is to build up the principal over time and allocate funds from the annual earnings of the principal. This enables allocations to be smoothed out over time.

The Australian Government should consider allocating a significant proportion of revenues from resource rent taxes (and any other economic rent or excess profit taxes) to a new SWF - the Australia Development Fund - to help manage public revenues from the resources sector for the long term benefit of all Australians. While the failure of the MRRT to raise significant revenues has contributed to calls for its demise, Australia will continue to rely on resources sector revenues for many decades to come and it is imperative that we become better at managing the scale and impacts of those revenues.

130 Scottish Government (2009), An Oil Fund for Scotland Taking forward our National Conversation, Edinburgh
131 Op.cit. p 26
132 due to major concessions made in its implementation, and a downturn in mineral prices