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**Fighting climate change:
Human solidarity in a divided world**

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UNITED NATIONS HUMAN DEVELOPMENT REPORT 2007: AUSTRALIA COUNTRY STUDY

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INTRODUCTION

The key theme underpinning this report is that the dependence of the Australian economy on the mining and minerals industries and on low cost energy has been the critical influence on the Australian approach to climate change policy. The Commonwealth government has emphasised the importance of no regrets approaches and has relied heavily on voluntary approaches – in particular, its Greenhouse Challenge programme – as a central element of policy directed at reducing greenhouse gas emissions from Australian business. This report analyses the Greenhouse Challenge in the context of Australia's overall climate change policies and assesses the potential contribution of such programmes to delivering on the significant reductions in greenhouse gas emissions that are likely to be required to stabilise atmospheric greenhouse gas emissions in the range 450-500 ppm¹.

THE AUSTRALIAN ECONOMY: A BRIEF OVERVIEW

Australia is one of the most arid continents in the world. The fragility of its diverse ecosystems and tendency to extremes of drought and flooding render it vulnerable to the effects of climate change. Australia is also exposed to risks such as disruptions to water supply, increases in the severity of storms, floods and droughts, coastal erosion due to sea level rise, and negative human health impacts (e.g. through an increase in the range and spread of tropical diseases and pests)².

Australia's gross domestic product (GDP) in 2004 was A\$821 billion (around US\$616 billion), equating to a GDP per capita of A\$40,604³. Services accounted for approximately 74% (just under A\$597 billion including electricity, gas and water supply) of GDP in 2003-2004, with manufacturing accounting for 11% (A\$83 billion), mining 4% (A\$30 billion) and agriculture, forestry and fishing 3% (nearly A\$24 billion)⁴.

Australia's exports are heavily dependent on the mining and minerals industry, and on agriculture. Australia is the world's largest exporter of black coal, with over 218 million tonnes exported in 2003-2004, and is among the world's leading exporters of bauxite, alumina, lead, uranium, gold, iron ore, aluminium, nickel and zinc. Agriculture accounts for around 23% of total Australian merchandise exports, with exports worth \$26.8 billion in 2004⁵. Australia is the world's largest exporter of wool and beef, the second largest exporter

¹ Depending on the level of emissions reductions (or emissions growth) in less developed countries, this would equate to emissions reductions of the order of 60-90% in industrialised countries by 2050.

² For a more detailed descriptions of Australia's exposure to climate change risk, see Australian Greenhouse Office (AGO) (2005a), *Australia's Fourth National Communication under the United Nations Framework Convention on Climate Change* (AGO, Canberra) at 83-89; Allen Consulting Group (2005), *Climate Change Risk and Vulnerability: Promoting an Efficient Adaptation Response in Australia* (AGO, Canberra); CSIRO (2002), *Living with Climate Change* (AGO, Canberra). For an assessment of the investment implications of climate change, see Rolph, B. & Prior, E. (2006), *Climate Change and the ASX100: An Assessment of Risks and Opportunities* (Citigroup Equity Research, Australia/NZ, Sydney).

³ AGO (2005a) (Note 2) at 14.

⁴ AGO (2005a) (Note 2) at 19-22.

⁵ AGO (2005a) (Note 2) at 2, 21.

of cotton, sheep meats and wheat, the third largest exporter of canola and barley, and a significant exporter of wine.

Electricity generation in Australia is dominated by coal-fired generation. In 2003-2004, 77% of electricity was sourced from black and brown coal and their by-products, while renewable energy sources, such as hydroelectricity, wind, solar, sugar cane residue (bagasse), wood and biogas accounted for 8%, natural gas 14% and petroleum products less than 1%⁶. Australia has no nuclear energy and limited hydro-electricity capacity.

Australia is continuing to experience strong economic growth driven by demand for its agricultural and mineral commodities. This growth, when taken together with the expected 36.8% increase in Australia's population over the period 1990-2021 and Australia's reliance on long-haul transport across vast distances, is likely to continue to exert pressure on resources and energy use well into the twenty-first century.

GREENHOUSE GAS EMISSIONS IN AUSTRALIA

Australia's greenhouse gas emissions profile is heavily influenced by its large energy-intensive industries such as aluminium, iron and steel production, its large agriculture sector and its heavy dependence on long-haul transport.

In 2004, Australia's greenhouse gas emissions totalled 564.7 million tonnes of carbon dioxide equivalent (MT CO₂(eq)), an increase of 2.3 per cent over the 1990 levels of 551.9 MT CO₂(eq)⁷. From 2003 to 2004, emissions increased by 13.9 MT CO₂(eq), or 2.5 per cent. Table 1 breaks these emissions down by sector, and Figure 1 provides an overview of trends in sectoral emissions over the period 1990-2004.

Table 1: Changes in CO₂-equivalent Emissions and Removals by Sector (1990-2004)⁸

Sector	1990 MT CO ₂ (eq)	2004 MT CO ₂ (eq)	Change MT CO ₂ (eq)	% Change
Energy	287.5	387.2	99.7	34.7%
Stationary Energy	195.7	279.9	84.2	43.0%
Transport	61.7	76.2	14.5	23.4%
Fugitive Emissions	30.0	31.0	1.0	3.4%
Industrial Processes	25.3	29.8	4.5	18.0%
Solvent and Other Product Use ⁹	NA	NA	NA	NA
Agriculture	91.1	93.1	2.0	2.2%
Land Use, Land Use Change & Forestry	128.9	35.5	-93.4	-72.5%
Waste	19.2	19.1	-0.1	-0.7%
Net Emissions	551.9	564.7	12.8	2.3%

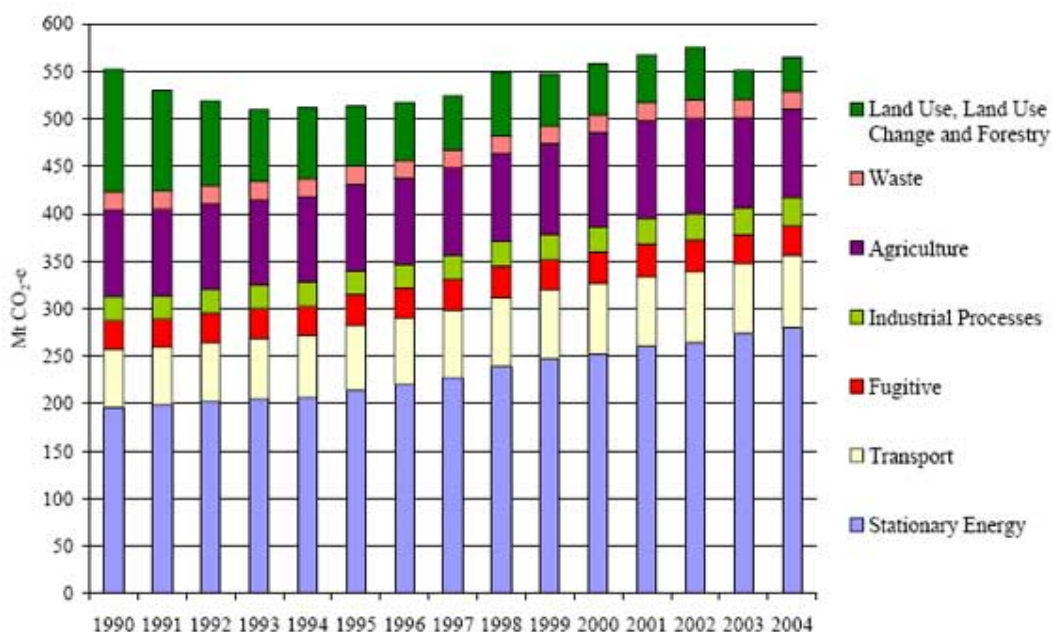
⁶ AGO (2005a) (Note 2) at 16

⁷ AGO (2006a), *National Greenhouse Gas Inventory 2004* (AGO, Canberra).

⁸ AGO (2006b), *Analysis of Recent Trends and Greenhouse Indicators 1990-2004* (AGO, Canberra) at 7.

⁹ Emissions from this sector are NMVOCs (non-methane volatile organic compounds), which cannot be converted into MT CO₂(eq).

Figure 1: Net CO₂-equivalent Emissions by Sector, 1990-2004¹⁰



The reductions in the emissions from the land use, land use change and forestry category reflect the significant reductions in the rate at which Australian forests have been converted to agricultural or other land uses¹¹. It should be noted that the credit for carbon sequestered in reforestation activities (i.e. plantations) established since 1990 will only be incorporated into national inventories for the period 2008-2012 (i.e. the Kyoto compliance period). If these emissions are excluded from the inventory, Australia's greenhouse gas emissions would have increased by 25.1 per cent (from 423.0 to 529.2 MT CO₂(eq)) over the period 1990-2004.

Australia has three 'macro indicators' for assessing the effectiveness of climate change policy, namely: total net national emissions (discussed above), emissions per capita, and emissions per unit of Gross Domestic Product (GDP). Over the period 1990-2004, Australia's population increased at an average of 1.2% per annum and economic activity at an average rate of 3.3% per annum¹². The net effect is that emissions per capita declined at an average rate of 1.0% per annum, with emissions per dollar of GDP declining by 35% over this period.

¹⁰ AGO (2006b) (Note 8) at 7.

¹¹ Australia has reduced annual carbon dioxide emissions from deforestation from 129 million tonnes in 1990 to 54 million tonnes in 2005, and this is expected to decrease to 45 million tonnes by 2010. In addition, new forest land planted since 1990 is expected to remove (sequester) 21 million tonnes of carbon dioxide per year (AGO (2007), 'Australia's Forest Estate – Achievements' (AGO, Canberra). For more information on Australia's approach to forest management, see www.greenhouse.gov.au/ncas. It is pertinent to note that there are significant uncertainties in the contributions of carbon sequestration to Australia's total greenhouse gas emissions. See, for example, Macintosh, A. (2007), 'The National Greenhouse Accounts and Land Clearing: Do the Numbers Stack Up? Research Paper No. 38' (The Australia Institute, Canberra); Macintosh, A. (2007), 'Response to the Federal Government's Critique of The National Greenhouse Accounts and Land Clearing: Do the Numbers Stack Up?' (The Australia Institute, Canberra).

¹² AGO (2006b) (Note 8) at 9-10.

Australia's greenhouse gas emissions are projected to reach 603 MT CO₂(eq) in the period 2008-2012 which, at 109% of 1990 levels¹³, is slightly above Australia's 108% Kyoto Protocol target. These projections incorporate the contribution of the various greenhouse gas emission reduction measures that have been adopted by the Commonwealth, State, Territory and local governments. The combined effect of these efforts is expected to cut annual emissions by 87 MT CO₂(eq) by 2010¹⁴. In the absence of these measures, Australia's greenhouse gas emissions were expected to reach 125% of the 1990 level by 2010¹⁵. Greenhouse gas emissions per dollar of real Gross Domestic Product are projected to decline by 45% from 1990 to 2010 and emissions per capita are projected to decline by 12% over the same period (from 33 tonnes per capita to 29 tonnes per capita)¹⁶.

Emissions for 2020 are projected to reach 718 MT CO₂(eq) or 127% of the 1990 level, reflecting the impact of ongoing growth in emissions in the energy sector (see Table 2). Over the period to 2020, emissions per real dollar of GDP are expected to decline to 52% below the 1990 level and the emissions per capita are expected to be 6% lower than in 1990 (31 tonnes as opposed to 31 tonnes per capita in 1990)¹⁷.

Table 2: Projected Changes in Sectoral Emissions (1990-2020)¹⁸

Sector	Projected increase (decrease) in emissions 1990-2010		Projected increase (decrease) in emissions 1990-2020	
	%	MT CO ₂ (eq)	%	MT CO ₂ (eq)
Stationary Energy	56	110	84	165
Transport	40	25	62	38
Fugitive Emissions	27	8	84	25
Industrial Processes	50	13	97	25
Agriculture	5	4	11	10
Waste	(19)	(4)	(45)	(8)
Land Use Change	(65)	(84)	(65)	(84)
Forestry		(21)		(20)

INTERNATIONAL POLICY RESPONSES

Australian industry has consistently argued that the Australian government should only pursue policies that are flexible and cost-effective in their own right, and that have the least negative impact on competitiveness, investment, regional development and jobs¹⁹. This lobbying²⁰,

¹³ AGO (2006c), *Tracking to the Kyoto Target: Australia's Greenhouse Emissions Trends 1990 to 2008-2012 and 2020* (AGO, Canberra) at 1.

¹⁴ AGO (2006c) (Note 13) at 1.

¹⁵ AGO (2006c) (Note 13) at 1.

¹⁶ AGO (2006c) (Note 13) at 15.

¹⁷ AGO (2006c) (Note 13) at 15.

¹⁸ AGO (2006c) (Note 13) at 16, 18.

¹⁹ See, for example, Knapp, R. (2004), 'Australian Aluminium Council [AAC] Submission to the Senate ECITA Committee Inquiry into the Kyoto Protocol Ratification Bill 2003 [No. 2]. 30 January 2004' (AAC, Canberra); Plastics and Chemicals Industries Association (PACIA) (2004), 'Submission to Senate Standing Committee on Environment, Communications, Information Technology and the Arts in Relation to its Inquiry into the Kyoto Protocol Ratification Bill 2003 (No 2). January 2004' (PACIA, Melbourne). It is important to note that industry views are not homogenous with the CEOs of a number of major Australian businesses – BP Australasia, Insurance Australia, Origin Energy, Swiss Re, Visy Industries, Westpac – calling for early action on climate change (Australian Business Roundtable on Climate Change (2006), 'Joint CEO Statement'. <http://www.businessroundtable.com.au/html/jointceo.html>).

allied to the heavy dependence of the Australian economy on the mining and minerals industries, has strongly influenced the Australian government's approach to both international negotiations and domestic policy.

Despite being one of the few countries permitted to increase its greenhouse gas emissions under the Kyoto Protocol²¹, the Australian government has decided not to ratify the Kyoto Protocol, arguing that the Protocol does not provide a clear pathway for emission reduction actions by developing countries²².

While it has continued to play an active role in the international processes around the United Nations Framework Convention on Climate Change (UNFCCC)²³ and the Kyoto Protocol, the Australian government has actively sought to work with other countries – in particular, the United States – to develop alternative international approaches to the target-based approach of the Kyoto Protocol. Perhaps the most significant activity in this regard has been the leadership role played by Australia in establishing, along with the United States, China, Japan, India and the Republic of Korea, the Asia-Pacific Partnership on Clean Development and Climate in 2005. The aim of the partnership is to develop global agreements on climate change based on clean technology development and deployment rather than the emissions target approach used in the Kyoto Protocol²⁴. In addition, Australia works with six bilateral climate change partners - China, the United States, New Zealand, Japan, the European Union, South Africa - on practical cooperative projects responding to global climate change. More than 50 projects in areas such as renewable energy, coal mine methane capture, energy efficiency, and carbon sequestration are now under way through these partnerships²⁵. Australia also participates in four multilateral partnerships that focus on technology: the Renewable Energy and Energy Efficiency Partnership, the Methane to Markets Partnership, the International Partnership on the Hydrogen Economy and the Carbon Sequestration Leadership Forum.

DOMESTIC POLICY MEASURES

Commonwealth

Australia has adopted a range of policy measures at the Commonwealth, State and Territory, and local government levels directed at reducing greenhouse gas emissions. At the

²⁰ For an extremely critical assessment of the influence of corporate lobbying on Australian climate change policy, see Hamilton, C. (2006), 'The Dirty Politics of Climate Change'. Speech to the Climate Change and Business Conference, Adelaide, 20 February 2006.

²¹ Australia is required to cap its greenhouse gas emissions at 108 per cent of its 1990 emissions, to be achieved on an annual basis over the five years from 2008 to 2012.

²² See, for example, AGO (2006c) (Note 13).

²³ Australia also provides assistance to developing countries in support of the UNFCCC. For example, since 1996-1997, Australia has contributed over \$279 million to bilateral and regional development assistance for activities that contribute to sustainable development while reducing net greenhouse gas emissions, or that help developing countries adapt to climate change, with a particular focus on forestry, land management and renewable energy. In addition, the Australian Government has provided funding for capacity development in developing countries, for helping vulnerable Pacific small island developing states to monitor and adapt to climate change, and for research and development in areas such as climate prediction.

²⁴ Howard, J., Downer, A., MacFarlane, I. and Campbell, I. (2005), 'Press Release: Australia Joins New Asia-Pacific Partnership on Clean Development and Climate. 28 July 2005' (Department of the Environment and Heritage, Canberra). For information on the activities of the Asia-Pacific Partnership on Clean Development and Climate, see <http://www.asiapacificpartnership.org>

²⁵ AGO (2005a) (Note 2) at 125-126.

Commonwealth level, the emphasis has been on ‘no regrets measures’, where a no regrets measure is defined as ‘a measure that has other net benefits (or, at least, no net costs) besides limiting greenhouse gas emissions or conserving or enhancing greenhouse gas sinks’²⁶. That is, the emphasis of policy has been on encouraging Australian industry to contribute to reducing greenhouse gas emissions while not threatening Australia’s international competitiveness²⁷.

Despite the focus on no regrets measures, the Commonwealth government has committed around two billion dollars (Australian) to climate change issues since 1997²⁸. The Commonwealth government’s Climate Change Strategy²⁹ incorporates a mix of policy measures including consumer and corporate education, voluntary corporate participation in emission reduction activities, seed funding for renewable energy innovations, mandatory standards for power generation, energy-use efficiency and vehicle fuel efficiency, the mandatory uptake of new renewable energy in power supply, research and policy development into sinks and emissions, and fostering growth in plantation forestry and native vegetation. These measures are projected to deliver greenhouse emissions abatement of 87 MT CO₂(eq) by 2010³⁰.

Some of the key policy measures that have been adopted include³¹:

- The Greenhouse Gas Abatement Programme³² which is designed to leverage private sector investment into activities or technologies that will result in substantial reductions in greenhouse gas emissions or sink enhancement, particularly in the Kyoto target period (2008-2012).
- The Greenhouse Challenge Plus (discussed further below)
- The A\$500 million Low Emissions Technology Demonstration Fund which will operate from 2005–2020 to support the demonstration of new low-emission technologies with significant long-term greenhouse abatement potential, and to support industry-led projects to demonstrate the commercial viability of new technologies or processes, or the application of overseas technologies or processes to Australian circumstances. The fund aims to leverage at least A\$1 billion in contributions from the corporate sector.
- The Mandatory Renewable Energy Target which will secure 9,500 Gigawatt-hours of additional renewable energy electricity by 2010. In addition, the Commonwealth

²⁶ AGO (1998a), *The National Greenhouse Strategy* (AGO, Canberra). The concept of no regrets (i.e. those measures that are financially worthwhile in the absence of any concerns regarding global warming) has been criticised because it is seen as having the effect of effectively excluding climate change as a factor in decision-making processes (Hamilton, C. (1996), ‘Thinking About the Future: Equity and Sustainability’, in Department of the Environment, Sport and Territories (1996), *Equity and the Environment* (Department of the Environment, Sport and Territories, Canberra, Australia), pp. 16-21).

²⁷ Howard, J. (1997), ‘Safeguarding the Future: Australia’s Response to Climate Change. Statement by The Prime Minister of Australia, The Hon. John Howard MP, 20 November 1997’.

²⁸ AGO (2006c) (Note 13).

²⁹ The Strategy – which consolidates previous climate change initiatives - is articulated through measures contained in the 2004–05 Federal Budget (see Department of the Environment and Heritage (2004), *Budget 2004-2005* (Department of the Environment and Heritage, Canberra) and the 2004 Energy White Paper (Commonwealth of Australia (2004), *Securing Australia’s Energy Future* (Commonwealth of Australia, Canberra)).

³⁰ AGO (2006c) (Note 13) at 1. For a breakdown of the expected emissions abatement from the different programmes and policy measures, see AGO (2005a) (Note 2) at 60-66.

³¹ For a more detailed description see AGO (2005a) (Note 2) at 3-6, 36-66. See also the Australian Greenhouse Office website: <http://www.greenhouse.gov.au/>

³² <http://www.greenhouse.gov.au/ggap/index.html>

Government has various programmes to support the commercialisation and use of renewable energy technologies.

- The Solar Cities programme which will provide \$75 million over nine years (2004-2013) to demonstrate the costs and benefits of solar power, energy efficiency and smart metering technologies.
- The Greenhouse Action in Regional Australia programme which aims to build the capacity of the agriculture and land management sectors to reduce greenhouse gas emissions by promoting forest sink enhancement and the integration of forest sinks and greenhouse issues with natural resource management.

One of the most significant influences on Australia's greenhouse gas emissions has been the introduction of a wholesale electricity market across Australia, which has increased the carbon intensity of electricity generation (through favouring low cost brown coal power producers)³³. The Commonwealth government has acted to address (at least partially) this market failure by requiring electricity suppliers and large purchasers to increase the quantity of renewable energy purchased by 2 per cent by 2010³⁴, as well as providing funding for the commercialisation of renewable energy technologies. In addition, market liberalisation has led to reductions in energy prices in real terms for most consumers in most regions. The relatively low price of electricity in Australia has been a barrier to effective demand side management; in Australia, the rate of improvement in end use energy efficiency in Australia over the past decade has been about half the OECD average³⁵.

While most current policy measures are directed at allowing Australia to meet its Kyoto Protocol commitments, a number of the measures (e.g. the Low Emissions Technology Demonstration Fund, the Solar Cities trial, a \$100 million Renewable Energy Development Initiative) seek to deliver greenhouse gas abatement options beyond the Kyoto compliance period. Notwithstanding these measures, Australia's greenhouse gas emissions are expected to be 127% of the 1990 level by 2020.

States and Territories

In parallel to the Commonwealth government's activities, each State and Territory has established a greenhouse strategy to address those issues with a bearing on climate change – for example, waste management, the planning and development of power plants, land use and transport planning and vegetation management – that fall under its jurisdiction³⁶. It is

³³ Parliament of the Commonwealth of Australia (2000), *The Heat is On: Australia's Greenhouse Future. Report of the Senate Environment, Communications, Information Technology and the Arts Committee* (Commonwealth of Australia, Canberra); AGO (2004a), *National Greenhouse Gas Inventory: Analysis of Recent Trends and Greenhouse Indicators 1990 to 2002* (AGO, Canberra).

³⁴ The measure will be implemented through the *Renewable Energy (Electricity) Act 2000* and the *Renewable Energy (Electricity) (Charge) Act 2000*, supported by the *Renewable Energy (Electricity) Regulations 2000*.

³⁵ Commonwealth of Australia (2004) (Note 29) at Section 3; Allen Consulting Group (2003), *Sustainable Energy Jobs Report. Prepared for the Sustainable Energy Development Authority* (Allen Consulting Group, Sydney).

³⁶ See, for example, State of Victoria, Department of Sustainability and Environment (2005), 'Victorian Greenhouse Strategy Action Plan Update' (State of Victoria, Melbourne); New South Wales Greenhouse Office (2005), *NSW Greenhouse Plan* (NSW Greenhouse Office, Sydney); Government of Western Australia (2004), *Greenhouse Strategy* (Government of Western Australia, Perth). To illustrate the strategies that have been adopted, the Victorian government has set out four overarching climate change objectives, namely promoting actions that deliver reductions in net greenhouse gas emissions, positioning Victoria to prosper in a low carbon economy, developing understanding of the adaptive responses required to deal with the impacts of climate change and increasing community awareness about the actions needed to reduce emissions. For industry and

interesting to note that a number of the States and Territories have explicitly acknowledged the need for significant cuts in greenhouse gas emissions in order to avert the most serious effects of climate change. For example, Victoria has suggested that it will need to reduce its emissions by 75% of current levels, with substantial progress towards this goal required in the first half of the 21st century³⁷. Similarly, New South Wales has set a target of reducing greenhouse gas emissions by 60% by 2050³⁸. In contrast, the Commonwealth government has not set targets beyond the Kyoto Protocol compliance period of 2008-2012.

Emissions Trading

There has been ongoing discussion around the potential for Australia to introduce emissions trading as a part of the policy mix directed at reducing greenhouse gas emissions. For example, in 1999, the AGO issued a series of discussion papers on emissions trading and how such a scheme could be implemented in Australia³⁹. However, because of concerns about the potential cost to Australian business, the Commonwealth government announced in August 2000 that it would not establish an emissions trading scheme until an international greenhouse gas emissions trading scheme had been established.

Despite the Commonwealth government's position⁴⁰, the States and Territories have supported the principle of emissions trading⁴¹ and, in January 2004, the First Ministers of State and Territory Governments established a working group of senior officials (subsequently named the National Emissions Trading Taskforce) to develop a model for a national emissions trading scheme⁴². The group issued a public discussion paper in August

commerce, the measures adopted include: requiring licensed facilities to implement best practice with respect to energy efficiency and greenhouse gas emissions and to conduct energy audits and implement actions that have a financial payback of up to three years; supporting the development and application of sustainable energy technologies and practices in manufacturing; supporting the uptake of greenhouse gas abatement technologies; supporting cleaner energy technologies such as improving the combustion efficiency of lignite and the development of geo-sequestration; improving public reporting of greenhouse gas emissions for large emitters; improving energy management in large commercial buildings (State of Victoria, Department of Sustainability and Environment (2005)). One of the key elements of the New South Wales responses is its Greenhouse Gas Abatement Scheme (GGAS), which requires electricity retailers and large electricity users choosing to participate in the Scheme to meet mandatory annual targets for greenhouse emissions, or pay a financial penalty. The Scheme requires electricity retailers to achieve 5% reduction in per capita emissions by 2007 compared to 1990 emission levels, and then maintain those levels until 2012 (see, further, <http://www.greenhousegas.nsw.gov.au>; Independent Pricing and Regulatory Tribunal (IPART) (2006), *Compliance and Operation of the NSW Greenhouse Gas Abatement Scheme During 2005* (IPART, Sydney)).

³⁷ State of Victoria, Department of Sustainability and Environment (2005) (Note 36) at 6-7.

³⁸ New South Wales Greenhouse Office (2005) (Note 36) at 2.

³⁹ AGO (1999a), *National Emissions Trading: Establishing the Boundaries, Discussion Paper No. 1* (Commonwealth of Australia, Canberra, Australia); AGO (1999b), *National Emissions Trading: Issuing the Permits, Discussion Paper No. 2* (Commonwealth of Australia, Canberra, Australia); AGO (1999c), *National Emissions Trading: Crediting the Carbon, Discussion Paper No. 3* (Commonwealth of Australia, Canberra, Australia); AGO (1999d), *National Emissions Trading: Designing the Market, Discussion Paper No. 4* (Commonwealth of Australia, Canberra, Australia).

⁴⁰ See, for example, Commonwealth of Australia (2004) (Note 34); AGO (2005a) (Note 2) at 41.

⁴¹ See, for example, State of Victoria, Department of Infrastructure and Department of Sustainability and Environment (2004), *The Greenhouse Challenge for Energy* (State of Victoria, Melbourne) at 2 which states: "Market mechanisms, such as emissions trading, offer an efficient and effective means of providing incentives for emissions abatement. Victoria supports the development and implementation of a national emissions trading scheme led by the federal government, in close consultation with all States and Territories... A Victorian-only emissions trading scheme is not proposed as this would be an inefficient route to greenhouse gas abatement and would disadvantage Victoria's economy in the absence of equivalent action by other States and Territories."

⁴² See further <http://www.emissionstrading.net.au/home>

2006 on the possible design of such a scheme⁴³. Overall, the scheme would seek to introduce a price for carbon into the electricity market but to minimise any adverse effects on trade-exposed industries through the allocation of free permits to compensate for higher energy costs.

In December 2006, the Australian Prime Minister John Howard announced the establishment of a joint government/business Task Group on Emissions Trading. The Task Group is required to advise on the nature and design of a workable global emissions trading system in which Australia would be able to participate, while ensuring that Australia's competitive advantages of large reserves of fossil fuels and uranium are preserved⁴⁴. The Task Group, which is required to report its findings by 31 May 2007, released an Issues Paper canvassing views and input with submissions due by 7 March 2007⁴⁵.

Despite the growing interest in emissions trading, it is likely that concrete proposals will only emerge following the federal election (expected between October and December 2007) and once the new government's climate change policy is defined. The opposition Labour Party has stated that, if elected, it would ratify the Kyoto Protocol, commit to reducing Australia's greenhouse gas emissions by 60% by 2050, establish a national emissions trading scheme and increase the mandatory renewables target. However, the Labour Party has not spelled out the specific emissions targets and timeframes it would adopt nor has it explained how the interests of emissions intensive industry would be taken into account.

CASE-STUDY: THE GREENHOUSE CHALLENGE AND GREENHOUSE CHALLENGE PLUS

The Commonwealth government established the Greenhouse Challenge in 1995 as a voluntary programme for public and private sector organisations to undertake and report on their actions to abate greenhouse gas emissions. The aim was to achieve the maximum practicable greenhouse gas emissions abatement, while not compromising business objectives such as development and growth⁴⁶.

Organisations wishing to participate in the Greenhouse Challenge were required to work through a six-step process, namely establishing and maintaining an inventory of greenhouse gas emissions, developing an action plan to minimise greenhouse gas emissions or enhance greenhouse sinks, forecasting expected reductions in greenhouse gas emissions, signing a Cooperative Agreement with the Commonwealth government⁴⁷, monitoring and reporting on

⁴³ National Emissions Trading Taskforce (2006), 'Possible Design for a National Greenhouse Gas Emissions Trading Scheme. August 2006' (National Emissions Trading Taskforce). The key features of the draft scheme are that: the scheme will be a cap-and-trade scheme (in a similar manner to the EU Emissions Trading Scheme); the scheme will initially cover all electricity generators of greater than 30MW, extending to all stationary energy with emissions of greater than 25,000 tonnes of CO₂-equivalent after five years; offset credits would be accepted from landfill and sewage methane use and forestry, with the potential for linking the scheme to international schemes through the use of the Kyoto Protocol flexibility mechanisms; trade-exposed energy intensive sectors would be compensated through the free allocation of permits; no free permits to new entrants into the market.

⁴⁴ Task Group on Emissions Trading (2007), 'Issues Paper' (Task Group on Emissions Trading, Canberra). The group's structure is tailored to reflect this objective, with the membership, in addition to a number of government representatives, comprising representatives from Xstrata Coal, International Power, Australian Pipeline Trust, Qantas, BHP Billiton, Alumina and National Australia Bank.

⁴⁵ Task Group on Emissions Trading (2007) (Note 44).

⁴⁶ Howard (1997) (Note 27).

⁴⁷ Cooperative Agreements were expected to include an emissions inventory, an assessment of the opportunities available for abating greenhouse gas emissions, a greenhouse action plan, and a commitment to regular

greenhouse gas emissions against targets, and being open to independent verification. The Greenhouse Challenge did not involve specific abatement targets being imposed on participating organisations, nor were there any sanctions or penalties where forecasts were not achieved.

In May 2004, the Australian government announced budget funding of A\$31.6 million for the Greenhouse Plus – Enhanced Industry Partnerships measure (hereafter the Greenhouse Challenge Plus). The Greenhouse Challenge Plus builds on the infrastructure and existing commitments of the Greenhouse Challenge⁴⁸, with the Cooperative Agreements signed under the Greenhouse Challenge being carried forward into Greenhouse Challenge Plus⁴⁹. Participants' commitments are broadly similar to those under the Greenhouse Challenge; participants are required to measure and monitor their greenhouse gas emissions, deliver the maximum practicable greenhouse gas abatement, continuously improve the management of greenhouse gas emissions and sinks, work towards the milestones set in individual agreements, provide annual reports to the Australian Greenhouse Office, make a public statement about participation in the programme, promote industry participants' activities and participate in independent verification of annual progress reports⁵⁰. The annual progress reports are expected to include an updated emissions inventory, a statement of absolute changes in emissions, a statement of progress against significant abatement actions, changes in emissions intensity, details of the calculation methodologies and assumptions used, an indication of which elements of the report are not confidential and a sign off by the chief executive or authorised delegate⁵¹.

From 1 July 2006, participation in Greenhouse Challenge Plus is a mandatory requirement for Australian companies receiving fuel excise credits of more than A\$3 million and for the proponents of large energy projects⁵². The AGO has estimated that these new requirements will affect around 100-200 businesses⁵³, although many were previously participants in the Greenhouse Challenge.

The programme allows participants to be recognised as Greenhouse Challenge Plus Leaders if they publicly disclose their gross emission levels, their short-term goals for greenhouse, an overview of their climate change strategy and the expected direction of future greenhouse gas emissions and mitigating actions⁵⁴. In addition, they are expected to develop action plans to meet or exceed their annual greenhouse goals, to reference best practice in the development of greenhouse targets and key performance indicators, and to encourage their suppliers to take greenhouse actions⁵⁵.

monitoring and reporting of performance. Cooperative Agreements can be viewed at <http://www.greenhouse.gov.au/cgi-bin/challenge/dbsearch.pl>

⁴⁸ Greenhouse Challenge Plus will also provide the framework for Greenhouse Friendly certification (a voluntary initiative that provides Australian businesses with the opportunity to market 'greenhouse-neutral' products or services) and the Generator Efficiency Standards programme (which aims to aim to achieve best practice in the efficiency of electricity generation).

⁴⁹ AGO (2005b), 'Greenhouse Challenge Plus: Programme Framework 2005' (AGO, Canberra, 2005).

⁵⁰ AGO (2005b) (Note 49).

⁵¹ AGO (2005b) (Note 49).

⁵² AGO (2005c), 'Greenhouse Challenge Plus: An Australian Government-Industry Partnership to Reduce Greenhouse Gas Emissions and Improve Energy Efficiency' (AGO, Canberra).

⁵³ AGO (2005c) (Note 52).

⁵⁴ AGO (2005b) (Note 49).

⁵⁵ AGO (2005b) (Note 49).

The actions taken under the Greenhouse Challenge Plus programme are expected to contribute more than 15 MT CO₂(eq) in greenhouse gas emissions reductions in 2010⁵⁶.

Outcomes from the Greenhouse Challenge

The Greenhouse Challenge has formed the centrepiece of the Australian government's efforts to encourage business to take action on greenhouse gas emissions and climate change for over ten years. Over 750 organisations were members as at the end of 2006⁵⁷ and the programme had significant coverage of Australian greenhouse gas emissions with almost total coverage in a number of major industrial sectors, including electricity generation and distribution, oil and gas extraction, iron and steel and aluminium, and coal mining.

The flexibility provisions in the Greenhouse Challenge were supported by industry as enabling cost-effective approaches to greenhouse gas emissions abatement to be implemented⁵⁸, and the programme has provided a range of important soft effects, in particular making greenhouse and climate issues a part of management decision-making processes⁵⁹.

Despite these positive outcomes, the overall contribution of the Greenhouse Challenge to reducing greenhouse gas emissions from Australian business appears to have been relatively modest. The Greenhouse Challenge did not provide strong incentives for participating organisations to set greenhouse gas emission reduction targets beyond business as usual, and the existence of the Greenhouse Challenge was used by industry to deflect calls for the introduction of stronger policy measures such as emissions trading. It appears that the major contributions of the Greenhouse Challenge were to encourage some organisations to bring forward some energy saving or greenhouse gas emission reduction projects and to help participating organisations to identify opportunities that provided clear short-term financial benefits⁶⁰. While many of the participants stabilised their greenhouse gas emissions over the period 1995 to 2000⁶¹, emissions from Australian business as whole have continued to rise,

⁵⁶ AGO (2005d), 'Australia's Response to Climate Change' (AGO, Canberra).

⁵⁷ For a current list of members, see:

http://www.greenhouse.gov.au/challenge/members/pubs/list_of_challengers.pdf. It was envisaged that 500 companies would have signed Cooperative Agreements by the end of 2000 and that 1000 companies would have signed by the end of 2005. The AGO subsequently stated that the mandatory requirements to join the Greenhouse Challenge Plus meant that the government's 2005 target was no longer a useful indicator of progress (AGO (2004b), *AGO Annual Report 2003/2004* (AGO, Canberra) at 27).

⁵⁸ See, for example, Australian Industry Greenhouse Network (AIGN) (2005), 'Submission on Greenhouse Plus: Industry Consultation Discussion Paper' (AIGN, Melbourne).

⁵⁹ Sullivan, R. (2005), *Rethinking Voluntary Approaches in Environmental Policy* (Edward Elgar, Cheltenham, UK) at 120-122.

⁶⁰ Sullivan, R. and Sullivan, J. (2005), 'Environmental Management Systems and their Influence on Corporate Responses to Climate Change', in Begg, K., van der Woerd, F. and Levy, D. (eds.) (2005), *The Business of Climate Change: Corporate Responses to Kyoto* (Greenleaf Publishing, Sheffield), pp. 117-130 at 122. From the data that are available, there is limited evidence that the organisations participating in the Greenhouse Challenge went beyond a narrowly defined interpretation of the costs and benefits of greenhouse gas emission reduction measures. The majority of the projects implemented were either low capital cost projects or projects that provided very short payback periods. In this context, the Greenhouse Challenge can be said to have been economically efficient in that it did not require firms to implement measures beyond those that could be clearly justified in economic terms. A more critical conclusion could be that the Greenhouse Challenge did not provide the strong drivers necessary to encourage companies to take advantage of all the opportunities that might be available (Sullivan (2005) (Note 59) at 115-117).

⁶¹ For a more detailed discussion of the emissions performance of Greenhouse Challenge participants, see Sullivan (2005) (Note 59) at 110-115.

with emissions from the electricity sector some 35% higher in 2004 than in 1990 and emissions from industrial processes 18% higher⁶².

While Australian business has strongly supported the Greenhouse Challenge, environmental non-governmental organisations (NGOs) argued that the Greenhouse Challenge was simply a public relations campaign for activities that would have happened anyway⁶³. In addition, NGOs expressed concern about the close relationship between government and industry in the Greenhouse Challenge, in particular the emphasis on the confidentiality of industry data and the absence of a formal role for NGOs in the Joint Consultation Committee (JCC) which oversaw the operation of the Greenhouse Challenge.

As a final comment on the Greenhouse Challenge, it is difficult to evaluate the precise contribution that the programme has made to achieving greenhouse gas emissions reductions. In a 2004 review, the National Audit Office noted that the emissions reductions claimed for the Greenhouse Challenge did not take account of what would have happened in the absence of the Greenhouse Challenge, the effect of corporate environmental management systems, or the effect of State and Territory climate change-related policy initiatives and programmes⁶⁴. The review also highlighted significant inconsistencies in the emissions reductions that the government had predicted for participating organisations and the actual reductions achieved⁶⁵. Furthermore, given that participating organisations were free to define their own baselines and business as usual performance, there was clearly the potential for participating firms to overstate their expected emissions growth thereby allowing them to claim that they have achieved even greater reductions in emissions⁶⁶.

Expected Outcomes from Greenhouse Challenge Plus

The Greenhouse Challenge Plus appears to address some of the weaknesses of the Greenhouse Challenge⁶⁷. First, the Greenhouse Challenge Plus is not a purely voluntary programme but offers clear financial incentives for certain companies to participate although, given that many of these companies are already likely to be participants, this may not result in a significant increase in membership of the programme. Secondly, the Greenhouse Challenge Plus now differentiates between participating companies. The incentives associated with Greenhouse Leaders should, *prima facie*, encourage companies to go beyond – and stay beyond – minimum compliance with the requirements of the programme. It remains to be seen how many companies will actually decide to become Greenhouse Leaders, as companies may be concerned that a failure to continue to meet the requirements of Greenhouse Leaders will lead

⁶² It has been argued that many of the ‘easy’ emissions reduction measures (the ‘low hanging fruit’) have now been implemented and it will become ever more difficult to achieve reductions without incurring economic penalties (Allen Consulting Group (2000), *Meeting the Kyoto Target: Impact on Regional Australia. Report by the Allen Consulting Group for the Minerals Council of Australia* (Allen Consulting Group, Melbourne)).

⁶³ Sullivan (2005) (Note 59) at 123-125.

⁶⁴ National Audit Office (2004), *The Administration of Major Programs: Australian Greenhouse Office* (National Audit Office, Canberra) at 43, 70.

⁶⁵ National Audit Office (2004) (Note 64) at 82.

⁶⁶ See also Sullivan, R. and Ormerod, R. (2002), ‘The Australian Greenhouse Challenge: Lessons Learned and Future Directions for Climate Policy’, in Albrecht, J. (ed.) (2002), *Instruments for Climate Policy* (Edward Elgar, Cheltenham), pp. 170-191 at 184-187.

⁶⁷ For a more detailed assessment of the potential contribution of Greenhouse Challenge Plus, see Sullivan, R. (2006), ‘Greenhouse Challenge Plus: A New Departure or More of the Same?’, *Environmental and Planning Law Journal*, Vol. 23, No. 1, pp. 60-73.

to criticism or negative press coverage⁶⁸. Thirdly, the improved disclosure requirements (in terms of the information that companies are required to put into the public domain) should address at least some of the NGO concerns about the lack of transparency. However, it is pertinent to note that the Greenhouse Challenge Plus retains its strong emphasis on the protection of commercial information⁶⁹ and it is therefore likely that NGOs will continue to be critical of the programme in this regard.

However, many of the weaknesses of the Greenhouse Challenge remain unaddressed. Most importantly, the Greenhouse Challenge Plus does not impose specific performance targets on participating companies or provide strong incentives for companies to significantly reduce their greenhouse gas emissions beyond business as usual⁷⁰. A further issue is that the oversight structure (the Industry-Government Partnership Committee) that has been established for the Greenhouse Challenge Plus continues to exclude key stakeholders⁷¹. It is therefore likely that environmental NGOs will continue to criticise the programme. Finally, the Greenhouse Challenge Plus may be less acceptable to Australian industry, which has expressed concern at the move away from the strictly voluntary approach that characterised the Greenhouse Challenge⁷².

TOWARDS CARBON NEUTRAL GROWTH

The major policy options for significantly reducing greenhouse gas emissions require significant investments (capital and operating costs, political support, cooperation) over the medium to long term. Ultimately, the ability of voluntary programmes such as the Greenhouse Challenge Plus to contribute to achieving significant emissions reductions is dependent on the surrounding mix of policy instruments. It is clear that in order to achieve significant reductions in greenhouse gas emissions, Australia will need to strengthen both its greenhouse gas emissions targets and the policy instruments it uses to deliver these targets. There is also a need to provide greater policy certainty beyond the Kyoto Protocol compliance period of 2008-2012, as policy uncertainty is a key barrier to investments in areas such as clean energy⁷³. There is growing evidence that early action and the strengthening of the climate change policy framework – for example, seeking a 60% reduction in greenhouse gas emissions by 2050 over year 2000 levels – will provide economic benefits to Australia, through the early positioning of the economy for more stringent future carbon price signals,

⁶⁸ See, for example, the comments of the Australian Industry Greenhouse Network which has argued that the priority for the Australian government should be to raise the profile of the voluntary approach to greenhouse, rather than singling out leaders for specific praise (AIGN (2005) (Note 58)).

⁶⁹ AGO (2005b) (Note 49) at 4.

⁷⁰ As a consequence, Sullivan (2006: 71) suggests: “The consequence is that organisations are likely to continue to make economically sub-optimal decisions on investments in energy efficiency or greenhouse gas abatement. This, in turn, means that the incentives for innovation will continue to be weak.” (Sullivan (2006) (Note 67)).

⁷¹ AGO (2005e), “Industry-Government Greenhouse Partnership Committee” (AGO, Canberra, 2005).

⁷² See, for example, AIGN (2005) (Note 58).

⁷³ For example, the Victorian government has stated: “A clear and stable energy and greenhouse policy framework is required to give the energy industry it needs to make the long-term investments necessary to meet our growing energy needs. If the current uncertainty continues, it will complicate and possibly deter investment in intermediate and baseload generation. It is also likely to dampen private investment in developing, demonstrating and commercialising new low-emission energy technology, and in the uptake of renewable energy and energy efficiency improvements” (State of Victoria, Department of Infrastructure and Department of Sustainability and Environment (2004) (Note 41) at 8). For a more general discussion of how policy uncertainty affects investment decision-making, see Sullivan, R. & Blyth, W. (2006), ‘Climate Change Policy Uncertainty and the Electricity Industry: Implications and Unintended Consequences. Chatham House Briefing Paper EEDP BP 06/02’ (Chatham House, London, UK).

lowering the costs of transition to a carbon constrained future and lowering the risk of disruptions (or shocks) to the economy⁷⁴.

In order to deliver on these benefits, it is suggested that the Australian government prioritises the establishment of a 'long, loud and legal'⁷⁵ climate change policy framework at the international and domestic levels. This framework should include appropriate long-term targets for emissions reductions as well as appropriate monitoring and implementation processes. In this regard, there are three priorities.

The first is for the Commonwealth government to support the establishment of an international target-based regime, where the targets are consistent with stabilising atmospheric greenhouse gas concentrations at a level that will avoid the worst effects of climate change. The scientific evidence suggests that this 'safe' level is of the order of 450-500 ppmv, corresponding to an approximately 60% reduction in global greenhouse gas emissions by 2050 over 1990 levels. Allowing for growth in developing countries, this would equate to emissions reductions of the order of 60-90% in industrialised countries by 2050. Australia's present international activities – for example, in the areas of technology transfer – will make important contributions to the delivery of these goals.

The second is for the Commonwealth government to set clear and unambiguous long-term climate change targets for Australia. Reflecting the types of targets that will probably be required of industrialised countries, these should be of the order of 60-80% reductions in greenhouse gas emissions by 2050, from a 1990 baseline, together with intermediate targets that allow Australia to achieve this goal in an economically efficient manner. It is suggested that the Australian government set a binding target for 2020 of the order of a 20-25% reduction over 1990 emission levels, to provide investment certainty for business over the medium term.

The third is to establish a carbon pricing mechanism through the establishment of a national emissions trading scheme, that is aligned with these national targets and that links to international emissions trading activities. On its own, however, emissions trading is unlikely to stimulate significant investments in lower emitting forms of power generation and, therefore, the Australian government needs to continue and probably accelerate its efforts in areas such as energy efficiency, renewable energy and clean (or low emissions) energy. The long-term credibility of emissions trading – and other measures directed at reducing greenhouse gas emissions – requires that competitiveness issues are explicitly considered as a key part of the design and implementation of an emissions trading regime⁷⁶. Competitiveness issues may be addressed through considering intensity-based allocations at the national level (i.e. so that the net impacts are minimised but that lower greenhouse gas emitters are

⁷⁴ Preston, B. & Jones, R. (2006), *Climate Change Impacts on Australia and the Benefits of Early Action to Reduce Global Greenhouse Gas Emissions* (CSIRO, Melbourne); Allen Consulting Group (2006), *Deep Cuts in Greenhouse Gas Emissions; Economic, Social and Environmental Impacts for Australia* (Allen Consulting Group, Melbourne); State of Victoria, Department of Infrastructure and Department of Sustainability and Environment (2004) (Note 73) at 18. Similar arguments about the international benefits of early action have also been advanced by the International Energy Agency (International Energy Agency (2006), *World Energy Outlook 2006* (International Energy Agency, Paris)).

⁷⁵ This term is used in Australian Business Roundtable on Climate Change (2006), 'The Business Case for Early Action' (Australian Business Roundtable on Climate Change) at 7.

⁷⁶ For example, the Victorian government has proposed that a national emissions trading scheme should be "...complemented by measures to address the potential vulnerability of energy-intensive trade-exposed industries..." (State of Victoria, Department of Infrastructure and Department of Sustainability and Environment (2004) (Note 41) at 17. See also Sullivan & Blyth (2006) (Note 73) for a more general discussion of this issue.

rewarded) and through maximising the linkages with international trading schemes. In this context, it is important to highlight the fundamental tensions that lie at the heart of the proposals that have been made by the National Emissions Trading Taskforce and the terms of reference of the recently appointed Task Group on Emissions Trading. In order to achieve long-term emissions reductions across the Australian economy as a whole, it is almost inevitable that trade-exposed sectors such as aluminium will have to significantly reduce their greenhouse gas emissions. While it is ultimately a matter for government to decide how these reductions are to be paid for, the proposals that have been advanced thus far do not appear sufficiently focused on the goal of achieving significant reductions from energy-intensive sectors. That is, the Australian government needs to signal that it accepts that action on climate change may cost money and may disadvantage certain sectors of the economy, at least over the short and medium-term. Without that recognition and acceptance, companies will not take government commitments seriously, and will assume that economic and competitiveness concerns will always take precedence over efforts to reduce greenhouse gas emissions.

CONCLUSIONS

The structure of the Australian economy – in particular the dependence on the mining and minerals industry and on access to low cost energy – has been the key influence on Australia's approach to international climate change negotiations and to domestic policy.

While Australia expects to meet its Kyoto Protocol commitments, this is primarily due to the significant emissions reductions from the land use, land use change and forestry sector. Otherwise, Australia's greenhouse gas emissions have grown significantly ahead of its Kyoto Protocol targets. Furthermore, beyond 2012, Australia expects its greenhouse gas emissions to grow significantly (by approximately 27% over 1990 levels through to 2020).

The public policy measures adopted to date are consistent with Australia's desire not to disadvantage its businesses. The major policy approaches have been voluntary measures such as the Greenhouse Challenge programme and significant financial support or subsidies for renewable and cleaner energy. The Australian government has not implemented the stronger policy measures, for example, emissions trading, necessary to direct the Australian economy towards significant reductions in its greenhouse gas emissions. Even if the proposals that have been advanced by the National Emissions Trading Taskforce were implemented, they fall a long way short of providing the strong incentives necessary to achieve significant emissions reductions.

The lack of policy certainty, the lack of clear targets beyond 2012 and the absence of a 'price' for carbon represent key barriers to the investments – for example, in clean coal – necessary to significantly reduce Australia's greenhouse emissions. In order to remove these barriers, the Commonwealth government needs to signal its commitment to achieving significant reductions in greenhouse gas emissions over the next 30 to 50 years, and commence the implementation of the policy measures – in particular emissions trading and prioritising energy efficiency both in the electricity generation sector and across the economy as a whole – to deliver on this commitment.