



**Re-Calibrating the Risk from
Climate Change– An Urgent
Business Task
19 & 20 MAY 2008
Parliament House, Canberra, ACT.**

‘Outcomes of the 2008 NBLFSD’

Executive Summary

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This report is a summary of the outcomes of the working groups as part of the National Business Leaders Forum on Sustainable Development compiled and edited by Michael Smith and Karlson Hargroves from The Natural Edge Project.

2008 National Business Leaders Forum on Sustainable Development

Summary Recommendations:

- In the face of escalating evidence of the speed and severity of climate change, urgent action is required in Australia to both reduce domestic greenhouse gas emissions, and to generate global acceptance of the need for an effective global response
- Australia's domestic requirements can be facilitated through business and political leadership engineering a low emissions energy revolution
- Bold targets and iconic projects can help catalyse the action needed and provide a platform for leadership
- Targets are needed especially in the following areas:
 - Demand management and efficiency
 - Renewable energy technologies
 - Cleaner fossil energy and carbon capture and storage
- An Emissions Trading Scheme should be established in Australia as quickly as possible
 - The ETS should be a pure market mechanism, simple in form, and require minimal intervention
 - Linkages with overseas carbon markets should be part of the design
 - Government should set out its intended use of revenues
 - Coverage should be broad and include buildings and transport
- Complimentary policies will also be required and should include stronger fuel efficiency standards for cars, buildings, and appliances, and also support for step-change technologies
- Australian governments should work through the Council of Australian Governments to ensure consistency of policy between governments and consistency between policy and the need for urgent action
 - The Federal Government's decision to establish a low means test for household solar PV rebate should be reversed
- Australia should provide strong global leadership on climate change
 - Australia is well placed to create regional models of co-operation which can serve as global examples

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Recommendations of the 2008 NBLFSD

Executive Summary

1. Context

The National Business Leaders Forum on Sustainable Development has long played a leadership role on climate change issues, most notably bringing out to Australia Al Gore in 2003, where he presented his now famous presentation that formed the basis of the movie, *An Inconvenient Truth*. In 2007, The Forum was the first business forum to publicly call for 20 per cent cuts to greenhouse gas emissions by 2020 and 60 per cent by 2050 as part of a fair and equitable national emissions trading scheme, (this call also supported the findings of the Australian Business Roundtable on Climate Change).¹ In 2008, The Forum assembled to recalibrate the risks and opportunities from climate change and to create a new set of recommendations. Workshops were held where a wide range of issues were discussed among delegates. The first part of this report is based on those discussions and submissions from delegates, which is then complimented and supported by a number of related appendices and further reading resources developed by The Natural Edge Project.²

2. Recommendations from Delegates – Summary Overview

2.1 A Position on Climate Change Mitigation

In his keynote address Tim Flannery discussed a range of recent trends, such as: global greenhouse gas emissions rising more rapidly than predicted; the north arctic summer ice melting speeding up; the melting of the permafrost in Siberia; the Atlantic ocean becoming a greenhouse gas source rather than a sink; and pointed out that this means that larger and more urgent reductions to greenhouse gas emissions are needed to reduce the risks of dangerous climate change.³ Dr Flannery outlined how the latest science shows that greater than 60 per cent by 2050 will be needed under a Post Kyoto global agreement to avoid the worst risks of dangerous climate change.⁴ Based on the latest climate science, the delegates of the Forum urge the Australian business community and governments at all levels to embrace a still greater sense of urgency for action on climate change and to forge new ways of working together. The challenges of climate change are unprecedented, but if we act now we can safeguard and shape our future prosperity, and turn this challenge into an opportunity.⁵

The 2008 National Business Leaders Forum for Sustainable Development made the following main recommendations and conclusions:

¹ In 2007, this public call was backed up by a detailed framework for action report which outlined how wise action on climate change can enhance business competitiveness and economic growth rather than harm it, drawing on a number of Australian studies and research in the area. See Smith, M. and Hargroves, K. (2007) *Executive Summary: Action on climate change can help business competitiveness and economic growth*, The Natural Edge Project (TNEP). Available at <http://www.nblf.com.au> (link to NBLF 2007). Accessed 15 June 2008

² Appendices and Resources are based on excerpts from The Natural Edge Project's submission to the Garnaut Climate Change Review. Available at <http://www.naturaledgeproject.net/Documents/TNEPSubmission.pdf>. Accessed 15 June 2008.

³ This presentation is supported by Tate, A. and Sherrard, J. (2008) *An Urgent Business Task: Re-calibrating the Risk from Climate Change*, A paper for Members of the National Business Leaders Forum on Sustainable Development, NBLFSD. Available at http://www.webls.info/weblease/clientimages/nblf/Recalibrating_the_Risk_from_Climate_Chage.pdf. Accessed 15 June 2008; Flannery, T. (2008) *Overview of the Latest Science on Climate Change*, Keynote Address, National Business Leaders Forum for Sustainable Development.

⁴ Flannery, T. (2008) *Overview of the Latest Science on Climate Change*, Keynote Address, National Business Leaders Forum for Sustainable Development.

⁵ NBLFSD (2008) *Climate Change and Business Risk: re-calibrating the risks of climate change - An Issues and opportunities paper*, NBLFSD. Available at http://www.webls.info/weblease/clientimages/nblf/080507-climate_and_business_risk-issues_and_opportunities-v3.pdf. Accessed 15 June 2008.

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- Business in Australia needs to re-calibrate the risks of climate change. On the whole business does not appear to be planning for the required emissions cuts, or for the risks of economic shocks and disruption created by extreme weather events. It may also be overlooking the risks coming from a lack of public support for its response actions.⁶
 - Climate change, if not mitigated, seriously threatens the Australian and global economy.⁷ Yet, as many speakers at the Forum explained, through targeting energy efficiency, demand management, retrofitting existing building stock, low carbon technologies and behaviour change, it possible to significantly reduce the costs of action to very affordable levels and achieve rapid greenhouse reductions.⁸ Hence, the Forum believes there is overwhelming evidence to suggest that the benefits of strong, early action on climate change outweigh the costs of not acting.
 - The challenges of climate change are unprecedented, but if we act now we can safeguard and shape our future prosperity, and turn this challenge into an opportunity. Capitalising on this opportunity depends on innovation – Asia needs energy that is both cleaner and more secure than we have been supplying. Our response should kick-start the low emissions energy revolution that was discussed at the Australia 2020 Summit.⁹
 - Leadership is the ingredient that brings us together and unites us in our efforts to realise the low emissions energy revolution. The challenges are unprecedented, but their scope only grows the longer action is delayed. Now is the time for action. Bold targets and iconic projects can catalyse the action needed and provide a platform for leadership.

For a low emissions energy revolution we need targets and icons in the areas of:

- *Demand management and efficiency* – i.e. cost-effective action that can deliver significant near-term emissions reductions, and is something that builds momentum quickly. Gerry Heuston, President of BP Australasia,¹⁰ and Forum board member, argued that Australia should aim to achieve a 20 per cent improvement in energy efficiency by 2020, backed by a uniform national building code, vehicle emissions standards and reforms favouring fuel efficient vehicles, appliance and equipment efficiency standards, and industrial plant standards.
- *Renewables* – we need large scale demonstration projects to bring forward the next wave of renewable technologies that can provide predictable power generation, such as concentrated solar, geothermal and ocean technologies.
- *Cleaner fossil energy and carbon capture and storage* – a range of speakers at the Forum, including Sharon Barrow, President of the ACTU, called on the Australian government to commit to a bold 10 year target to make carbon capture and sequestration commercially viable, taking inspiration from former US President's John F. Kennedy's historic call to America to put a man on the moon within a similar timescale.

⁶ Ibid.

⁷ Tate, A. and Sherrard, J. (2008) *An Urgent Business Task: Re-calibrating the Risk from Climate Change*, A paper for members of the National Business Leaders Forum on Sustainable Development, NBLFSD. Available at http://www.webls.info/weblease/clientimages/nblf/Recalibrating_the_Risk_from_Climate_Chage.pdf. Accessed 15 June 2008.

⁸ This claim is backed up by numerous studies listed in the Resources 1 and 2 section at the end of this report.

⁹ NBLFSD (2008) *Climate Change and Business Risk: re-calibrating the risks of climate change - An Issues and opportunities paper*, NBLFSD. Available http://www.webls.info/weblease/clientimages/nblf/080507-climate_and_business_risk-issues_and_opportunities-v3.pdf. Accessed 15 June 2008.

¹⁰ Heuston, G. (2008) *Bold Goals that can Drive a Low Emissions Energy Revolution*, Plenary Address, NBLFSD.

Delegates were unanimous in recognising the strong business case for such commitments. Companies under the Federal Government's Greenhouse Challenge and Energy Efficiency Opportunities Program already are achieving remarkable results through energy efficiency investments. Increasing numbers of green building retrofits are demonstrating the value of investing in green buildings to reduce greenhouse gas emissions. Clearly the automotive industry is also undergoing an historic shift to fuel efficient cars. Thus, the shift to a low-carbon economy is already creating significant business opportunities. Global markets for environmental technologies and services already approach US\$1 trillion. New markets for low carbon technologies and products, worth billions of dollars, will be created if the world acts on the scale required.

Australia has a significant opportunity to help Asia, and in the process to sustain our own economic growth for at least the next decade. Capitalising on this opportunity depends on innovation – Asia needs energy that is both cleaner and more secure than we have been supplying. The Forum argues that our response should kick-start the low emissions energy revolution that was discussed at the Australia 2020 Summit.¹¹ Rapidly decoupling economic growth from greenhouse gas emissions is the pro-growth strategy, as inaction will eventually undermine economic growth. Hence, delegates to the 2008 Forum were united in their view that it is absolutely in Australia's best interests to provide strong leadership to help address the greatest challenge of our generation – climate change.

2.2 Climate Change Mitigation Policy Recommendations

2.2.1 A National Emissions Trading Scheme

The 2008 Forum was unanimous in recommending that The Emissions Trading Scheme should be established rapidly. In 2007 the Business Leaders Forum agreed upon and published a set of principles to underpin the design of an Australian Emissions Trading Scheme. In 2008, The Emissions Trading Workshop, led by John Hewson, built upon this 2007 work and recommended the following:

- That as far as possible, the Emissions Trading Scheme should be a pure market mechanism with simple, clear and transparent rules and governance arrangements.
- Having established the system, government must resist the temptation to second-guess efficient market outcomes, that is, the ETS should be allowed to operate with minimal intervention.
- Linkages with established carbon markets overseas should be a key feature of the design. If the Australian economy is to emerge as a winner in this global race it will need to do so by accessing abatement measures, including offsets, at the lowest cost available world-wide.
- Government must set out its intended use of permit auction revenues and penalties. This could include: purchase of permits to manage scarcity; funding new abatement technologies until they can be fully supported by the capital markets; direct investment in energy efficiency for low income households; and general consumer awareness programs. Government revenue from the sale of permits should also be used to address informational failures and skills, as well as training gaps. Government revenue from the sale of permits could also be used to assist local and state governments address long standing sustainable infrastructure needs - from retrofitting

¹¹ NBLFSD (2008) *Climate Change and Business Risk: re-calibrating the risks of climate change - An Issues and opportunities paper*, NBLFSD, Available http://www.webls.info/weblease/clientimages/nblf/080507-climate_and_business_risk-issues_and_opportunities-v3.pdf. Accessed 15 June 2008.

inefficient street lighting to improving low carbon public transport options. However, government must avoid using these funds to intervene where the market mechanism can deliver the desired outcomes.

- Mark Proegler, who is Director of Environmental Policy, for BP Australia emphasised that, *'for sectors that can fully pass through costs and are not exposed to competition not subject to a carbon price, permits should be distributed via full auctioning. Auction proceeds should be hypothecated and used to encourage development and deployment of low-carbon technologies. For sectors that face challenges from competition not exposed to a carbon price and who are unable to pass on increased costs of carbon constraints (e.g. EITE), some administrative allocation, phased out over time, should be used to help manage the transition to full auctioning.'*¹²
- Also the Emissions Trading Scheme workshop agreed generally with the Garnaut review and the Federal Government's Green Paper¹³ that an emissions trading scheme should cover as much of the economy as is possible, including buildings and transport.

In principle, emissions trading schemes can cover most of the economy, but in practice most schemes initially just focus on areas such as electricity and large industry which have clear onsite emissions that are easy to measure. Such limitations risk missing a range of cost effective ways to reduce greenhouse gas emissions, such as energy efficiency opportunities in industry and in the commercial building sector. The Forum notes that there have been a number of important submissions to the Garnaut Review to address this crucial question of how Australia can best ensure that low cost abatement through energy efficiency is adequately encouraged and rewarded. Forum delegates, Maria Atkinson and Che Wall in the workshop on 'Greening the Built Environment' recommended an integrated Emissions and Efficiency Trading Scheme (EETS).¹⁴ Such an approach is almost identical to an Emissions Trading Scheme but differs in that it also recognises energy efficiency in the same way it addresses emissions.¹⁵ Another range of approaches to address this issue has been recommended by Australian energy efficiency expert Alan Pears in his submission to the Garnaut Review.¹⁶

2.2.2 A Portfolio Approach to Address Climate Change – The Biggest Market Failure Ever

Many plenary and workshop speakers, including Forum Convenor Molly Harriss Olson, argued that no one policy measure is adequate to address climate change, the biggest market failure ever. The Forum commended the 'Garnaut Climate Change Review' for outlining the wide range of market, informational and institutional failures in its discussion papers which need to be addressed through a

¹² Proegler, M. (2008) *An Emissions (Emitter's) Perspective: BP Australasia*, National Business Leaders Forum on Sustainable Development, Workshop Presentation.

¹³ See Australian Federal Government's Carbon Pollution Reduction Scheme Green Paper at <http://www.climatechange.gov.au/greenpaper/index.html> Accessed 15 June 2008

¹⁴ Lend Lease, Lincoln Scott and Advanced Environmental (2008) *Joint Submission in Response to the Garnaut Review Change Review Issues Paper – Forum 5 Transport, Planning and the Built Environment*, Lend Lease, Lincoln Scott and Advanced Environmental. Available at [http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0849010ResponseToIssuePaper5-\(jointsubmission\)LendLease-LincolneScott-AdvancedEnvironmental/\\$File/D08%2049010%20Response%20to%20Issue%20Paper%205%20-%20\(joint%20submission\)%20Lend%20Lease%20-%20Lincolne%20Scott%20-%20Advanced%20Environmental.pdf](http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0849010ResponseToIssuePaper5-(jointsubmission)LendLease-LincolneScott-AdvancedEnvironmental/$File/D08%2049010%20Response%20to%20Issue%20Paper%205%20-%20(joint%20submission)%20Lend%20Lease%20-%20Lincolne%20Scott%20-%20Advanced%20Environmental.pdf). Accessed 15 June 2008.

¹⁵ Simply put, it treats one ton of greenhouse gas emissions (tCO₂e) that is not emitted because energy is not used in the same way that a conventional Emissions Trading Scheme treats one ton of tCO₂e that is not emitted due to a change in energy generation.

¹⁶ Pears, A. (2008) *Emissions Trading: A Two-Edged Sword*, Submission to the Garnaut Review, RMIT. Available at [http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0849943ETSSubmission-AdjunctProfessorAlanPears2305058/\\$File/D08%2049943%20%20ETS%20Submission%20-%20Adjunct%20Professor%20Alan%20Pears%202305058.pdf](http://www.garnautreview.org.au/CA25734E0016A131/WebObj/D0849943ETSSubmission-AdjunctProfessorAlanPears2305058/$File/D08%2049943%20%20ETS%20Submission%20-%20Adjunct%20Professor%20Alan%20Pears%202305058.pdf). Accessed 15 June 2008.

portfolio approach to climate change policy. Overseas experience shows that those cities and countries which are succeeding in reducing their emissions are not simply relying on an emissions trading scheme but also have a multi-faceted portfolio approach to climate change policy (see Appendix 1).

Thus, in addition to an emissions trading scheme, many delegates from the Forum, argued that there needs to be a range of related complimentary policy measures and programs¹⁷ that can be implemented immediately and in advance of the introduction of an emissions trading scheme. These include stronger fuel and energy efficiency standards for cars, buildings¹⁸ and appliances. Tim Flannery commented that there are currently no fuel efficiency standards for motors used in boating. Other delegates, like former deputy Premier of Victoria John Thwaites, emphasised the many actions that need to be taken to help the poor and low income earners simultaneously reduce their energy bill and greenhouse gas emissions¹⁹ (see Appendix 2).

Having lost at least a decade on actions to reduce climate change, Australia can now at least benefit from learning the lessons from those countries which are leading on the climate change policy front. The Forum recommends learning from best practice globally in determining the right set of policies to address climate change in Australia (see Appendix 1). For instance, overseas experience shows that competitiveness issues for trade exposed industry are straightforward to address in policy terms (see Appendix 4). The forum also urges the government to recognise that at the Federal and State Government levels there are many good policies and initiatives upon which it can build through the Council of Australian Governments (COAG) (see Appendix 2).

Finally, the Forum recommends a consistent approach to ramping up Australia's efforts to cutting greenhouse gas emissions. Polls taken before and after the election have consistently shown that the community is looking for strong leadership on climate change. Hence there has been great disappointment and confusion at the Forum with the government's decision to set such a low means test for the solar PV rebate for households. At the Forum there was overwhelming support for this decision to be reversed. According to some news outlets the solar panel industry has experienced up to a 60 per cent drop in activity since the federal government introduced the means test for the solar panel rebate.²⁰ Rodger Mead, CEO of Conergy, the third largest supplier of solar panels in the country, says his company's sales have slumped by up to 60 per cent. To achieve the Australian government's MRET 2020 target surely Australia needs to be encouraging more people to become trained solar panel installers and attract more solar manufacturers to Australia, not less. A recent CSIRO and Allen Consulting study showed that 3 million Australians need retraining in areas like energy efficiency and renewable energy to enable Australia to achieve the 60 per cent by 2050 target.²¹ Consistency of policy is needed to enable businesses to plan, invest, hire and train staff with confidence.

¹⁷ Centre for International Economics (2008) *Discussion paper for the 9th National Business Leaders Forum for Sustainable Development*, reports commissioned by the Property Council and the Australian Sustainable Built Environment Council. Available at http://www.webcls.info/weblease/clientimages/nblf/National_Business_Leaders_Forum_-_Outcome_Statement.pdf. Accessed 15 June 2008.

¹⁸ Ibid.

¹⁹ Thwaites, J. and Nicholson, T. (2008) 'Let us hang clothes on our balconies', *The Age Newspaper*, 3 July 08. Available at <http://www.theage.com.au/opinion/let-us-hang-clothes-on-our-balconies-20080702-30o2.html>. Accessed 15 June 2008.

²⁰ Channel 7 Sunrise Program (2008) 'Solar panel industry slumping by 60%', *Yahoo 7News*. Available at <http://au.lifestyle.yahoo.com/b/sunrise/11121/solar-panel-industry-slumping-by-60/>. Accessed 15 June 2008.

²¹ Hatfield-Dodds, S., Turner, G., Schandl, H. and Doss, T. (2008) *Growing the green collar economy: Skills and labour challenges in reducing our greenhouse emissions and national environmental footprint*, Report to the Dusseldorp Skills Forum, CSIRO. http://www.acfonline.org.au/uploads/res/CSIROGreenJobsFinalReport_080625.pdf. Accessed 15 June 2008.

2.3 What Potential is there for GHG emission reductions by 2020?

One of the biggest decisions the government will need to make soon as part of global negotiations is a short term 2020 target for Australia. In 2007, the National Business Leaders Forum publicly called for 20 per cent cuts by 2020. In 2008, we call for the government to commit to at least a 20 per cent by 2020 target. The Forum calls on the government to, like Europe, be willing to commit to a higher short term target of between 25-40 per cent by 2020 as part of a post Kyoto global agreement, in line with the understandings reached at the UN Bali conference. Resources 1 and 2, at the end of this document, list the currently available economic modelling of different short term greenhouse gas reduction targets for Australia. All show that Australia can achieve 20-40 per cent reductions in greenhouse gas emissions by 2020. These reports show that Australia does have the capacity to rapidly peak Australia's rising emissions and then achieve sustained annual reduction targets. Specifically:

- Professor Mark Diesendorf's 2007 modelling and report²² shows in detail how Australia could reduce its greenhouse pollution by 30 per cent by 2020.
- McKinsey's 2008 report argues that Australia could easily achieve 30 per cent reductions by 2020 and even 60 per cent by 2030.²³
- Dr Hugh Saddler *et al's* 2008 modelling and report shows that Australia can achieve at least a 40 per cent reduction in greenhouse gas emissions by 2020.²⁴
- The Environment Business Australia's 2007 report suggests that Australia could meet an ambitious short term target of 50 per cent greenhouse gas reductions by 2020.²⁵

These reports show that energy efficiency, better demand management, avoided deforestation, renewable energy, and sustainable transport measures can provide significant reductions of greenhouse gases by 20-40 per cent rapidly by 2020. Energy efficiency, smarter building codes and regulations and other forms of demand management in California has led to a flattening of previously rising electricity demand. Sweden, the UK and the Netherlands have all achieved flattening of previously rising electricity demand through effective policy measures. There is a strong business and economic case for implementing sensible energy efficiency and demand management approaches quickly as this will reduce the need for Australia and other nations to spend scarce resources on needing to build any new coal fired power stations in Australia.

2.4 Benefits to Australia of Taking a Global Leadership Position on Climate Change

Australia is uniquely positioned to play a globally leading role to both create a robust and effective Post Kyoto Framework and demonstrate the mutual value of OECD and emerging economies working together to rapidly mitigate climate change. Australia is well placed to create a model of how OECD

²² Diesendorf, M. (2007) *Paths to a Low Carbon Future Reducing Australia's Greenhouse Gas Emissions by 30 percent by 2020*, Sustainability Centre, Australia. Available at <http://www.greenpeace.org/raw/content/australia/resources/reports/climate-change/paths-to-a-low-carbon-future.pdf>. Accessed 15 June 2008.

²³ Gorner, S., Lewis, A., Downey, L., Slezak, J., Michael, J. and Wonhas, A. (2008) *An Australian Cost Curve For Greenhouse Gas Reduction*, McKinsey Consulting, Australia/New Zealand. This report argues that 30 per cent reductions by 2020 can be achieved largely through energy efficiency and carbon offsets. Available at http://www.mckinsey.com/locations/australia_newzealand/knowledge/pdf/1802_carbon.pdf. Accessed 15 June 2008.

²⁴ Saddler, H. et al (2008) *Energy [R]evolution: A Sustainable Australia Energy Outlook*, Greenpeace International, European Renewable Energy Council (EREC). Available at http://www.energyblueprint.info/fileadmin/media/documents/national/australia_report.pdf. Accessed 15 June 2008.

²⁵ Environment Business Australia (2007) *Targets for our Future: 20% greenhouse gas emissions cuts by 2020 and 60% by 2050*, Environment Business Australia. Available at http://environmentbusiness.com.au/images/stories/targets_for_our_future_september_07.pdf. Accessed 15 June 2008.

countries can work with emerging economies to reduce deforestation with PNG and Indonesia, our closest neighbours. Through such efforts Australia more than likely will be eligible for significant carbon credits under the Clean Development Mechanism.

There are other ways Australia could provide leadership. Australia's world leading commitment to phase out inefficient lighting by 2012 has led to the European Union, California and even the Philippines rapidly followed suit. The same concept could be applied tactically to other appropriate household, office, catering/hospitality and industry appliances, helping Australian manufacturers to target niche manufacturing opportunities and helping to drive energy efficiency improvements globally.

While some industry groups and media commentators have raised fears of costs to industry from Australia taking a strong leadership position, the Forum believes that not enough attention is being given to the significant business opportunities for Australia. Yet, the submissions from business groups to the Garnaut Review show that more work needs to be done to communicate this. We believe that more work needs to be done to make the cost effective ways of reducing emissions more tangible to the majority of business leaders. Billions of dollars can be added to the national GDP through a pro-active approach to energy efficiency and 10's of billions of dollars could be saved in Australia with effective demand management over the next few decades. Australia has world leading renewable technology innovators and is regarded globally as being at the cutting edge of green buildings.

The global competitiveness of the Australian car industry will be significantly helped by a shift to manufacturing hybrid cars and improved fuel efficiency standards. Australia's leadership on emissions trading should see Australia become one of the centres of carbon trading in the Asia Pacific creating significant opportunities for the Australian financial sector. To help business understand how to identify and implement cost effective business opportunities, a new online resource *Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation*,²⁶ was featured at the Forum. Funded by CSIRO and The National Framework for Energy Efficiency and developed by The Natural Edge Project, in partnership with Griffith University and ANU, this online resource consists of three modules which provide business with all they need to identify and implement energy efficiency opportunities. The modules also show business how to reduce greenhouse gas emissions further, with investments in low carbon technologies, renewable energy and offsets.

To conclude, modelling in 2007 by CSIRO, The Climate Institute, Monash University and McLennan Magasanik Associates,²⁷ shows that Australia can take a global leadership position on climate change whilst maintaining strong economic and jobs growth. Their modelling looked at the economic impacts on the Australian economy of an emissions path that delivered 20 percent reductions by 2020 and net carbon_e neutrality by 2050. They found that by 2050:

- The economy will grow at 2.8 percent annually versus 2.9 percent annually with no action on climate change (i.e. a 0.1 percent annual reduction in GDP growth, assuming the costs of inaction are not taken into account).
- Employment will increase from 9.7 to 16.7 million jobs by 2050.

²⁶ Smith, M., Hargroves, K., Stasinopoulos, P., Stephens, R., Desha, C. and Hargroves, S. (2007) *Energy Transformed: Sustainable Energy Solutions for Climate Change Mitigation*, The Natural Edge Project (TNEP), Australia. Available at www.naturaledgeproject.net/Sustainable_Energy_Solutions_Portfolio.aspx. Accessed 13 February 2008.

²⁷ Hatfield-Dodds, S., Jackson, E.K., Adams, P.D. and Gerardi, W. (2007) *Leader, follower or free rider? The economic impacts of different Australian emission targets*, The Climate Institute, Sydney, Australia. Available at http://www.climateinstitute.org.au/images/stories/CI058_ER_FullReport_NEW.PDF Accessed 4th March 2008.

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- Long term impacts on energy prices and affordability are manageable with the average energy consumer bundle (electricity, petrol and gas) falling from 6 percent of average income today to 4 percent by 2050. (While electricity, petrol and gas prices increase this is more than offset by increases in real income)

The report concludes that, '*making substantial reductions in Australia's net greenhouse emissions is affordable, and compatible with continuing growth in incomes, employment and living standards.*'²⁸

2.5 Sustainable Development Policy Recommendations

The 2008 Forum did not simply focus on climate change. The Forum asked a distinguished group of Australia's leading scientists to outline what needs to be done on the other top environmental issues facing Australia, in addition to climate change. Having lost 10 years on climate change, it is vital that Australia does not make the same mistake with the other pressing environmental issues. Professor David Lindemayer launched *Ten Commitments: Reshaping the Lucky Country's Environment*,²⁹ within which 30 leading environmental thinkers in Australia have written provocative chapters on the top environmental issues facing the country, each with 10 recommended commitments for action. Professor David Lindemayer, in his speech at the Forum, outlined some of the new and surprising insights brought together in this new publication, for instance,

*The amount of carbon tied up in some native forests, such as the wet forests of Victoria, is 2,000 tons of carbon per hectare, significantly larger than the IPCC default value of 90 tons. Under an emissions trading scheme with a carbon price of say \$19 per ton, the 200,000 hectares of wet forest in Victoria would be worth \$80 billion. The royalties to the Victorian government from those wet forests in the Central Highlands of Victoria are approximately half a billion dollars per year. [This means that]... in an economy, with a national emissions trading scheme, those forests have massive values in terms of their carbon storage, and how native forests are treated needs to be rethought.*³⁰

This example highlights how often sustainability issues are interrelated. At the Forum, Tim Costello, CEO of World Vision, outlined how efforts to alleviate poverty and climate change can now no longer be separated. He outlined the numerous ways that Australian business, government and individuals can reduce poverty while also helping to reduce greenhouse emissions and earning carbon credits. Now that Australia has ratified Kyoto, companies are eligible to invest in Clean Development mechanism projects. This will open up new opportunities for corporate responsibility.

It is important to note that, by taking concerted action on climate change, Australia and other nations will also be able to address broader environmental and sustainable development issues. For instance, investments in avoided deforestation have significant biodiversity benefits, investing in hybrid cars and higher car fuel efficiency standards reduce urban pollution, and greater investment in public transport and cycling infrastructure provides significant public health benefits and reduced obesity. Hence the Forum strongly recommends that actions on climate change be seen as part of an overarching program of action on sustainable development. The Forum strongly supports the conclusion from the

²⁸ Ibid.

²⁹ Lindenmayer, D., Olson, M., Morton, S. and Dovers, S. (2008) *The 10 Commitments: Reshaping: The Lucky Country's Environment*, CSIRO Publishing. Available at <http://www.publish.csiro.au/nid/18/pid/5947.htm>. Accessed 15 June 2008.

³⁰ ABC, The Science Show (2008) 'Business Leaders Discuss Climate' *ABC Radio National*. Available at <http://www.abc.net.au/rn/scienceshow/stories/2008/2263755.htm>. Accessed 15 June 2008.

2020 Summit that sustainable development and climate change should be seen as overarching umbrella themes, since they cross over into all other streams of activity.

To assist the new government in its efforts to achieve sustainable development and mitigate climate change, in addition to the publication *Ten Commitments*, there is a treasure trove of existing Senate and House of Representative inquiries into aspects of sustainable development. Unfortunately, most of the recommendations from these inquiries were not utilised by the previous government.

2.6 Recommendations from the '2020 Summit' and Previous Government Inquiries

The Forum recommends that the Government reviews and acts on sensible recommendations on climate change and sustainable development from the 2020 Summit, The *Ten Commitments* publication³¹ and from existing bipartisan Senate and House of Representative Standing Committee on Environment inquiries, into:

- Australia's Future Oil Supply and Alternative Transport Fuels,³²
- Sustainable Cities,³³
- A National Sustainability Charter³⁴,
- Corporate Social Responsibility,³⁵ and
- Employment in the Environment Sector.³⁶

Similarly, there is a significant opportunity for this government to dust off, review, enhance and act on the Environment Industry Action Agenda³⁷, since again many aspects of this were not actioned by the previous government.

2.7 Opportunities for the Education Revolution

Forum delegates Andrew Campbell, former chief of Land and Water Australia, and James Porteous, Editor of CSIRO's *ECOS magazine*, emphasised that one of the most important opportunities for the new government is to align aspects of the governments Education Revolution with appropriate aspects of the UN Decade of Education in Sustainable Development 2005-2015. As mentioned above, new CSIRO and Allen Consulting modelling³⁸ predict that a carbon emissions trading scheme will require three million workers to be trained or re-skilled by 2015. It shows that without investing in skills

³¹ Lindenmayer, D., Olson, M., Morton, S. and Dovers, S. (2008) *The 10 Commitments: Reshaping The Lucky Country's Environment*, CSIRO Publishing. Available at <http://www.publish.csiro.au/nid/18/pid/5947.htm>. Accessed 15 June 2008.

³² Parliament of Australia, Senate (2007) *Australia's Future Oil Supply and Alternative Transport Fuels: Executive Summary*, Australian Government. Available at http://www.aph.gov.au/senate/committee/rrat_ctte/oil_supply/report/a02.htm. Accessed 4 September 2007; McNamara, A. (Chair) (2007) *Queensland's Vulnerability to Rising Oil Prices: Taskforce Report*, Queensland Government. Available at www.epa.qld.gov.au/publications/p02190aa.pdf/Queenslands_vulnerability_to_rising_oil_prices_taskforce_report.pdf. Accessed 15 June 2008.

³³ See House of Representatives Standing Committee of Environment and Heritage - *Inquiry into Sustainable Cities* at <http://www.aph.gov.au/house/committee/environ/cities/report.htm>. Accessed 15 June 2008.

³⁴ House of Representatives, Standing Committee on Environment and Heritage (2007) *Sustainability for Survival - Creating a Climate for Change: inquiry into a sustainability charter*, Commonwealth of Australia. Available at <http://www.aph.gov.au/house/committee/environ/charter/report.htm>. Accessed 15 June 2008.

³⁵ Parliamentary Joint Committee on Corporations and Financial Services (2006) *Corporate Responsibility: Managing Risk and Creating Value*, Commonwealth of Australia. Available at http://wopared.parl.net/senate/committee/corporations_ctte/corporate_responsibility/report/report.pdf. Accessed 15 June 2008.

³⁶ House of Representatives, Standing Committee on Environment and Heritage (1999) *Employment in the Environment Sector - Methods, Measurements and Messages: Inquiry into employment in the environment sector*, Commonwealth of Australia. Available at <http://www.aph.gov.au/house/committee/environ/greenjobs/report/contents.htm>. Accessed 15 June 2008.

³⁷ See Environment Industry Action Agenda at <http://www.environment.gov.au/settlements/industry/environment/> Accessed 15 June 2008.

³⁸ Hatfield-Dodds, S., Turner, G., Schandl, H. and Doss, T. (2008) *Growing the green collar economy: Skills and labour challenges in reducing our greenhouse emissions and national environmental footprint*, Report to the Dusseldorf Skills Forum, CSIRO Publishing. Available at http://www.acfonline.org.au/uploads/res/CSIROGreenJobsFinalReport_080625.pdf. Accessed 15 June 2008.

and retraining there is little chance the Government will meet its target of reducing greenhouse gas emissions by 60 per cent by 2050. At the 2008 Forum many speakers mentioned the sustainability skills shortage in Australia. It was widely recognised at the Forum that Australia currently does not have enough people trained and skilled in sustainable development and climate change mitigation or adaptation. To help the Federal Government take a strategic and co-ordinated approach to the issue of education and training for sustainable development, the Forum recommends that the government funds and acts on the 2nd phase of Australia's National Strategy for Education for Sustainable Development. The 2nd phase of this Strategy was developed by Australia's National Environmental Education Council with the relevant government departments and is based on two years of consultation. There is a significant opportunity for improving environmental and sustainable development education in Australia, consistent with the new government's education revolution and the need to supply the skills required for the rapidly growing sustainability jobs, industries and exports sector. It is widely acknowledged that for Australia to achieve respectable greenhouse gas reduction targets by 2020, as well as manage our water and other resources sustainably, significant re-training and skilling of many Australians will be required. It is widely acknowledged that Australia has a skills shortage for instance in sustainable energy and energy efficiency professionals, water professionals, green building designers. The Australian Water Professionals Association is currently tasked to identify gaps in skills among water professionals nationally. The Australian Resource Institute for Education for Sustainability (ARIES)'s work has also highlighted many areas where Australia can improve education for sustainable development. The Natural Edge Project's recent survey of engineering schools nationally revealed that very few were receiving any systematic training in energy efficiency, yet over 60 per cent of energy efficiency/energy auditing professionals in Australia are engineering graduates. In the UK, the UK Labour Government's education department's has publications which link the traditional education department's agenda of improving skills and training³⁹ with the need for better co-ordination of education for sustainable development in the UK.⁴⁰ The Forum believes that much can be learnt from the UK experience here.

³⁹ UK Government Department for Education and Skills (n.d.) *Sustainable Development Action Plan for Education and Skills*, UK Government Department for Education and Skills. Available at <http://www.dfes.gov.uk/aboutus/sd/docs/SDactionplan.pdf>. Accessed 15 June 2008.

⁴⁰ UK Government Department for Environment, Food and Rural Affairs (DEFRA) (2003) *Draft Sustainable Development Education Strategy*, DEFRA, UK. Available at http://www.defra.gov.uk/environment/sustainable/educPanel/pdf/sdeduc_draftstrat.pdf. Accessed 15 June 2008.

Appendix 1: Examples of Global Climate Change Policy Leadership

Australia is currently a long way behind many other 'competitor nations' on per capita climate change performance, having lost at least a decade for concerted action. The reality is that Australia's emissions are currently still rising at 1.5 percent per annum, and current trends predict, under existing policy settings, that Australia's emissions will be 20 percent above 1990 levels by 2020.⁴¹ Most tellingly are the statistics that Australia's per capita emissions and per capita oil use are among the highest in the world.⁴² With regard to industry, a respected international study by the Center for Global Development in Washington, DC, has found that Australia's power sector is the world's worst emitter of greenhouse gases on a per capita basis.⁴³ *However on the upside, Australia can learn from the policy experience of many other OECD nations who have already implemented climate change policy reform.* The following pages briefly highlight a range of climate change policy areas where Australia can learn much from the example of nations leading on climate change policy reform.

- *Climate Neutral Nations:*

Four nations – Iceland, New Zealand, Norway, and Costa Rica have now committed to becoming net climate neutral by 2050 if not before.⁴⁴ They are leading a new UNEP climate neutral global network.⁴⁵ Norway, a significant OECD economy, has committed to becoming net climate neutral by 2030. Costa Rica aims to be climate neutral by 2021 when it celebrates 200 years of independence.⁴⁶ Other countries are moving towards similar levels of commitment such as various states of the USA, including California committing to achieving 80 percent cuts in emissions by 2050.⁴⁷ The Climate Institute's 2007 report on the economic impacts of Australia addressing emission reduction targets, shows that Australia becoming carbon neutral by 2050 is consistent with strong economic growth, and that Australia would benefit if it were to take a leadership position on targets.⁴⁸

- *GHG Reductions – Regional Targets:*

The EU has committed to a minimum 20 percent reduction in greenhouse gas emissions (from 1990 levels) by 2020 and is pushing in international meetings for a global agreement of 30 percent reductions by 2020. If the world will agree to the 30 percent target by 2020 then the EU will adopt this stronger target.⁴⁹

- *Energy Efficiency Targets:*

⁴¹ Australian Associated Press (2008) 'Australia on Track to Meet Kyoto But Emissions Keep Rising', *Australian Associated Press*. Available at <http://en.epochtimes.com/news/8-2-25/66573.html>. Accessed 7 March 2008.

⁴² Turton, H. (2004) *Greenhouse gas emissions in industrialised countries – Where does Australia stand?* Discussion Paper Number 66. Available at http://www.publish.csiro.au/?act=view_file&file_id=EC120p6.pdf Accessed 7 March 2008.

⁴³ SBS (2008) 'Australians worst per capita emitters', SBS. Available at http://news.sbs.com.au/worldnewsaustralia/australians_39worst_per_capita_emitters39_135130 Accessed 7 March 2008.

⁴⁴ See UNEP Climate Neutral Network at www.climateunited.org/cnn_contentdetail.aspx?m=175&amid=666 Accessed 7 March 2008.

⁴⁵ See UNEP Climate Neutral Network at www.climateunited.org/cnn_contentdetail.aspx?m=175&amid=666 Accessed 7 March 2008.

⁴⁶ The strategy will build on Costa Rica's decision to tax fossil fuels in 1996 with 3.5 percent of the money raised allocated to the National Forestry Financing Fund. In 2007 Costa Rica planted more than five million trees or 1.25 per person making it the highest per capita planting in the world. Various industries are supporting the initiative including a C-neutral plan by Costa Rica's banana sector.

⁴⁷ The Climate Group (2005) *Low Carbon Leader California*, The Climate Group. Available at http://theclimategroup.org/assets/resources/low_carbon_leader_california.pdf. Accessed 7 March 2008.

⁴⁸ Hatfield-Dodds, S., Jackson, EK., Adams, PD., and Gerardi, W. (2007) *Leader, Follower or Free Rider? The economic impacts of different Australian emission targets*, The Climate Institute, Sydney, Australia.

⁴⁹ Environment News Service (2007) 'Europe to Cut Greenhouse Gases 20 Percent by 2020', *Environment News Service*, March 8, 2007. Available at www.ens-newswire.com/ens/mar2007/2007-03-08-04.asp. Accessed 10 April 2008.

In the UK the biggest 10,000 energy using companies have to, by law, sign up to and achieve energy efficiency targets to receive an 80 percent exception from the UK carbon tax.⁵⁰ Most of the 10,000 UK companies have exceeded their energy efficiency targets ahead of time and overall saved £650 million in the process. The European Union plans to increase energy efficiency sufficiently to reduce energy use by 13 percent by 2020 as part of its 2006 Energy Efficiency Action Plan, saving \$164 billion in the process, even though their economy is already much more energy efficient than Australia's.⁵¹ In contrast, Australia does not yet have a national energy efficiency target. Although Australia's 250 biggest energy-using companies are required to publicly report their energy efficiency opportunities with a return on investment of less than four years, to date there is no legal requirement to invest in such opportunities - even those with a one year or less return on investment.

- *Residential Buildings with Improved Energy Performance:*

The USA, Europe, China and Japan have all gone down the path of better regulation to improve building standards.⁵² The UK Government's 'Code for Sustainable Homes' legislates binding regulations for energy reduction with staggered targets; 25 percent more efficient by 2010, 44 percent by 2013, and 100 percent, or zero emissions by 2016. Now passed into law, the code sets minimum standards for both energy and water efficiency. In addition, the UK government has agreed that any home achieving a Level 6 sustainability rating will be exempt from stamp duty.⁵³ In France, the government has committed to ensuring that all new buildings should 'produce more energy than they consume' by 2020.⁵⁴ In the Netherlands, which experiences very cold winters, the standard design for a new home would qualify for an Australian star rating of 8-10.

In contrast, Australian buildings still fall short of overseas minimum building regulations for equivalent climate zones, with energy use in Australian new homes continuing to rise. Some states have begun to address this, following the Australian Building Code Board's introduction of minimum energy performance requirements into the Building Code of Australia (BCA) in January 2003.⁵⁵ In Victoria from July 2004, every new house and apartment in Victoria was required to meet a 5-Star Energy Efficiency standard.⁵⁶ During 2006, requirements for 5-star energy ratings were introduced in South Australia, Western Australia and the Australian Capital Territory.⁵⁷ New

⁵⁰ House of Commons Environment, Food and Rural Affairs Committee (2004-2005) *Climate Change: looking forward*, Ninth Report of Session, House of Commons Environment, Food and Rural Affairs Committee. Available at www.publications.parliament.uk/pa/cm200405/cmselect/cmenvfru/130/130i.pdf. Accessed 14 April 2007; Kirby, A. (n.d.) 'UK Industry Succeeding: UK Beats Greenhouse Gas Targets', *BBC News Online*. Available at www.defra.gov.uk/environment/ccl/pdf/cca_aug04.pdf. Accessed 14 April 2007; UK Government (2006) *Explanatory Memorandum to the Climate Change Agreements (eligible facilities) (amendment) Regulations*, UK Government. Available at http://www.opsi.gov.uk/SI/em2006/uksiem_20061931_en.pdf. Accessed 14 April 2007; Kirby, A. (n.d.) 'UK Industry Succeeding: UK Beats Greenhouse Gas Targets', *BBC News Online*. Available at www.defra.gov.uk/environment/ccl/pdf/cca_aug04.pdf. Accessed 14 April 2007.

⁵¹ European Union (2007) *Saving 20% by 2020: European Commission unveils its Action Plan on Energy Efficiency*, Memo/07/6, European Union, p 2. Available at <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/6>. Accessed 10 April 2008.

⁵² The Insulation Council of Australia and New Zealand (2006) 'ICANZ applauds ACT 5-Star decision', *Press Release*, 20 February 2006. Available at www.icanz.org.au/news/ACT-5-Star/. Accessed 10 April 2008.

⁵³ BBC (2006) 'Zero carbon homes plan unveiled', *BBC*, London. Available at <http://news.bbc.co.uk/2/hi/science/nature/6176229.stm>. Accessed 10 April 2008.

⁵⁴ Deutsche Well (2007) *Sarkozy Promises Green Revolution for France*, Deutsche Well. Available at <http://www.dw-world.de/dw/article/0,1433,2847015,00.html>. Accessed 10 April 2008.

⁵⁵ See DEWAR - *Building Code of Australia* at www.environment.gov.au/settlements/energyefficiency/buildings/code.html. Accessed 10 April 2008.

⁵⁶ See Sustainability Victoria website at www.sustainability.vic.gov.au/renewable_energy/policies_and_initiatives/shw/industry/5star_regulations.asp. Accessed 10 April 2008.

⁵⁷ See Australian Capital Territory Government website at www.chiefminister.act.gov.au/media.asp?section=52&media=1098&id=1098&title. Accessed 10 April 2008; See Planning South Australia website at <http://www.planning.sa.gov.au/index.cfm?objectid=1F05999B-96B8-CC2B-691B6F3A96013410>. Accessed 10 April 2008; See Western Australian Government website at <http://www.5starplus.wa.gov.au/>. Accessed 10 April 2008.

South Wales operates its own Building Sustainability Index, which includes a certification process for new dwellings with respect to mandatory targets for greenhouse gas emissions.⁵⁸ However, Tasmania, Queensland and the Northern Territory have still not adopted 5-star requirements for new homes. In addition, the Insulation Council of Australia and New Zealand cautions that even with 5-Star energy efficiency regulations across the country, Australian buildings would still fall far short of overseas minimum building regulations for equivalent climate zones, noting that Australia still has a long way to go from having the least energy efficient buildings of OECD countries to anything approaching international minimum standards.⁵⁹

- *Energy Efficient Products and Services:*

The energy demand in households accounts for 25 percent of the final energy needs in the EU, with electricity used for domestic appliances in households showing the sharpest increase. The EU is responding to this issue by requiring energy labelling of household appliances and to demand minimum efficiency requirements.⁶⁰ The Japanese government has set strict new energy-saving targets, focusing on 18 types of consumer and business electronics. Home and office air-conditioners, for instance, must be redesigned to use 63 percent less power by 2008. The targets have sparked a frenzy among electronics makers, who are producing record numbers of energy-saving consumer products.⁶¹ Although not yet as strict as Japan standards or as progressed as the EU, Australia is contributing a leadership role in this area, through mandatory approved energy labels, and minimum energy performance standards (MEPS). The Department of Resources, Energy and Tourism is delivering a world-leading Energy Efficiency Opportunities (EEO) Program which aims to improve the competitiveness, productivity and business investment in energy efficient technologies. The program requires involvement by an estimated 250 mining, manufacturing, transport, resource processing and commercial businesses that are responsible for about 40 percent of all energy used in Australia,⁶² to help reduce growth in greenhouse gas emissions and demands on energy infrastructure.

- *Reducing Private Vehicle Transport GHG Emissions:*

New Zealand has committed to halving per capita transport emissions by 2040 by introducing electric cars and a requirement to use bio-fuels.⁶³ As of 2006, vehicles with low emissions already account for almost 11 million cars (21 percent) on Japan's roads.⁶⁴ Australia has yet to announce national targets for the private transport sector. In Sweden, private car buyers receive a subsidy of kr10,000 (Swedish krona) (AUD\$1,800) for zero or low emission vehicles since April 2007 (due to expire in December 2009) and the initiative has become a runaway success. While kr250 million (AUD\$45 million) was set aside for the scheme over three years, sales of 'eco-cars' are soaring to the extent that the real cost may top kr1.4 billion (AUD\$2.5 million) in 2008. Forty

⁵⁸ See BASIX website at <http://www.basix.nsw.gov.au/information/index.jsp>. Accessed 10 April 2008.

⁵⁹ The Insulation Council of Australia and New Zealand (2006) 'ICANZ applauds ACT 5-Star decision' *Press Release*, 20 February 2006. Available at www.icanz.org.au/news/ACT-5-Star/. Accessed 10 April 2008.

⁵⁹ See Code for New Sustainable Homes at <http://www.planningportal.gov.uk/england/professionals/en/1115314116927.html>. Accessed 10 April 2008.

⁶⁰ See European Commission - *Energy Efficiency* at http://ec.europa.eu/energy/demand/legislation/domestic_en.htm. Accessed 10 April 2008.

⁶¹ Faiola, A. (2006) 'Turn off the heat – how Japan made energy saving an art form', *The Guardian*, UK. Available at www.guardian.co.uk/world/2006/feb/17/japan.oil. Accessed 10 April 2008.

⁶² See Department of Resources, Energy and Tourism (formerly the Department of Industry, Tourism and Resources) website - at www.energyefficiencyopportunities.gov.au/. Accessed 10 April 2008.

⁶³ See UNEP Climate Neutral Network at www.climateneutral.unep.org/cnn_contentdetail.aspx?m=175&amid=666. Accessed 7 March 2008.

⁶⁴ Faiola, A. (2006) 'Japanese Putting All Their Energy Into Saving Fuel', *Washington Post Foreign Service*, Thursday, February 16, 2006. Available at www.washingtonpost.com/wp-dyn/content/article/2006/02/15/AR2006021502762_pf.html. Accessed 12 April 2008.

five thousand vehicles were sold in the nine months the scheme was operative in 2007 (44 percent private sales), and dealers expect to sell 100,000 in 2008.⁶⁵

- *Improving Freight Transport:*

In 2007 France committed to invest heavily in rail infrastructure to take freight transport off the roads and onto rail as part of France's 'Green Revolution'.⁶⁶ In Australia greenhouse emissions from trucking freight continues to rise. In 2004, freight related emissions represented 36 percent of transport emissions and approximately 6 percent of Australia's overall greenhouse gas emissions and in 2005 road transport contributed 84 percent of the total freight emissions despite carrying out only 38 percent of the domestic freight task.⁶⁷

- *Reducing Traffic Congestion and Encouraging Modal Shifts:*

Over 15 cities in OECD countries have successfully implemented a congestion tax.⁶⁸ London is still a stand-out example, using revenue from its congestion tax to spend AUD\$500 million in improving and building safe bike paths and cycle lanes.⁶⁹ Mayor Ken Livingstone in February 2008 announced changes in the capital's 'congestion charge' road-pricing policy, increasing the congestion tax for powerful cars and certain pickup trucks with high carbon emissions to a £25 (AUD \$54) daily charge, up from £8 (\$17). Hybrid cars have also been made exempt from the congestion tax.⁷⁰

- *Reducing Oil Dependence:*

A number of countries have committed to significantly reducing their nation's oil dependency. Sweden, which was badly hit by the oil price rises in the 1970s, has committed to getting off oil by 2020. The country relies on fossil fuels mainly for transport, with only 32 percent of the energy coming from oil in 2003, down from 77 percent in 1970. Almost all of the country's heating was converted in the past decade to schemes which distribute steam or hot water generated by geothermal energy or waste heat. Iceland hopes by 2050 to power all its cars and boats with hydrogen made from electricity drawn from renewable resources. Brazil intends to power 80 percent of its transport fleet with ethanol derived mainly from sugar cane within five years.⁷¹ Japan, the world's second-largest economy with no domestic sources of fossil fuel has kept its oil consumption steady since 1975 - while world consumption has risen steadily - by dramatically diversifying its power sources over the years, becoming far less dependent on oil and cultivating a culture of conservation.⁷² These plans are a part of broader sustainability plans like Hawaii's 2050⁷³ Sustainability project, which has created a citizen-driven blueprint for the state's next half-century. The Hawaii 2050 strategy documents outline how the state will handle a tourist

⁶⁵ Vidal, J. (2006) 'Sweden plans to be the world's first oil-free economy', *The Guardian*, UK, 2 February 2006. Available at <http://www.guardian.co.uk/environment/2006/feb/08/frontpagenews.oilandpetrol>. Accessed 10 April 2008; Simpson, P.V. (2008) 'Eco-car subsidy could break budget', *The Local*, 1 March 2008. Available at <http://www.thelocal.se/10196/20080301/>. Accessed 10 April 2008.

⁶⁶ Chrisafis, A. (2007) 'Sarkozy puts France on green track', *The Guardian*, UK. Available at <http://www.guardian.co.uk/world/2007/oct/26/france.climatechange>. Accessed 7 March 2008.

⁶⁷ Bailey, S. and Dodd, A. (2007) *Trade and Transport Bulletin – Carbon pricing for road transport: getting closer?*, DLA Phillips Fox, 22 Nov 2007. Available at www.dlaphillipsfox.com/article/64/Trade-and-Transport-Bulletin---Carbon-pricing-for-road-transport-getting-closer. Accessed 10 April 2008.

⁶⁸ See Roadpricing - 15 Cities at <http://www.roadpricing.biz/> Accessed 7 March 2008.

⁶⁹ Taylor, M. (2008) 'City's two-wheel transformation', *The Guardian*, UK. Available at <http://www.guardian.co.uk/uk/2008/feb/09/transport.world1> Accessed 7 March 2008.

⁷⁰ See Transport for London at <http://www.tfl.gov.uk/roadusers/congestioncharging/>. Accessed 7 March 2008.

⁷¹ Vidal, J. (2006) 'Sweden plans to be the world's first oil-free economy', *The Guardian*, UK, 2 February 2006. Available at <http://www.guardian.co.uk/environment/2006/feb/08/frontpagenews.oilandpetrol>. Accessed 10 April 2008.

⁷² Faiola, A. (2006) 'Turn off the heat – how Japan made energy saving an art form', *The Guardian*, UK. Available at www.guardian.co.uk/world/2006/feb/17/japan.oil. Accessed 10 April 2008.

⁷³ See Hawaii 2050 website at <http://hawaii2050.org/>. Accessed 10 April 2008.

economy, a swelling population, friction between cultures and a changing climate and environment.⁷⁴ Australia has not yet developed a similar 'off-oil' plan.

- *Increasing the Role of Renewable Energy:*

Renewable electricity generation capacity reached an estimated 240 gigawatts (GW) worldwide in 2007, a 50 percent rise over 2004, however, renewable energy represents only 3.4 percent of global power generation.⁷⁵ By setting bold targets for the amount of the country's electricity that will be sourced by renewable sources, national governments around the world are signalling to the market that innovation in renewable energy will be rewarded. For example, the UK renewable energy target is 40 percent by 2020, New Zealand is 90 percent by 2025, Costa Rica's is 90 percent by 2030. The European Union has boosted the region's renewable energy target to 21 percent by 2010. Where countries and regions may not have bold targets, states and cities are signalling their support and leadership at a global level. California has set a target of 20 percent renewable energy by 2010 and 33 percent by 2020.⁷⁶ In contrast, Australia's goal is currently 20 percent by 2020. Polling by The Climate Institute shows that 86 percent of Australians will readily accept an immediate shift to a target of 25 percent of Australia's electricity generation to come from renewable energy sources by 2020.⁷⁷ As yet, no Australian states or cities have targets that exceed the federal target.

- *Increasing the Use of Feed-In Tariffs (FITs):*

FITs place a legal obligation on utilities to purchase electricity from renewable energy installations, whereby the tariff rate is guaranteed (in the best examples for a long period up to 20 years), and is determined for each technology to ensure profitable operation of the installation. In the EU, FITs are the norm, with Germany, Denmark, and Spain considered model countries achieving significant results. For Germany, where FITs have been in place and supported politically since 1990, their law has made them a world leader in renewable energy, generated billions of dollars a year in exports, created in the region of a quarter of a million jobs, saved nearly 100 million tons of carbon dioxide annually in recent years, and set records for installed capacity across many technologies, all at the cost of around US\$1.80 per household, per month.⁷⁸ Among developing countries, India was the first to establish feed-in tariffs, followed by Sri Lanka and Thailand (for small power producers only), Brazil, Indonesia, and Nicaragua. In the first half of 2005, feed-in policies were enacted in China, Ireland, Turkey, and the US state of Washington. China's feed-in policy was part of a renewable energy promotion law enacted in February 2005.⁷⁹ There is a significant opportunity here for the Australian government to lead and co-ordinate a national approach to feed in tariffs.

- *Roll-Out of Electricity Metering – Smart Meters:*

⁷⁴ Hawaii 2050 Sustainability Task Force (2008) 'Hawaii 2050 Sustainability Plan Sets Direction for State's Future', PR Newswire. Available at http://www.foxbusiness.com/article/hawaii-2050-sustainability-plan-sets-direction-states-future_474971_1.html. Accessed 10 April 2008.

⁷⁵ Renewable Energy Network for the 21st Century and Worldwatch Institute (2007) cited in 'Editorial: Renewable energy surges forward', The Japan Times Online, 16 March 2008. Article available at: <http://search.japantimes.co.jp/cgi-bin/ed20080316a1.html>. Accessed 10 April 2008.

⁷⁶ See California Energy Commission's Renewable Energy Program at <http://www.energy.ca.gov/renewables/>. Accessed 10 April 2008.

⁷⁷ Australian Conservation Foundation (2007) 'The future's bright – a boost in renewable energy is a boost for the Australian economy' *Press Release* 23 April 2007. Available at http://www.acfonline.org.au/articles/news.asp?news_id=1229. Accessed 10 April 2008.

⁷⁸ Mendonca, M. (2007) 'Energy, Ethics and Feed-In Tariffs', *Renewable Energy World.Com*, 30 April 2007. Available at www.renewableenergyworld.com/rea/news/reinsider/story?id=48310. Accessed 10 April 2008.

⁷⁹ REN21 (2008) *Global Status Report: Policy Landscape / Power Generation Promotion Policies*, REN21. Available at www.ren21.net/globalstatusreport/gsr4b.asp. Accessed 10 April 2008.

Several OECD countries have already undertaken national rollouts of smart meters. In Italy, the energy utility Enel SpA has installed more than 30 million electronic meters.⁸⁰ In 2004 Paolo Scaroni, Enel's Chief Executive, said: '*Enel's 2 billion euro investment in the AMM, including R&D costs and rollout, will be paid back in 4 years in Italy alone.*'⁸¹ In 2003, Sweden announced that monthly readings would be required of all electricity meters by 2009, resulting in a flurry of activity in the region. In September 2007, the Dutch government proposed that all seven million households of the country should have a smart meter by 2013, as part of a national energy reduction plan.⁸² Roll-outs are also underway in California and Pennsylvania in the USA. According to John Hutton, the UK Secretary of State for business, enterprise and regulatory reform, smart energy meters should be brought in under an accelerated program, as 10 years is just simply, 'too long'.⁸³ In Australia, the Council of Australian Governments (COAG) agreed at the February 2006 meeting to a conditional national rollout of smart meters for all consumers where, 'the benefits outweigh costs', but there was no timeframe put on this initiative.⁸⁴ As of 2008, Australia is still assessing whether smart meters are economically viable.⁸⁵ Although no rollout has yet been undertaken, in some parts of Australia, the rollout of smart meters has already commenced. There is progress towards a state-wide rollout in Victoria, and companies have trialled or are planning to trial metering technologies in NSW, Qld, WA and SA. The Commonwealth's 'Solar Cities' program will also demonstrate the application of integrated smart meter, renewable energy and energy efficiency technologies.⁸⁶ The Townsville Solar City program also includes a comprehensive investigation into behaviour of residents to assist in reducing energy consumption, based on the Community Based Social Marketing (CBSM) methodology developed by Dr Doug Mackenzie-Mohr.

⁸⁰ http://www.enel.com/en/press_room/press_releases/releases/index.aspx?iddoc=1526994

⁸¹ http://www.enel.it/azienda_en/sala_stampa/comunicati/ss_comunicatiarticolo.asp?IdDoc=824879

⁸² Parliamentary Office of Science and Technology (2008) Smart Metering of Electricity and Gas, *Postnote*, February 2008, no. 301. Available at www.parliament.uk/documents/upload/postpn301.pdf. Accessed 10 April 2008.

⁸³ Davies, J. (2007) 'Smart meters win minister's backing: John Hutton says 10 years is too long to wait for smart energy meters to be rolled out', *Computing*, 12 Nov 2007. Available at www.computing.co.uk/computing/news/2203262/smart-meters-win-minister. Accessed 10 April 2008.

⁸⁴ Energy Networks Association (2008) Smart Meters – Policy Paper. Available at: www.ena.asn.au/udocs/ena_102506_160523.pdf. Accessed 10 April 2008.

⁸⁵ (2008) National rollout of smart meters may not be justified in Australia. In Metering.Com, 10 March 2008. Available at: <http://www.metering.com/node/11953>. Accessed 10 April 2008.

⁸⁶ Ministerial Council on Energy (2007) *Smart Meters: Information Paper - Development of an implementation roll-out of smart meters*, Ministerial Council on Energy. Available at <http://www.mce.gov.au/assets/documents/mceinternet/SmartMetersInfoPaper20070123163300.pdf>. Accessed 10 April 2008.

Appendix 2: Existing Australian Policies and Programs to Build Upon.

It is important as a first step to affirm that the new Federal Government has many existing government policies and R&D programs upon which it can rapidly build, some of which have already been alluded to above. Key initiatives are briefly highlighted below:

- Establishing the world's first 'Solar Cities' program.⁸⁷ This program will provide the new Federal Government with a wealth of information over the next five years to better develop and implement policy to reduce Australia's peak load electricity demand.
- Working with the states through the Council of Australian Governments (COAG) to establish and facilitate;
 - The National Framework for Energy Efficiency,⁸⁸ a COAG initiative to add AUD\$1 billion to Australia's GDP through energy efficiency. What is needed is a solid energy efficiency target for both 2020.
 - The Australian Minimum Energy Performance Standards (MEPS)⁸⁹ for appliances, which have encouraged the refrigeration industry to achieve more than 50 percent energy efficiency improvements in the last 20 years. These are positive steps upon which Australia can build a sustainable energy future.
- Involving 250 of the biggest energy consuming companies in Australia in the Department of Resources, Energy and Tourism's Energy Efficiency Opportunities program.⁹⁰ This program involves companies that represent 60 percent of energy usage by business in Australia. However, currently the businesses that have signed up are only required to publicly report their energy efficiency opportunities of four years or less. In Victoria, the Government requires business to publicly report and implement any energy efficiency opportunity of three years or less. There is an opportunity for the Federal Government to apply the Victorian model nationally and thus align national regulation in this area.
- Phasing out inefficient lighting by 2012.⁹¹ The European Union and California have committed to doing the same. This will have significant flow-on effects by driving a change among manufacturers in China to focus on more energy efficient products. The same concept could be applied to other everyday household appliances and office and industry equipment. Why should we in Australia be allowing into our market the least energy efficient products? If it is right to ban the most inefficient types of lighting why not apply this concept to other products on the market? If Australia did phase out the least energy efficient products, home appliances and office and industry equipment it could lead to the EU and California following suit. This would provide clear incentives to domestic and international manufacturers to change. This would also help to give local manufacturers a competitive advantage by enabling them to be first to market with.

⁸⁷ See The Solar Cities Program at <http://www.greenhouse.gov.au/solarcities/index.html>. Accessed 10 April 2008.

⁸⁸ See National Framework for Energy Efficiency at www.nfee.gov.au/home.jsp?xcid=48. Accessed 10 April 2008.

⁸⁹ See Minimum Energy Performance Standards at www.energyrating.gov.au/meps1.html. Accessed 10 April 2008.

⁹⁰ See Department of Industry, Tourism & Resources' Energy Efficiency Opportunities program at www.energyefficiencyopportunities.gov.au. Accessed 10 April 2008.

⁹¹ Department of Environment and Water Resources (2007) *World first! Australia slashes greenhouse gases from inefficient lighting*, Department of Environment and Water Resources. Available at www.environment.gov.au/minister/env/2007/pubs/mr20feb07.pdf. Accessed 10 April 2008.

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- Supporting and initiating numerous other innovations in energy efficiency.⁹² This is a tradition that deserves to be highlighted and built on by the new Federal Government by setting up specific energy efficiency innovation research and development (R&D) projects. The Federal government has enormous R&D expertise in Australia such as the CSIRO Energy Transformed Flagship program. This program is tasked with researching how Australia can achieve 60 percent reductions in greenhouse gas emissions by 2050. It would be timely for CSIRO to now also be tasked with researching the following questions:
 - How best to effectively peak Australia's emissions as soon as possible and best achieve 25-40 percent greenhouse gas reductions by 2020?
 - Once peaked how can Australia become climate neutral and answer the questions of 1) by what date? 2) at what level of annual reduction? 3) how much would it cost? and 4) what would the effect on jobs be?
 - How can Australia contribute to strategies to deliver a global reduction in emissions?
 - Providing higher rebates for solar photovoltaic energy⁹³ and hot water systems.⁹⁴ South Australia has initiated a feed-in tariff providing further incentives for families to save energy and invest in solar energy. There is a significant opportunity for the Federal Government to work with the state governments to create a national feed in tariff system.
 - Supporting world-leading renewable energy research at Universities, such as ANU and UNSW. With its ready availability of land relative to population, sunny climate, winds, long coastline and existence of underground 'hot rock' geothermal resources. In the past a lack of clear leadership in this area has seen renewable energy innovations head off-shore. Australian company Solar Heat and Power, for example, has relocated to California, where venture capital for renewable energy is abundant, further to incentives provided by Governor Arnold Schwarzenegger's administration. The new government is to be commended for its 20 per cent by 2020 MRET target. This will greatly assist here.

⁹² Pears, A. (2005) *Innovation and Energy Efficiency*, Sustainable Solutions and RMIT. Available at http://www.naturaledgeproject.net/NAON_ch17.aspx#PapersPears. Accessed 13 March 2008.

⁹³ Department of Environment, Water, Heritage and the Arts (2008) *Photovoltaic Rebate Programme*, Department of Environment, Water, Heritage and the Arts. Available at www.greenhouse.gov.au/renewable/pv/index.html. Accessed 10 April 2008.

⁹⁴ Ibid

Appendix 3: New Policy Recommendations

Subsidies and Incentives

It has recently been estimated that Australia currently spends AUD\$6.5 billion annually on perverse subsidies, i.e. subsidies which lead to more greenhouse gas pollution.⁹⁵ This is far more than what is currently being spent by government to reduce greenhouse gas emissions. A 'Whole-of-Government' approach is needed to realign economic incentives and subsidies to ensure all government departments grants and incentives focus on reducing greenhouse gas emissions. According to Riedy and Diesendorf, these current subsidies include:⁹⁶

- electricity price subsidies to aluminium smelting;
- tax benefits for salary packaging motor vehicles;
- Greenhouse Gas Abatement Programs (which go mostly to fossil fuels);
- fuel excise reduction;
- fuel sales grants scheme;
- automotive industry support;
- land for roads and car parking;
- reduced import duty on 4WDs;
- inappropriate company tax concessions; and
- R&D support for fossil fuels.

Simple policy changes need to be made to remove disincentives to do the right thing, such as the following should be considered:

- Remove the fringe benefits tax incentive to drive company vehicles long distances. Create incentives for employers to provide free public transport for their employees.
- Remove favourable tariff treatment of four-wheel-drive vehicles by increasing their import tariff from 5 percent to 10 percent, to bring it into line with regular vehicles, making exceptions for primary producers.
- Remove the GST from public transport.
- Remove GST from the sale of biofuels and indefinitely extend the biofuel-excise holiday.
- Remove GST from the sale fuel efficient cars (7 litres per 100 km or less), hybrids and new electric cars.
- Remove GST from the sale of 5-star energy efficient appliances

Since climate change is considered the most significant market failure of all, the following incentives and subsidies are recommended as justifiable for governments to apply, to address this market failure, removing perverse subsidies (AUD \$6.5 billion annually) that encourage greenhouse gas pollution,

⁹⁵ Riedy, C. and Diesendorf, M. (2003) 'Financial subsidies to the Australian fossil fuel industry', *Energy Policy*, no. 31, pp 125-137.

⁹⁶ Ibid

and applying subsidies instead to the following climate change mitigation strategies (in addition to revenue raised from the permits for a national emissions trading scheme of between AUD\$5-12 billion):

- Extend government subsidies for energy audits for small businesses and households. Introduce government subsidies for the purchase of energy-efficient equipment by small businesses and households as part of the follow-up to energy audits. This would help overcome upfront investment costs of energy efficiency for retrofitting homes, buildings and industry. Introduce financial incentives for new energy efficient equipment.
- Fund demand management infrastructure such as the national rollout of smart meters.
- Introduce tax incentives or subsidies for installation of co-generation and local energy-storage equipment.
- Subsidise renewable energy. Establish a government-sponsored venture capital fund to complement the 'Sun Fund', to help developers of renewable-energy and energy-efficient technology to get their new products to market. Initiate cooperation between the federal government and the finance industry in developing new forms of energy related venture capital funds.
- Increase tax incentives for private research and development of new energy-efficient and renewable-energy equipment.
- Fund major national sustainable transport infrastructure such as light rail, high speed trains and an upgrade of the national freight rail network.
- Compensate the poor for the likely higher electricity and fuel prices under an emissions trading scheme by funding the retrofitting of public housing, rental markets and low cost flats/housing with insulation, energy efficient lighting and appliances.

Policy Options to Address Barriers to Energy Efficiency

International experience suggests that the following policies and targets are needed to compliment both the Australian national emissions trading scheme and to provide economic incentives to ensure the uptake of energy efficiency opportunities (other authors have provided still more detailed recommendations in this area⁹⁷):⁹⁸

- Set a national energy efficiency target for 2020 to then be expanded through annual minimum increases in energy efficiency in the order of 1-3%.
- Introduce and subsidize mandatory energy audits of all medium to large energy users, with compulsory implementation of energy saving opportunities that have a payback period of one years or less, coupled with public reporting of all energy-saving opportunities that have a payback period of up to four years.

⁹⁷ Watt, M. and Outhred, H. (1999) *Energy Industry Sustainability: Policy Options*, Australian Co-operative Research Centre for Renewable Energy, Murdoch University; Greene, D. and Pears, A. (2003) *Policy Options for Energy Efficiency in Australia*, ACRE Policy Committee; Lovins, A. and Lovins, H. (1997) *Climate: Making Money, Making Sense*, RMI. Available at http://stephenschneider.stanford.edu/Publications/PDF_Papers/LovinsLovins1997.pdf Accessed 13 February 2008.

⁹⁸ Geller, H. *et al* (2006) 'Policies for Increasing Energy Efficiency: Thirty Years of Experience in OECD Countries', *Energy Policy* no. 34, pp 556 -557.

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- Increase national mandatory minimum energy performance standards to match best global practice.
 - Implement national mandatory minimum energy and greenhouse performance standards for all appliances and equipment with the capacity to use more than 50 Watts of electricity or 5 megajoules per hour (MJ/hour) of natural gas.
 - Legislate to ensure that all new homes and buildings have solar hot water systems and support this by maintaining the current rebate systems at the Federal and State government levels.
 - For all homes mandate energy and greenhouse gas ratings and require that these ratings be published in all advertisements and contracts for the sale or rental of the homes.
 - For all commercial buildings mandate minimum energy and greenhouse performance standards. The minimum performance standards should initially include a 5-star requirement for new buildings including fit-out, and a requirement for existing commercial buildings to be progressively improved to achieve 4-star rating.
 - Increase funding for the Cities for Climate Protection (CCP) program for local governments. Ensure that at least part of this funding is used to upgrade the energy efficiency of public street lighting. Require each local government to report annually on the use of the funding.
 - Award one-off grants to manufacturers of energy consuming appliances and equipment, thus enabling them to retool in order to meet the mandatory energy performance standards.

Policies to Improve Demand Management

Restructure electricity tariffs to provide financial incentives for saving electricity

Australia's electricity system itself is the main cause of our excessive greenhouse emissions but there is no consideration of this, or the cost of greenhouse emissions to the economy, in the design of the market. The rules of the National Electricity Market (NEM) are inappropriately focused on the supply of coal-fired electricity at the expense of energy savings and renewable energy technologies. The failure to harness an adequate level of demand management is such a fundamental flaw of the NEM that broad-scale changes to the rules are urgently required. Unnecessary pressures to build expensive new infrastructure inflate costs - decrease the efficiency and reliability of networks, reduce options for cost-effective demand management and unnecessarily raise prices for consumers. These outcomes are in conflict with the long term interests of consumers. The Total Environment Centre has published a range of publications providing detailed and clear recommendations for change to regulations and policies to encourage rather than discourage demand management.⁹⁹

Policies to Encourage Renewable Energy¹⁰⁰

Policies to help ensure a smooth transition to a low carbon electricity sector:

- Include a greenhouse trigger in the Environment Protection and Biodiversity Conservation Act that ensures federal oversight of developments that will have greenhouse emissions greater than 100,000 tons of CO₂-e each year.¹⁰¹

⁹⁹ See publications on Demand Management at the Total Environment Centre's web page at http://www.tec.org.au/index.php?option=com_content&task=view&id=640&Itemid=316. Accessed 10 March 2008.

¹⁰⁰ See EU Renewable Energy Policy online resources at <http://www.euractiv.com/en/energy/eu-renewable-energy-policy/article-117536>. Accessed 10 March 2008.

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- Increase Australia's Mandatory Renewable Energy Target (MRET) to ensure at least 15 percent of national electricity demand is met from renewable sources by 2015, and 25 percent is met from renewable sources by 2020.¹⁰² Introduce annual auditing of national progress towards the target.
 - Introduce 'feed-in tariff' laws for renewable energy that guarantee minimum prices for renewably generated electricity for set periods, to give it a commercial foothold.

Policies to help the uptake of solar energy opportunities:

- Mandate that a solar, heat pump or solar compatible natural gas hot water system with low standby losses be installed in every proposal for a new or substantially renovated residential building. Where natural gas and sunshine are both available, mandate that the only system that may be installed is gas boosted solar. Such efforts should also be coupled with restrictions on the maximum temperature settings of hot water systems to be within the range of 50-60 degrees celcius.
- Local governments must implement rules protecting solar access of all existing and new buildings.
- Local governments must remove planning restrictions on the installation of solar hot water and photovoltaic modules on residential buildings.
- Strengthen the development of Australia's manufacturing base by committing to making Australia a world leader in solar photovoltaic and solar thermal technology. This can be achieved by keeping locally researched solar technology in the country through appropriate use of government subsidies, tax incentives, venture capital funds and research funding.

Policies to help the uptake of wind power opportunities:

- With wide public consultation, develop and implement consistent planning guidelines across all levels of government for the establishment of wind farms nationally.
- Develop grid management policies that allow for the inclusion of wind farm output forecasting data. The use of such data will allow for the greater penetration of wind energy and optimised cost and/or emissions reductions.
- Extend State and federal incentives for small renewable energy generation systems, such as solar thermal and solar photovoltaic rebates, to include small wind turbines of less than 100 kW capacity that service a similar need and market.

Create a more holistic and integrated approach to Research and Development (R&D) Funding for Renewable Energy in Australia, by:

- Over the past decade, the previous Federal Government systematically cut funds to Australia's renewable-energy focussed research and development programs. Programs cut over the past decade include the Energy R&D Corporation, the Australian Cooperative Research Centre for Renewable Energy, and the Renewable Energy Commercialisation Program of the Australian Greenhouse Office.

¹⁰¹ McGrath, C. (2006) 'Review of the EPBC Act', paper prepared for the 2006 Australian State of the Environment Committee, Department of the Environment and Heritage, Canberra. Available at <http://www.environment.gov.au/soe/2006/publications/emerging/epbc-act/index.html>. Accessed 10 March 2008.

¹⁰² ACF, CANA et al (2007) *A Bright Future. 25 Percent Renewable Energy by 2020*, ACT and CANA. Available at http://www.cana.net.au/documents/25_RenewableEnergyforAustraliaby2020report_2007.pdf. Accessed 10 March 2008.

After a decade of stop-start management of R&D support there remains a critical funding gap between early stage research and support at the point of commercialisation.¹⁰³ Furthermore, the Low Emissions Technology Development Fund, (the Government's flagship low emissions technology program) allocation has favoured fossil fuel projects over renewable energy projects by a ratio of more than four to one on a dollar basis (AUD\$335 million so far to fossil fuel projects; AUD\$75 million to renewable energy). Moreover this program is not available to support R&D. Other countries, like Germany, effectively plug this gap for renewables funding, through integrated programs of support which cover every aspect of the renewable energy industry — research, development, demonstration, commercialisation and market support. Critical mass is built via the availability of large-scale and stable R&D funding in, for example, the Fraunhofer Institute for Solar Energy Systems, which has a budget of \$47 million per year. The Fraunhofer Institute is just one of many such large European solar research institutes. This type of integrated support for renewable energy research is not available in Australia.

¹⁰³ For more details see the report: Greenpeace Australia Pacific (2007) *Hung out to dry: Federal neglect of renewable energy research and development in Australia*, Greenpeace Australia Pacific. Available at <http://www.greenpeace.org/raw/content/australia/resources/reports/climate-change/hung-out-to-dry-federal-negle.pdf>. Accessed 10 March 2008.

Appendix 4: Addressing Competitiveness Issues of Trade Exposed Industry

In Australian from 1996-2007, one of the main arguments, from certain sectors of Australian businesses, against Australia ratifying Kyoto was that it would harm international competitiveness of those businesses. The Australia Institute analysed this issue in depth and released a discussion paper in 2006.¹⁰⁴ It found that a company's competitiveness could be disadvantaged internationally by the imposition of a carbon tax or an emissions trading scheme if all the following conditions exist:

- The industry is particularly emissions-intensive.
- The industry is trade exposed.
- The trade exposure is with companies in developing countries that do not have to meet emissions caps under the Kyoto Protocol.

The paper showed that creating a carbon signal either through a carbon tax or an emissions trading scheme would affect a very small part of the Australian economy which contributes only 1.5 per cent to GDP and 19 per cent of merchandise exports. The vulnerable exports included aluminium and alumina, steel and non-ferrous metals, liquefied gas and gold. Their research showed that less than half of these exports went to developing countries. This paper recommended that Australia ratify the Kyoto Protocol and implement a carbon tax or an emissions trading scheme. It examined all the options for dealing most effectively with the competitiveness problem including wholesale exceptions, negotiated agreements, offsetting tax deductions and financial incentives for energy efficiency improvements.

The 2001 paper by The Australia Institute made the case for compensating trade exposed and emissions intensive industry through a border tax adjustment. This means that the government would pay the exporter of say aluminium exports a rebate to offset the increased costs in production caused by the carbon tax or emissions trading scheme. But the rebate would only be paid at the point of export thus ensuring that all companies producing and selling within Australia would be subject to the carbon price signal. Border tax adjustments are not a radical idea. They are already in use in a number of tax systems in a number of countries including in the Australian GST system and the European value added tax.

The OECD has also undertaken a great deal of work in this area. They concur with the findings of The Australian Institute on this issue. For instance the OECD has modelled implementing a carbon tax with a Border Tax Adjustment on the EU cement industry. There were two versions modelled: 1) exported production was completely exempted from the climate policy, and imports of cement from the rest of the world were taxed according to the CO₂ intensity of the cement production in the exporting country; 2) exports benefit from a rebate corresponding only to the least CO₂ intensive technology available at a large scale, and imports were taxed to the same level. The modelling showed the effectiveness of Border Tax Adjustments. Under a carbon tax emissions were reduced by 20 per cent in the cement industry without any significant leakage of the cement industry relocating to developing countries, referred to as "carbon leakage". In the first BTA version, the loss of production in EU countries was limited to 2% and the leakage was replaced by a spill-over, since emissions in the rest of the world

¹⁰⁴ Saddler, H. Muller, F. Ceuvas, C. (2006) *Competitiveness and Carbon Pricing: Border Adjustments for Greenhouse Policies*. Discussion Paper no. 86, Australia Institute, Canberra, April.

also decrease. The second BTA version was also found to prevent carbon leakage, with a leakage rate of around 4% in 2010.

There are other policies that can assist business's competitive advantage and help encourage environmental sustainability. Two examples of note are 'feebates'¹⁰⁵ and Germany's Best Available Technology legislation.¹⁰⁶ The Germans have developed an ingenious form of regulation that helps drive better environmental outcomes whilst making German industry more competitive. Much of the rest of Europe, including Eastern Europe, have now followed Germany's lead. The German Best Available Technology legislation does not involve mandating specific technologies as many in the US assume. Rather, the German Government upwardly adjusts standards that industry has to meet based on the standards met by the best and most cost effective available technologies. In theory then, whenever a new and improved technology is created globally, German industry is expected to meet the environmental standard achieved by that technology. Of course, regulatory practise is more flexible, ambiguous and much less instantaneous. However, it is sufficient to provide significant incentive for German firms to develop new technologies that make it cheaper for them to meet the competition from the best available technologies globally.

Feebates, very simply, combine both a fee on the most environmentally harmful brands of a certain product, whilst providing income to governments, allowing them to provide a rebate to encourage consumers to purchase the most environmentally benign products. Operationally feebates are very simple. Take the example of the car. If you bought a new car, you would pay an extra fee if it were an inefficient user of fuel, or alternatively get a rebate if it were energy-efficient. The neutral point would be set so that fees and rebates balanced, so it becomes neither an inflationary measure nor a disguised tax.

The key benefit of feebates is that they would ensure that industry knows that there will be clear market signals to the consumer to purchase more efficient products, thereby stimulating innovation in the right direction for sustainability. But government would still need to work with industry to phase in feebates to ensure industry has time to respond. To reduce administrative costs, feebates can be targeted at those consumer products that have the largest ongoing environmental impacts, such as cars and, within the home, refrigerators and washing machines.

When fee-bates are coupled best available technology regulation, eco-taxes and the emissions trading schemes, this can give business significant potential long-term competitive advantage in the field of environmental technologies. As Professor Michael Porter, Harvard Business School, wrote as far back as 1991:

As other nations have pushed ahead, US trade has suffered. Germany has had perhaps the world's tightest regulations in stationary air-pollution control, and German companies appear to hold a wide lead in patenting and exporting air-pollution and other environmental technologies. As much as 70% of the air pollution-control equipment sold in the US today is produced by foreign companies. Britain is another case in point. As its environmental standards have lagged, Britain's ratio of exports to imports in environmental technology has fallen from 8:1 to 1:1 over the past decade. In contrast, the US leads in those areas in which its regulations have been the strictest, such as pesticides and the remediation of environmental damage. Such leads should be treasured and extended. Environmental protection is a universal need, an

¹⁰⁵ von Weizsäcker, E., Lovins, A. and Lovins, H. (1997) 'Factor Four: Doubling Wealth, Halving Resource Use', Earthscan, London.

¹⁰⁶ Braithwaite, J. and Drahos, P. (2000) 'Global Business Regulation', Cambridge University Press, Cambridge.

*area of growing expenditure in all the major national economies and a major export industry. The strongest proof that environmental protection does not hamper competitiveness is the economic performance of nations with the strictest laws.*¹⁰⁷

These are just a taste of the range of options and approaches available to governments to allow them to take a lead with industry, and the community, to achieve sustainable development in a way that does not harm competitiveness of industry but rather helps it. This discussion shows how easily business's fears of international competitive disadvantage from sustainable development can be fairly addressed by effective policy.

¹⁰⁷ Porter, M. (1991) 'Green Competitiveness', Scientific American, 5 April.

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