CLIMATE CHANGE AND AUSTRALIA

ADDITIONAL REPORT BY SENATOR BOB BROWN, AUSTRALIAN GREENS

The evidence before the Committee leaves no doubt that human action is changing the climate of the Australia and the Earth. This has momentous implications.

Finding 1

The scientific consensus of the second report of the Intergovernmental Panel on Climate Change was that the balance of evidence suggests a discernible human influence on global climate. Recent work has strengthened the evidence that –

- **There has been sustained global warming over the last century**
- **Current concentrations of CO_2 in the atmosphere are higher than at any time in the last 15 million years**
- **Human activity accounts for the substantial fraction of the global temperature increase in the 20th century.**

Finding 2

I accept forecasts that over the next century global temperatures will rise by between 1-5 degrees C and note that –

- **Sea level will rise by about 0.5 m during the next century, <u>and continue to rise for 500 to 800 years longer even if atmospheric concentrations of greenhouse gases are stabilised.</u> The main contributor to the rise is ocean water expanding as it warms; the warming already experienced will continue to work its way to the ocean's depths over a period of centuries causing the water to expand and sea levels to rise.**
- **Australia is the most vulnerable OECD country to the impacts of climate change because of its aridity, already high temperatures and long coastline.**
- **The potential for more frequent and severe El Nino events and possible disturbance to the Walker Circulation in the atmosphere over the western Pacific are key concerns for Australia**
- **Australia's ecosystems are vulnerable because of their evolutionary isolation**

- **Higher than normal sea temperatures in 1998 resulted in mass bleaching and death of coral and that modelling indicates such events could become commonplace within 20 years and annual and catastrophic within 50 years.**

The Convention on Climate Change, which Australia has signed, calls for greenhouse gas concentrations in the atmosphere to be stabilised at a level that 'would prevent dangerous anthropogenic interference with the climate system'.

Finding 3

The evidence suggests that stabilising CO2 levels in the atmosphere at 550 ppm (compared with pre-industrial levels of 280 ppm and the current concentration of 360 ppm) may be sufficient to avoid dangerous climate change and that this would require developed countries to reduce emissions by about 90%, to 10% of 1990 levels.

Recommendation 1

That Australia plan to reduce its greenhouse gas emissions by 90%, compared with 1990 levels, by 2050, as its contribution to stabilising CO2 levels in the atmosphere at twice pre-industrial levels.

While recognising that Australia's Kyoto target will have minimal impact on climate change, its ratification is nevertheless an important signal of concern and acceptance of responsibility.

I agree with Professor Ian Lowe –

> "The argument that Australia should not adopt greenhouse targets until developing countries do is simply morally indefensible. It is a bit like diners in a five star restaurant saying that soup kitchens should be closed down to avoid waste of food. I think it is entirely unreasonable for a country that uses six kilowatts of energy per person continuously to be saying that countries that use between one per cent and 10 per cent of that amount of energy should set limits on their energy use before we do."[1]

Recommendation 2

Ratify the Kyoto Protocol without delay.

Australia's Failure

By 1998, the most recent year for which figures are available, Australia's greenhouse gas emissions were already 118% of 1990 levels, 10% over our Kyoto target of 108% of 1990 emissions by 2010.

[1] Professor Ian Lowe, Hansard, 26 May 2000

The government's big policy decisions are promoting increased greenhouse gas emissions while the strategies to reduce emissions are small, fragmented and, with the exception of the anaemic and compromised 2% for renewables program, voluntary.

Thus --

- Electricity reform and the introduction of the national electricity market have favoured existing brown coal generators (the worst greenhouse gas polluters) over all other energy sources, including gas, energy efficiency and renewables. In addition the price of grid electricity has fallen by 30%. Result – greenhouse gas emissions increased by 18.4% between 1990 and 1997 and a further 9% between 1997 and 1998.[2]

- Land transport consistently and massively favours road over rail, exacerbated by the GST package which reduced diesel taxes for heavy transport by 25c per litre, and petrol for business use by 10%, at an annual cost of around $3 billion. The price of public transport increased and the competitiveness of rail freight relative to road declined. Even before these changes road transport emissions had increased by 18% between 1990 and 1998.

- The Federal Government has failed to stop runaway clearing of native vegetation in Queensland and Tasmania. The current rate is over 400 000 hectares per annum.

- Carbon-rich old growth forests are open for logging, and deemed a renewable energy source if burnt for electricity, under the new Renewables Energy (Electricity) Act 2000. The government does not measure greenhouse gas emissions from logging native forests.

- Implementation of the National Greenhouse Strategy, weak as it is, is well behind schedule, to the point where the Government noted in answer to questions on notice that –

> "the reporting schedule contained in the National Greenhouse Strategy was indicative only and not intended to bind Government consideration or action to address these matters".[3]

Finding 4

The Australian Government will fail to meet its Kyoto target.

A report on progress in implementing the National Greenhouse Strategy is supposed to be tabled in the 'second half of 2000'. Meanwhile, appendix 2 reproduces the Government's answers to questions on notice relating to the lack of progress on implementing the Strategy.

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[2] Hugh Saddler, *Greenhouse Gas Emissions from Australia 1990-97: Key Trends.* April 2000

[3] Answers to questions on notice from Senator Bob Brown dated 28 June 2000

Recommendation 3

That the Government implement the National Greenhouse Strategy on time and in full.

While commissioning and funding ABARE to assess the economic impact of reducing greenhouse gas emissions, the government has made no effort to count the environmental, economic and social cost if global warming continues unabated.

Recommendation 4

That the Government commission a comprehensive accounting (financial where relevant) of the environmental, economic and social impacts of climate change. It should focus on Australia and the Asia Pacific region, and include an assessment of the risks of sudden catastrophic change to key weather systems and the costs of remedial plans for such an emergency.

Environmental Technology, Industry and Jobs
Ostrich or ET?

A striking feature of the Committee's hearings was the evidence of a lively, energetic and creative environmental technology sector is flourishing despite the structural impediments and lack of government support.

Greenhouse-polluting industries portrayed action to reduce greenhouse gas emissions as resulting in unmitigated economic gloom –

> "I do not think the Australian community fully appreciates that the adjustment process that we are talking about is massive in its dimensions if, in fact, we are to contemplate some of the options now being canvassed. The cost will come back on the community, either by way of jobs or by way of costs, which will translate ultimately into jobs and into the investment environment."[4]

They also disputed that carbon dioxide was a pollutant –

> "The issue really is that, if the industry is overpolluting for its product, there is a responsibility for that industry to manage that process. I do not regard CO2 as a pollutant. CO2 is a natural part of the lifecycle; it is not a polluting gas."[5]

By contrast, the Committee heard from many companies and organisations of the great opportunities in the inevitable transition to a more sustainable future –

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[4] Mr Buckingham, Business Council of Australia, Hansard, 21 March 2000

[5] Dr Rawlings, Australian Coal Council, Hansard, 26 May 2000

> "We consider there are tremendous opportunities for the renewable energy sector in Australia. The New South Wales government estimated that the renewable energy sector was worth $5 billion in New South Wales for 1999. It was the largest growth sector in that state and current trends indicate that the trend will continue."[6]
>
> "….Australia is now sitting on a goldmine of energy efficiency opportunities, with the potential for energy savings in NSW alone estimated by SEDA to be at least $900 million annually."[7]

In fact, as the Sustainable Energy Industry Association pointed out, by reinterpreting ABARE's modelling, **85% of the national economy is either unaffected (substantially the services sector) or beneficially affected by reducing greenhouse gas emissions**. The 15% that is negatively affected includes some of Australia's largest companies, especially mining, mineral processing and coal, who have been disproportionately effective in moulding public perceptions.

Local government has a key role in reducing emissions and in many cases has been more energetic and creative than federal or state governments. They influence up to 50% of emissions. For example, street lighting alone accounts for 40% of greenhouse gas emissions in some cities, and the energy cost is $156 million a year. Quality can be improved and energy consumption at least halved by using efficient lighting and controlling the lighting time more accurately.[8]

Finding 5

Key impediments to energy efficiency and renewable energy include –

- **The fossil fuel industry does not pay for its pollution.**
- **The National Electricity Market is heavily biased. It favours existing brown coal generators, subsidises long distance electricity transmission, and hinders grid access for small scale renewable electricity generators.**
- **We lack legislated, uniform, high energy efficiency standards for electricity generation, appliances, buildings and transport.**
- **Consumers lack information about their contribution to greenhouse gas emissions.**

Carbon taxes have dropped off the big parties' political agenda because of the introduction of the GST. A carbon tax is nevertheless the simplest, most direct and efficient way to force greenhouse polluters to pay the cost of their pollution, promote environmental technology industries, and signal to the community that we are serious

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[6] Mr Chia, Stanwell Corporation, Hansard, 26 May 2000

[7] Ms Cathy Zoi, Energy Technology Investments, submission no. 208

[8] SEDA, Energy Efficiency Victoria, *Energy and Cost Savings Opportunities in Street Lighting*, August 1999

about tackling climate change. The tax already exists in several western European countries, can be introduced at a modest level to begin with, and can be complemented by emissions trading. A carbon tax of $30-$40 per tonne would reverse the 30% drop in electricity prices that industry gained between 1993 and 1997[9] and give it to the environment instead.[10]

Recommendation 5

That the Government –

- **Boost environmental technology industries and ensure that greenhouse polluters pay by introducing a carbon tax of $30 -- $40 per tonne from 2002.**
- **Establish a national analogue of the NSW Sustainable Energy Development Authority to promote and invest in energy efficiency and renewables, funded from the carbon tax.**
- **Legislate to require electricity retailers to disclose greenhouse gas emissions on consumer's bills.**
- **Fund a national program make street lighting energy and cost efficient.**
- **Abolish tied road funding and replace it with a Transport Fund, that can allocate money to works and strategies after an open consultative process.**
- **Implement the Sun Fund, through which farmers and others using diesel generators can swap part of all of their entitlement to the diesel fuel rebate for an equivalent amount to invest in renewable energy.**

Dedicated funding for sustainable energy research was abolished in 1996, and funding through federally funded Cooperative Research Centres favours fossil fuels by a factor of at least 4:1.

Recommendation 6

Reinstate the National Energy Research and Development Corporation with a budget of at least $30 million pa to fund research into sustainable energy and energy efficiency.

Age Matters

> "…an increasing number of process studies indicate that terrestrial forest ecosystems do not reach an equilibrium of assimilation and respiration and act as net carbon sinks until high ages… These arguments indicate that replacing unmanaged old-growth forest by young Kyoto stands…will lead

[9] Prof. Hugh Outhred, ???

[10] SEIA's proposal for a 'reverse' carbon tax deserves consideration.

> to massive carbon losses to the atmosphere mainly by replacing a large pool with a minute pool of regrowth and by reducing the flux into a permanent pool of soil organic matter."[11]

Australia is cheating the environment and the international community by manipulating the accounting rules for carbon in living systems (plants and soil in particular).

- Australia alone of the developed countries is allowed to count the emissions from clearing native vegetation in its 1990 baseline. Despite the Government's inaction to date, it is inconceivable that clearing in 2008—12 will be anywhere near 1990 levels, if only because it is so cheap to stop. Australia thus has a 'bubble' of 20% of 1990 emissions that can be filled by increased fossil fuel emissions.

- Australia is arguing to exclude CO2 emissions from logging old growth native forests and clearing native forests for plantations from the Kyoto Protocol (see appendix 1). For example --

  > "Deforestation is defined as direct human induced forest conversion which is frequently accompanied by burning. This does not include harvesting or other practices which occur as part of ongoing commercial forestry."[12]
  >
  > "The estimates of the impact of logging will not distinguish between old growth and modified native systems, as it is forest parameters other than age which are the most useful predictors of carbon storage. More reliable predictors rely on models based on bole volume, basal area or basal area and height."[13]
  >
  > "As the National Plantation Inventory does not currently collect information relating to previous land use, it is not possible to say whether, or how much of the plantations established were on sites that previously contained natural vegetation….all states except Tasmania agreed that no further native forest would be cleared for plantation establishment."[14] The most recent estimates put the current rate of clearing for plantations in Tasmania on public and private land at 20 000 hectares per annum.

- Australia is actively working to undermine even the limited effectiveness of the Kyoto Protocol by including additional 'sink' activities such as revegetation but ignoring activities that lead to greenhouse gas emissions, e.g. destroying wetlands.

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[11] Schulze, Ernst-Detlef, Wirth, Christian, Helmann, Martin (2000) *Managing forests after Kyoto*. Science **289**, 2058

[12] Australian Submission to UNFCCC on Land Use, Land Use Change and Forestry, 1 August 2000

[13] Answers to questions on notice from Senator Brown, 28 June 2000

[14] Answers to questions on notice from Senator Brown, 16 March 2000

- The *Renewable Energy (Electricity) Bill 2000* encourages wood from cleared native vegetation and logged native forests, including old growth, to be burned for electricity and counted as renewable.

Recommendation 7

Reduce greenhouse gas emissions immediately by –

- **Implementing national clearing controls, to intervene in Queensland and Tasmania.**
- **Protecting remaining old growth forests.**

Recommendation 8

Negotiate at the Sixth Conference of Parties (COP6) (November 2000) for international accounting rules that –

- **Are consistent with the goals of the Convention on Biological Diversity, the Ramsar Convention on Wetlands, the Regional Seas Convention, and the UN Convention to Combat Desertification;**
- **Allow carbon credits to be created only when the carbon stock on any given parcel of land is greater than it was in 1990;**
- **Include logging of native forests and clearing of native forests for plantations within the definition of 'deforestation';**
- **Are 'symmetrical' with respect to the inclusion of new activities – that is additional sinks can only be counted if additional sources are included too.**

Recommendation 9

Negotiate at COP6 for the contribution of sinks to be capped under any international emissions trading system.

Basslink

> "…if we were given that amount of money to spend [the $500 million cost of Basslink] you could do a lot for renewables, for demand management and for setting up a more sustainable energy system in Australia…"[15]
>
> "…a negative is that…you are going to allow the existing coal-fired base load plants to operate even more in a base load mode and possibly prolong their life or to operate with higher load factors and probably thereby shut out

[15] Dr Muriel Watt, p.422, 23/3/2000

> other new greenhouse friendly technologies, particularly gas-fired cogeneration which also likes to operate in a base load mode."[16]
>
> "The cost of Basslink is very substantial and, while I know that there are plans regarding having large wind farms in Tasmania, effectively they would be facing a cost penalty of something like $1,000 a kilowatt, roughly, compared to putting those same wind farms in, say, southern Victoria or other parts of the mainland…We do not know the actual cost—that is a commercial matter—but it would be of that order. So, while there is some potential there, it is not clear to me how it could be capitalised on, how you would achieve it."[17]
>
> "If we are going to deal with greenhouse seriously, we have to be looking at managing demand and not managing supply. Basslink is part of the whole old approach that we have had towards electricity where we are constantly looking at supply options but we never focus on demand."[18]

I agree.

Recommendation 10

That Basslink should not proceed.

Climate Change Implementation Bill

The only way to give certainty for industry and the community to plan ahead is through legislating to implement the Convention on Climate Change. Voluntary measures are not working, and a carbon tax and/or emissions trading alone will not do the job. Neither will a greenhouse trigger under the Environment Protection and Biodiversity Conservation Act, because it will only affect new proposals.

Legislation is needed to set the targets for reducing greenhouse gas emissions, provide mechanisms for consultation with industry and the community, and establish an independent statutory authority to manage the process and report on progress.

Recommendation 11

That the Government introduce legislation to implement the Climate Change Convention, based on the Climate Change Implementation Bill.

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[16] Dr Hugh Saddler, p.422, 23/3 2000

[17] Prof. Outhred, p.505, 17/4/2000

[18] Ester Abram, p.504, 20/3/2000

APPENDIX 1 – AUSTRALIAN GREENS ADDITIONAL REPORT

Australia's preferred definitions exclude native forest logging from greenhouse scrutiny

The Australian Government is protecting the native forest based timber industry by arguing to exclude its greenhouse gas emissions from scrutiny under the Kyoto Protocol. It also displays a consistent bias in over-estimating the greenhouse benefits of plantations and under-estimating those of native forests (see box).

The Kyoto Protocol requires changes in carbon stocks and emissions resulting from 'deforestation', 'reforestation' and 'afforestation' to be accounted for. The Australian Government submission on Land Use, Land Use Change and Forestry[19] proposes to define these terms as follows:

> Afforestation, reforestation – planting a hectare or more of trees on an area that has not been tree-covered for a minimum of five years beforehand.
>
> Deforestation – removing trees so that the land is no longer 'forested'; but specifically excluding 'harvesting or other practices which occur as part of ongoing commercial forestry'.

In other words, old growth forests and woodlands can be logged and replaced with pulp or fuelwood plantations without accounting for the loss of carbon.

The woolly definitions that enable such a perverse interpretation pervade the analysis of 'forests' and 'forestry' in relation to climate change. 'Forest' includes everything from a 10 year old pulp or fuelwood plantation to a 500 year old forest. A change of use from forested to non-forested land or vice versa is taken to be the critical element in triggering an assessment of carbon storage and emissions, while the impact of the equally significant change of use from conservation to agro-industrial management is ignored.

To sort out the confusion requires –

- Different categories of 'forest' to be defined, ranging from old-growth to tree farms
- 'Deforestation' to be broken down into its component activities, including logging, clearing for plantations or other crops, burning etc, with the carbon conservation impact of each activity individually accounted for
- Tree farming to be treated in the same way as any other form of agriculture for carbon accounting purposes

[19] Australian Submission to UNFCC on Land Use, Land use change and Forestry – 1 August 2000

APPENDIX 2 – AUSTRALIAN GREENS ADDITIONAL REPORT

Australian Greenhouse Office
Answers to Questions on Notice dated 28 June 2000

Government answers to questions show a consistent bias over-estimating the greenhouse benefits of plantations and underestimating those of native forests.

"In many instances a plantation forest, because of improved condition due to soil aeration and fertiliser application will be more productive (carrying more biomass at maturity) than a native forest in a mature condition."[20]

"The amount of carbon stored in old growth forests is highly variable, being closely related to forest type. Current estimates are in the range of 39-490 t biomass per hectare. A typical value for plantations is around 244 t biomass per hectare."[21]

"The amount of carbon stored in regrowth forests combined with that stored in forest products has the capacity to exceed storage in mature forest. However, it takes 500 years before this effect is fully offset by stored products…..(emphasis added)"[22]

[20] Answers to questions on notice from Senator Brown, 9 March 2000

[21] Answers to question on notice from Senator Brown, 22 June 2000

[22] Australian Greenhouse Office, *Greenhouse Sinks and the Kyoto Protocol: An Issues paper*, 2000

Questions on Notice from Senator Bob Brown

1. Provide a report showing how each of the following actions in the National Greenhouse Strategy has been completed.

NB: The National Greenhouse Strategy has been developed by the Commonwealth and all State and Territory governments, with some measures not relevant or applicable to all jurisdictions. The following responses address actions taken by the Commonwealth to implement NGS measures. A report on progress in implementing the NGS, including action by States and Territories, will be tabled in the Commonwealth Parliament in the second half of 2000.

3.3 Environmental impact assessment (to be reviewed and amended as appropriate by the end of 1998/99)

Measure 3.3 of the National Greenhouse Strategy reads as follows:

"Governments will ensure that significant potential greenhouse gas emissions emitted from proposed projects are adequately addressed through their environmental impact assessment processes. This will include recognition of greenhouse as an environmental factor for this purpose.

Responsibilities - to be pursued by all jurisdictions.

Indicative timeframe - EIA processes to be reviewed and amended as appropriate by end 1998/99."

Answer:

Under the *Environment Protection (Impact of Proposals) Act 1974*, now repealed, greenhouse gas emissions were considered as an environmental factor and addressed through environmental impact assessment processes conducted under that Act.

The *Environment Protection and Biodiversity Conservation Act 1999*, which commenced on 16 July 2000, introduces a new scheme based on actions affecting six matters of national environmental significance and actions affecting Commonwealth land or taken by Commonwealth agencies. In the case of actions in a Commonwealth marine area and actions affecting Commonwealth land or taken by a Commonwealth agency, where the matter protected is the environment, greenhouse gas emissions will be addressed, where relevant, through environmental impact assessment processes.

In addition, a consultation process is under way on the possible addition of a greenhouse trigger under the Act in relation to new projects that would be major emitters of greenhouse gases. Under the proposed model, the trigger would apply to actions likely to result in greenhouse gas emissions over 0.5 million tonnes of carbon dioxide equivalent in any 12 month period. This proposed threshold is equivalent to approximately 10% of the average annual increase in Australia's total greenhouse emissions and can therefore be considered to be of national environmental significance.

Preface to the Responses for NGS Measures 4.1 A (iv) - (vii)

Under the National Greenhouse Strategy, specific Measures were to be pursued in cooperation with State and Territory governments, industry and others in order to expand energy market reforms and promote the delivery of greenhouse abatement consistent with the competition reform principles underpinning energy market reform. Specific Measures to be undertaken included:

- ensuring that technical and safety requirements for small scale electricity generation were consistent, appropriate and equitable;
- ensuring that there are no regulatory impediments to the provision of stand-alone power systems based on renewable resources where it is economic to do so;
- identifying and addressing any structural, legislative or regulatory barriers to cogeneration, consistent with the principle of neutrality of treatment of energy sources; and
- identifying and addressing any structural, legislative or regulatory barriers to renewable energy and energy efficiency, consistent with efficient operation of the market.

The timeframe given for implementing these measures was June 2000. It should be noted, however, that the reporting schedule contained in the National Greenhouse Strategy was indicative only and not intended to bind Government consideration or action to address these matters.

Competition reform in the electricity sector has delivered structural reform of publicly owned utilities, creation of competitive generation and retail markets, a competitive wholesale spot market for electricity, an efficient financial contract market, third-party access and regulation of network services. Similarly, competition reform in natural gas has delivered structural reform of publicly owned pipeline and retail businesses, open access to transmission and distribution services and establishment arrangements which, over time, should lead to greater competition in the upstream sector. Together, these reforms have already delivered considerable benefits.

Electricity and gas markets have entered a period of transition towards a more fully integrated and competitive national market. The nature of the Measures which are the subject of your question are such that activity is not completed but ongoing as jurisdictions and various organisations work through the reform process. However, significant progress is being made and activities which have either been completed, are in progress or are planned, are reported below.

Responses relating to specific Measures follow:

4.1 A(iv) Consistent, appropriate and equitable technical and safety requirements for grid connection of small scale electricity generation (by June 2000)

One of the objectives of the National Electricity Code (the Code) is to provide open access to the interconnected transmission and distribution network.

The Code requires generators intending to participate in the National Electricity Market (NEM) to abide by a set of uniform technical requirements, as well as any requirements specified in the connection agreement with their network provider. The technical requirements dictated in the Code for a connection agreement are extremely stringent and were put in place to ensure the security of the national power system.

National Electricity Code Administrator (NECA) is progressing its Review of Technical Standards which is expected to be completed by the end of this year. The principal objective of this Review is to examine whether the existing standards in the Code are too stringent and especially therefore whether they represent a barrier to entry to the market, in particular for cogeneration and emerging technologies.

Non-technical requirements applying to generators, including safety, are primarily a matter for jurisdictional regulation by the States and may vary from jurisdiction to jurisdiction. With regard to this, on 23 May 2000, the Energy Market Group, which reports to the Council of Australian Governments, established a working group to investigate the potential benefits of harmonising certain regulatory arrangements across jurisdictions in order to promote consistency and improve efficiency. Opportunities for greater harmonisation include safety regulation and licensing conditions.

4.1 A(v) Ensure no regulatory impediments to stand-alone power systems based on renewable resources (by June 2000)

Stand-alone power systems, including those based on renewable resources, are usually located in remote locations at the extremities of transmission networks. Stand-alone power systems that are not grid-connected are not subject to the Code although they are subject to jurisdictional regulation. To date, however, we are not aware of any direct regulatory impediments to the use of stand-alone power systems.

One potential impediment to the implementation of stand-alone power systems, however, is the incentive that current regulatory arrangements may create for network service providers to augment transmission systems when the implementation of demand-side or local generation alternatives would have been more economic. Under the Code, inter-regional network augmentations need the approval of the National Electricity Market Management Company (NEMMCO) which must consider any practical and economically efficient alternatives to augmentation when deciding whether network augmentation is justified.

In addition, NECA has proposed strengthening the Code to ensure greater consideration of demand-side and local generation alternatives to new network investment, and meaningful consultation with affected customers. The next step will be to publish draft Code changes as the basis for consultation with stakeholders. This process is expected to be completed by the end of 2000.

The high capital costs of establishing stand-alone power systems can act as a significant barrier to entry, particularly for renewable energy systems. To address this concern, the Government introduced the Renewable Remote Power Generation Program (RRPGP) to actively encourage the uptake of stand-alone power systems based on renewable sources.

The RRPGP provides a rebate for the installation of renewable remote power supplies in situations where renewable energy will reduce or replace diesel for off-grid electricity generation, or for new off-grid installations where it can be demonstrated that the energy source would otherwise be diesel.

The program is funded from excise paid on diesel used to generate electricity by publicly owned generators and will potentially provide support for up to 50% of the capital cost of a renewable energy installation. The program commenced on 1 July 2000.

4.1 A(vi) Address structural, legislative or regulatory barriers to cogeneration (by June 2000)

Under the National Greenhouse Strategy, structural, legislative or regulatory barriers to cogeneration were to be identified and addressed consistent with the principle of neutrality of treatment of energy sources.

Structural, legislative and regulatory barriers to cogeneration and renewable generators have been documented in two recent reports: the Allen Consulting Group report commissioned by the Department of Industry Science and Resources, *Energy Market Reform and Greenhouse Gas Emission Reductions* (March 1999), (Allen Report), and in the *Renewable Energy Action Agenda* (June 2000). Principal among these issues is the impact of Transmission Use of Service (TUOS) charges on the competitiveness of cogenerators.

TUOS charges have two components: a variable component relating to actual use of the transmission system and a fixed component to facilitate recovery of sunk costs associated with existing transmission investments.

Under the present arrangements, TUOS charges are paid entirely by end customers. Remotely located generators do not face any charges for transporting electricity to market. These arrangements create a significant competitive disadvantage for generators located within a distribution network, such as cogenerators. Their customers pay these TUOS charges even when they do not use the transmission network. NECA estimates that TUOS represents around 8 per cent to 10 per cent of delivered electricity charges.

This anomaly was recognised by NECA in its *Transmission and Distribution Pricing Review* report (July 1999). The Report's recommendations include Code changes to require distributors to pass on savings to cogenerators resulting from the reduced use of the transmission system by their customers (ie the variable component). This change has the potential to reduce the effective TUOS charge by around 50%, to between 4 per cent and 5 per cent of delivered electricity charges. The Australian Competition and Consumer Commission is expected to release its final determination on NECA's proposed Code changes in August 2000.

In addition, NECA is currently progressing the *Review of the Scope for Integrating the Energy Market and Network Services* (the RIEMNS Review). This Review includes an evaluation of current regional boundaries and methods for calculating transmission loss factors, with a view to improving locational pricing signals within the National Electricity Market.

Improved locational pricing signals will favour generators that are located closer to load, compared to existing, remotely located generators, who will be required to pay for increasing transmission losses as electricity is transmitted across a greater number of regional boundaries. Greater use of locational

pricing would help to create new competitive opportunities for embedded generators, including renewable and cogenerators.

Further reform in this area has the potential to offset the impact of the fixed component of the TUOS charge, which would eliminate any material disadvantage to cogenerators resulting from the TUOS charging regime. The recommendations of this Review are likely to be implemented over the next three years, inclusive of the one year notification period required under the Code for alteration of regional boundaries, subject to the ACCC's response to the review.

Reforms in the gas transportation sector in particular have produced positive outcomes such as reduced gas haulage prices and enhanced security of supply, benefiting downstream industry.

Ongoing reforms in the gas market to reduce impediments and remove barriers to competition along all stages of the gas supply chain recommended in the Allen Report are being pursued through the recently established Gas Policy Forum. This Forum, established by the Commonwealth, includes jurisdictions, national regulatory bodies, and the gas and electricity industry. As such it will be well placed to provide high level oversight of, and advice to, Governments on the progress of the Commonwealth, States and Territories in implementing existing gas sector reforms, priorities for future gas policy development in relation to 'free and fair trade in natural gas, and policies as they may relate to the growth of the gas market, including convergence and greenhouse issues. The Forum will also facilitate a broad review of the gas access Code following completion of the first round of access arrangements.

Implementation by jurisdictions of acreage management recommendations from the Upstream Issues Working Group report and full retail contestability over the next two years (large industrial gas customers are already fully contestable) should contribute to greater penetration of natural gas in the nation's energy mix to achieve efficient cogeneration and improved greenhouse outcomes.

4.1 A(vii) Address structural, legislative or regulatory barriers to renewable energy and energy efficiency (by June 2000)

Under the National Greenhouse Strategy, structural, legislative or regulatory barriers to renewable energy and energy efficiency were to be identified and addressed in a manner consistent with the efficient operation of the market.

The greatest impediment to increased market penetration of renewable energy remains its cost. On the 20 June 2000, the Minister for Industry, Science and Resources launched the *Renewable Energy Action Agenda.* The Action Agenda establishes a policy framework to promote growth in a commercially viable and internationally competitive Australian renewable energy industry.

In addition to promoting the growth of renewable energy, the Government is also introducing efficiency standards for new and existing electricity generation facilities. The final report prepared by the Efficiency Standards Working Group was released in February 2000 and outlines measures aimed to encourage movement toward best practice in the efficiency of fossil-fuelled electricity generation, while recognising issues such as cost effectiveness and regional diversity. The Minister for Environment and Heritage, Senator the Hon Robert Hill, officially launched the Measure on 29 June 2000 and the standards formally took effect on 1 July 2000.

Concerns have been raised that certain aspects of the current market arrangements, such as network pricing arrangements, operate to restrict the entry of renewable projects. These structural, legislative and institutional barriers were identified in the Allen's Report (March 1999) and highlighted in the *Renewable Energy Action Agenda* (June 2000). In particular, vesting contracts and TUOS charges were identified as significant impediments to renewables and energy efficiency.

Vesting contracts were introduced to ensure a smooth and orderly transition to a fully competitive wholesale electricity market and were always intended to be temporary in nature. Vesting contracts will expire from January 2001.

TUOS charges are being addressed through NECA's Transmission and Distribution Pricing Review and the RIEMNS review. The Transmission and Distribution Pricing Review's recommendations have the potential to halve the effective TUOS for embedded generation customers to between four and five percent of the total delivered electricity charge. In addition, further reform resulting from the outcomes of the RIEMNS Review has the potential to offset the remainder of the TUOS charge, thereby eliminating any material disadvantage to renewable generators resulting from the TUOS charging regime.

NECA is also undertaking an initiative to facilitate and encourage a more pro-active demand-side management response within the NEM. The initiative is

examining, amongst other things, the impediments in current market arrangements to the development of a vigorous and competitive demand-side response, and ways in which the market framework could facilitate customers gaining the full value of their demand-side response. Specifically, the initiative will include examination of: the regulatory framework; commercial incentives; technical coordination; market information and communication; and transaction costs.

As a first step, NECA has conducted a survey of retailers and end-use customers to assess the current extent of demand-side participation and prevailing market attitudes towards it. The survey findings will provide a basis for shaping further processes to overcome any potential structural or code-based barriers to greater demand-side participation. Improved demand side management may create new opportunities for renewable generators to participate within the NEM.

4.1 B(i) Monitor operation of the market...to assess its impact on greenhouse gas emissions (first assessment and report to be completed by July 2000)

The ANZMEC analysis of trends in energy supply and use in the national energy market ["Energy Trends" publication (incorporating measure 4.1 B(i) of the NGS)] is currently being conducted. The original goal was to have the first draft of the report completed by the end of July 2000, in time for the August 2000 ANZMEC Ministerial meeting. However, delays in provision of some essential data to assess the trends in energy production and use, and to produce the required indicators, are still to be obtained before the final assessment can be presented. It is expected that the report will be delivered to ANZMEC Ministers late in November 2000.

4.2 (i) Efficiency standards for different fossil fuel classes to be applied to new electricity projects, significant refurbishments and existing generation (standards for new power stations to be in place from 2000)

Efficiency standards for new, refurbished and existing power stations using fossil fuels are in place in 2000. The framework, developed by a technical working group comprising representatives from all Commonwealth, State and Territory governments as well as industry and energy users, was released in October 1999 for public comment. Detailed technical guidelines for the measure were released in January 2000. Workshops were held with the majority of generators affected by the standards during April and May 2000. "Generator Efficiency Standards" took effect from 1 July 2000.

4.6 (iv) Collate data on the renewable energy services industry (to be collated by December 1999)

The Renewable Energy Internet Site (http://renewable.greenhouse.gov.au) was launched in October 1999. It contains among other things a map of significant renewable energy installations in Australia and a database of industry members. The database enables members of the public to find players in the Australian renewable energy industry. It has over 500 entries including business, government, universities, research institutes and non-profit organisations. The database can be searched by product or organisation, and all searches can be done for the entire database or a single state of Australia. Organisations wishing to be included in the database can advise their details online.

The Australian Greenhouse Office is currently adding to this information by participating with the Sustainable Energy Industry Association, the Department of Industry, Science and Resources and relevant State agencies in conducting a sustainable energy industry national survey. Questionnaires have been sent to 2000 organisations understood to be involved in renewable energy and energy efficiency.

5.1 Examine economic policy instruments relating to transport to ensure they are consistent with fiscal, economic and environmental policy, including greenhouse objectives (to be completed in 1999/00)

The Bureau of Transport Economics is undertaking this task at the request of the Australian Transport Council comprising Commonwealth, State and Territory transport ministers. A final report is expected to be considered by transport ministers when they meet in November 2000.

5.4 Integrated transport investment framework (project proposals to be framed this way from January 2000)

No Commonwealth actions to date in the context of the NGS. However, the Commonwealth along with other jurisdictions has been examining this issue as part of the work program of the National Taskforce on Best Practice Land-use and Transport Planning established under Measure 5.3 of the NGS. It is expected that a report will be provided to the ATC in November reporting on this issue.

5.7 Improving public transport services (plans to be initiated by 1999/2000 for urban centres with populations of 200 000 and above)

Measure not applicable to the Commonwealth. This measure is being pursued by the States and Territories.

5.8 New public transport modes and technologies (forum to be established by July 1999)

The Commonwealth Department of Transport and Regional Services has undertaken consultations with States and Territory agencies and interested academic and community groups. The aim of these consultations has been to further define the objectives and methodology of the project. A report on the forum will be provided to the Australian Transport Council at its meeting of November 2000.

5.9 Support for walking and cycling (1999/2000)

Parts (ii) and (iv)

The National Bicycle Strategy has been revised and updated. The Commonwealth is assisting in the delivery of this measure in the context of the work program being implemented by the Australian Bike Council.

5.14 Study of opportunities to reduce freight transport emissions (studies to be completed by July 2000)

The study of opportunities to reduce freight transport emissions is being addressed by the Australian Transport Council (ATC) though two processes.

The potential role of Intelligent Transport Systems for reducing freight emissions is being progressed as part of a larger joint consultancy with Environment Australia and the Australian Greenhouse Office into the role ITS can play in addressing air quality and greenhouse emissions. This project is due to report in October 2000.

Separately, ATC has tasked the Marine and Ports Working Group and Rail Working Group (comprising Commonwealth, State and Territory officials) to review opportunities for reducing greenhouse emissions from freight transport, including the potential for modal shift. Consultants will shortly be commissioned to undertake industry case studies to identify options to reduce freight transport emissions and to deliver the analytical tools to assess the relative greenhouse benefits of possible options. ATC will consider interim results from this project in November with the final outputs to be considered in the first quarter of 2001.