

THE AUSTRALIA INSTITUTE

**AUSTRALIA'S GREENHOUSE STRATEGY:
CAN THE FUTURE BE RESCUED?**

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Discussion Paper Number 3
February 1995

ISSN 1322-5421

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Abbreviations

ABARE	Australian Bureau of Agricultural and Resource Economics
AMEC	Australian Minerals and Energy Council
ANZMEC	Australian and New Zealand Minerals and Energy Council of Ministers
CO ₂	carbon dioxide
DPIE	Department of Primary Industries and Energy
EEA	Economic and Energy Analysis Pty Ltd
EMTF	Energy Management Task Force
ESAA	Electricity Supply Association of Australia
ESD	Ecologically Sustainable Development (Working groups)
FCAI	Federated Chamber of Automotive Industries
FCCC	Framework Convention on Climate Change
GWA	George Wilkenfeld and Associates Pty Ltd
HERS	Home Energy Rating Scheme
IC	Industry Commission
IGAE	Inter-Governmental Agreement on the Environment
IRP	integrated resource planning
LECNSW	Land and Environment Court of NSW
MEPS	Minimum Energy Performance Standards
MW	megawatts
Mt	millions of tonnes
NAFC	National Average Fuel Consumption Program
NEMP	National Energy Management Program
NGRS	National Greenhouse Response Strategy
RAPS	remote area power systems
UNEP	United Nations Environment Program

Summary

The National Greenhouse Response Strategy (NGRS) agreed between the Commonwealth and the States has failed to make any impact on Australia's greenhouse gas emissions. After two years of its operation, there is no evidence that even one tonne of carbon emissions has been saved as a result of the NGRS. Moreover, Australia's excess of emissions over the target of the Framework Convention on Climate Change -- to return to 1990 levels by the year 2000 -- is likely to be far greater than has been admitted by the Commonwealth Government.

Consequently, Australia has passed up substantial 'no-regrets' gains in energy efficiency, and our ability to participate effectively in international efforts to tackle climate change has been seriously compromised. Indeed, if all countries adopt a position based on special pleading, as Australia appears to be doing, then the complex and difficult international negotiations to reach a feasible agreement could collapse.

The threat of climate change is a global one, and all nations need to consider whether they will participate in global efforts to address it. A rational and prudent assessment of the risks means that governments, companies and individuals must all take steps to reduce the greenhouse gas intensity of those activities over which they have control.

The issue of global warming is a classic case of an 'externality', that is, a cost associated with an activity that is not met by the producer or consumer. This, combined with the long-term nature of the greenhouse problem, will require that governments take the lead in developing the response framework and implementing policies to reduce emissions.

The failure of the NGRS derives from a failure of governments to show leadership, to reconcile conflicting policy objectives and to distinguish the public interest from narrow commercial interests. This has been compounded by a lack of knowledge of the energy market in parts of the bureaucracy, and a lack of informed public debate and scrutiny.

Nearly every major energy supply decision taken in Australia in the two years since the NGRS was adopted has favoured the option with the *higher* greenhouse gas emissions. In instances where governments have not themselves directly made the decisions, they have failed to give the decision makers concerned any signal that greenhouse gas emissions need serious consideration.

For the foreseeable future, the national gains from carefully targeted action will far exceed the national losses, and substantial greenhouse gas reductions can be achieved at zero or negative cost. The elements of a moderate but effective national greenhouse response strategy are:

- a commitment to build no further coal-fired power stations;
- a low level carbon tax to promote energy efficiency and renewables;
- establishment of a Sustainable Energy Authority;
- mandatory energy standards for equipment and buildings;
- a credible program to increase the fuel-efficiency of vehicles;
- integration of greenhouse policies with micro-economic reform policies in the energy sector;
- an end to land clearing;
- a clear strategy for transition to renewable energy use in the longer term; and
- adoption of feasible national greenhouse gas reduction targets.

1. What Is At Stake?

1.1 The international situation

The threat of catastrophic climate change due to human-induced changes in the composition of the Earth's atmosphere is one of today's most urgent environmental issues. The natural 'greenhouse effect' has long been familiar to the scientific community, but awareness of the dangers of 'enhanced' global warming grew during the 1980s. Since 1985 there has been a succession of international meetings, conferences, summits and conventions on the issue. Australia has been an active participant in these international events, and an elaborate network for research, coordination and response embracing all levels of government and a wide range of experts and interest groups has been established within Australia.

It is now over four years since the Commonwealth Government adopted an 'interim planning target' for reducing Australia's greenhouse gas emissions, and more than two years since the Council of Australian Governments endorsed the *National Greenhouse Response Strategy* (NGRS). Australia, along with 167 other countries, is a signatory to the Framework Convention on Climate Change (FCCC), the primary instrument of international cooperation on this issue.

The FCCC entered into force on 21 March 1994. In March 1995 the parties to the convention will hold their first meeting, to review progress made individually and collectively, and to discuss the need and scope for further action. As part of the preparation for this 'Conference of the Parties', each country submitted a 'National Communication' in September 1994, detailing an inventory of its greenhouse gas emissions in 1988 and 1990, and the steps it had taken to carry out the obligations it had assumed through choosing to participate in the FCCC.

The Commonwealth Government is currently reviewing the effectiveness of Australia's response so far, considering what further domestic action may be necessary and formulating its strategy for the Conference of the Parties. There is a danger that Australia and other countries at the Conference will subvert the collective global interest through their pursuit of too narrow a perception of national self-interest. Alternatively, there is a possibility for the Australian Government to take a different stance, one which casts off the special pleading that currently seems likely to form the basis of our approach to international negotiations, and adopts a position of leadership as it did in negotiations over the protection of the Antarctic and over APEC.

If the risks of climate change are to be reduced, then self interest, personal and national, can only be served through effective collective action. Given the degree of distrust between nations, in this as in all other matters, all proposals for collective action will be judged against the self-interest of the proponents and against their ability to demonstrate that they are capable of practising what they preach.

The present indications are that Australia will seek international arrangements which will suit its perceived economic interests in continuing to use and export large amounts of coal, the most greenhouse gas-intensive of all energy forms. On the face of it, this is so contrary to the imperatives of reducing global greenhouse gas emissions that other countries (and many people in Australia) will need to be given a reason why this is in the global interest, and not just in Australia's.

Elaborate explanations are being devised within the Commonwealth bureaucracy. These appear to centre on the precept that burning Australian coal here and overseas, preferably with Australian technology, would somehow displace the less efficient use of coal elsewhere. There appears to be little consideration to alternatives to coal and current coal-burning technologies, including technologies for greater efficiency of coal use, natural gas and renewable energy systems, all of which Australia is also in a position to export.

1.2 The importance of an effective domestic greenhouse strategy

It remains to be seen whether special pleading is adopted as national policy, and if so whether Australia's delegates have any chance of convincing an international audience of sceptical nations, each of which will no doubt be clamouring for the adoption of strategies which suit *its* particular circumstances. It is a safe assumption that only those nations which can demonstrate some real commitment to reducing greenhouse gas emissions domestically will have any chance of being taken seriously.

This paper examines whether Australia can indeed demonstrate such a commitment, and concludes that it cannot. There is no evidence that the National Greenhouse Response Strategy has saved *one single tonne* of greenhouse gas emissions which would not have been saved in any case and for other reasons. In other words, there has been no departure from 'business as usual'. The principles in the NGRS have been routinely ignored at all levels of government, and the specific actions and programs in the NGRS have been delayed or watered down even before their implementation has been seriously considered.

The Commonwealth Government would not serve the national interest if it sought to conceal the true position from its own citizens or from other parties to the FCCC. It is necessary to recognise the failure of the NGRS because in a world of open information it will be impossible to conceal anyway. Just as Australia will, and should, scrutinise other countries' positions and statements to better understand the differences between rhetoric and reality, so other countries will scrutinise ours. The only defensible response is to address the issues openly and to take effective steps towards the many 'no-regrets' options embodied in the NGRS.

This paper examines the reasons for the failure of the NGRS and makes a number of suggestions for measures which are:

- consistent with the intent of the NGRS;
- low-cost or revenue neutral;
- capable of implementation; and
- likely to be effective.

Whether or not these measures are taken up is in many respects a test of whether Australia is prepared to make even modest, low-cost greenhouse gas reductions, and hence, whether it is entitled to a serious hearing in international forums on climate change. If not, there is a danger that Australia will lose the opportunity to influence whatever international consensus might emerge. The only alternative then may be to withdraw altogether from international efforts to reduce the risk of climate change. The issues are so complex and intractable that international efforts to control greenhouse gas emissions may well collapse; Australia's current position based on special pleading could contribute to such a collapse.

1.3 The costs of inaction

One of the main barriers to action has been a concentration on the narrow economic costs, without a counter-balancing consideration of the benefits of action, or the costs of inaction. Potentially, the costs of inaction are extremely high. While there is still no general scientific agreement that global warming is taking place, there is broad consensus among climate scientists that warming will occur. However, our understanding of what the impact of such warming would be on the human and the natural world is still relatively rudimentary.

Several years of intensive scientific research have confirmed that general global warming is highly likely to occur (CSIRO 1992, 1994) and climatic trends in recent years have provided some evidence that it may already be occurring. The seven hottest years since reliable records began have all occurred since 1980, with 1990 the hottest (Leggett 1993). Extreme climatic events such as droughts, heatwaves, storms and flooding appear to be becoming more frequent and more severe worldwide.

The current drought and the east coast bushfires of January 1994 are timely reminders of the impact of severe climatic events on Australians and on Australia's economy. Even a small increase in the frequency and severity of such events would impose great costs. Apart from direct costs, we could expect greater instability in our region, and increase in the numbers of economic and environmental refugees.

The impact of global warming on natural ecosystems would also be severe. If climate were to change slowly enough, and there were no major impediment to the migration of plant or animal populations, then ecosystems could have some chance to adapt or migrate. However, the likely rate of warming is projected to approach 0.3°C per

decade, which may be 10 to 100 times the rate ecosystems have experienced in the last few million years, and far higher than the rate of warming at the end of the last glacial period, about 10,000 years ago (Huntley 1990). Furthermore, the sheer density of human settlement and agriculture greatly reduces the scope for species migration, and raises the prospect of widespread extinction of plant and animal species (Mitchell and Williams 1994).

Most people would agree that if these are the potential cost of inaction, they are so high that considerable action is warranted by way of insurance even if their likelihood is still uncertain. The cost of that insurance, and how it should be distributed across the community, remain matters of legitimate debate. Those groups who do not wish to bear any of the cost of this insurance (such as the fossil fuel industries) will have an incentive to overstate the costs, to avert or forestall action by the general community. However, taking action to reduce emissions brings other benefits, and inaction other costs and risks, apart from those associated with long-term climate change (which cannot be averted *solely* by unilateral action on Australia's part). The following four scenarios illustrate some of these costs.

International action, with Australia's participation

Working towards an effective international consensus, with Australia's full participation, is not only the approach with the best chance of minimising the damage from climate change, but the only morally supportable course. Whether or not such a consensus actually results in averting the worst effects of global warming, it would forge an international framework better capable of dealing with the consequence of climate change and other global environmental concerns.

International action, without Australia's participation

It may be that an international consensus embracing a significant number of the world's greenhouse gas emitters can be forged, but that Australia will be excluded from it (or choose to exclude itself) because its proposals and arrangements will prove unacceptable to the consensus nations. If Australia finds itself outside this 'greenhouse bloc', its energy and energy-intensive exports may well be excluded or subject to barriers to trade. In fact, non-energy exports such as agriculture and tourism may also be affected. Both of these rely heavily on Australia's reputation as an environmentally clean country, a perception which is easily dented (as we have seen from the recent beef contamination issue).

By choosing to exclude ourselves from a greenhouse consensus, we would also risk losing credibility and hence our ability to influence events in the other international forums where we have carefully built up our reputation, from the United Nations and APEC to the Antarctic Treaty and the International Whaling Commission.

No international action, no unilateral action by Australia

If an international consensus should prove impossible, all countries will have to consider their own positions. Considering the long-term risks of climate change, we would have to hope that those nations who account for a significant share of greenhouse gas emissions, such as the USA, Russia and China, take some action to reduce their emissions.

If we took no action, we could expect some friction in dealing with any countries who did. We would have consigned ourselves to a group of recalcitrant nations, and our trade may well be at some risk, particularly if our actions and self-interested preconditions are implicated in the failure of the international consensus.

No international action, unilateral action by Australia

Some people may think that it would be folly to take any action at all to reduce greenhouse gas emissions if other countries (accounting for some ill-defined ‘critical mass’ of global greenhouse gas emissions) do not. However, this need not be the case. Most of the proposals in the NGRS are cost-effective in their own right, without assigning any monetary value to greenhouse gas emissions. That is the basis of the ‘no-regrets’ approach on which the NGRS is based. By delaying the implementation of ‘no-regrets’ proposals we are continuing to use resources inefficiently and hampering our international competitiveness.

The success of the NGRS would be a sign that Australian governments and institutions are capable of implementing a nationally agreed policy that represents a broad national consensus, evolving as it has out of the extensive and exhaustive Ecologically Sustainable Development process. Its failure would indicate that inertia, commercial self-interest and the ideology of unfettered markets still dominate public policy in this area.

2. The Evolution of Australia's Greenhouse Strategy

Climate change emerged as a public issue in Australia in 1988, about three years after the scientific conference at Villach, Austria, which provided the first authoritative scientific evaluation of the magnitude of climate change which may result from continued increase in the atmospheric concentration of greenhouse gases.

In June 1988 a meeting of more than 300 scientists and policy makers from 48 countries was held in Toronto under the banner *International Conference on the Changing Atmosphere: Implications for Global Security*. Although the meeting had no special status, it quickly became famous for its Call for Action, which urged the adoption of an initial global goal to reduce carbon dioxide emissions by about 20 per cent below 1988 levels by the year 2005. This Toronto Target was not based on any analysis of the reductions necessary to reduce the risk of catastrophic change to an acceptable level, but it provided a focus for the magnitude and urgency of the international task at hand.

In November 1988 the Intergovernmental Panel on Climate Change (IPCC) was established under the auspices of the United Nations Environment Program (UNEP) and the World Meteorological Organisation (WMO). Its purpose was to report to the Second World Climate Conference (scheduled for Geneva in October 1990) on the science and impacts of global warming, and strategies to forestall, delay or adapt to the possibility of climate change.

While the IPCC was going about its task, governments in Australia and elsewhere came under increasing public pressure to respond to the greenhouse issue. In March 1989 representatives of 24 nations, including Australia's Minister for Foreign Affairs, signed the *Declaration of the Hague* which recognised the global significance of climate change and called on all nations to participate in the international frameworks being established within the United Nations, including the IPCC.

In mid-1989 the governments of NSW and Victoria publicly adopted the Toronto target 'as an interim objective for planning purposes', even before there was any information on the means by which such a target could be met in Australia. State governments were spared the need to develop any actual plans to meet their targets by the fact that the issue rapidly moved into the national arena. In April 1989 the Commonwealth set up a national climate change program, which included the establishment of a National Greenhouse Advisory Committee of scientific advisers, and of a Prime Ministerial Working Group to assess what targets were achievable.

The greenhouse debate soon became polarised between the environment ministers and their departments on the one hand, and the energy ministers and their departments on the other. Climate change is primarily an environmental issue, and the environment portfolios urged action commensurate with the scale of the problem. However, the energy (and to a lesser extent, transport) portfolios remain responsible for most of the means of reducing greenhouse gas emissions.

It has always been clear that any realistic strategies to contain Australia's greenhouse gas emissions must focus on the energy system. In June 1990 the Australian Minerals and Energy Council (AMEC) of Commonwealth, State and Territory Ministers published its report, *Energy and the Greenhouse Effect*, which recognised the energy dimensions of the issue. In August 1990 AMEC initiated a number of studies and programs aimed at reducing the greenhouse-gas intensity of the energy system, although AMEC avoided discussion of any specific targets.

As the Second World Climate Conference approached, the Commonwealth Government felt under pressure to make some gesture of commitment towards greenhouse gas reduction, so that Australia would appear to side with those nations which showed the most concern on climate change.

On 11 October 1990 the Commonwealth Government adopted an 'interim planning target' of stabilising Australia's emissions of greenhouse gases at 1988 levels by the year 2000 and reducing them by 20 per cent by 2005, with the important caveat that 'the Government will not proceed with measures which have net adverse economic impacts nationally or on Australia's trade competitiveness in the absence of similar action by major greenhouse gas producing countries'.

At the same time, the Commonwealth sought the advice of the Industry Commission and of the Ecologically Sustainable Development (ESD) Working Groups on the cost and benefits of taking action to achieve the target. The responses, which were completed late in 1991, diverged. The Industry Commission found that taking unilateral action would be costly. However, it could not measure the benefits of action to reduce emissions, and stated that the inter-temporal nature of the issue and the uncertainties involved made it an *ethical* issue for government to address (IC 1991). The ESD Working Groups, on the other hand, concluded that there was a large range of actions which would be cost-effective on energy grounds alone, so that the additional benefit in greenhouse gas reduction would be free.

The next milestone in the evolution of the issue was in 1992. At the UN Conference on Environment and Development in Rio in June (the Earth Summit), Australia was one of the 155 nations which signed the United Nations Framework Convention on Climate Change (FCCC). This came into force on 21 March 1994, by which date 167 nations had signed and 60 had ratified the Convention. The Convention designates 2000 as the year by which signatories will endeavour to return greenhouse gas emissions to their 1990 levels (Article 4.2). Although this is not an obligation on signatories at present, it is likely that the issue of such an obligation will be raised at the first Conference of the Parties, which is scheduled to be held in Berlin in March 1995.

The FCCC already commits signatories to, among other things:

Take climatic change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions... (R11, Article 4.1 (f)); and

...adopt national policies and take corresponding measures on mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases... (R11, Article 4.2 (a)).

The FCCC text notes that ‘national’ includes ‘regional economic integration organisations’: ie that national governments have obligations to ensure that the relevant parts of the FCCC apply at all levels of planning.

During 1992 the Commonwealth and the States worked on a national framework to give effect to monitor the impacts of the wide range of measures which might have some impact on greenhouse gas emissions. In December 1992 the Council of Australian Governments endorsed the *National Strategy for Ecologically Sustainable Development* and the *National Greenhouse Response Strategy* (NGRS). The NGRS is assessed in the next section.

3. What Progress Has Been Made?

It is now over two years since the adoption of the NGRS, over four years since the Commonwealth Government's adoption of the interim planning target and more than six years since climate change first became a public issue of national and international significance. What has actually been done to reduce greenhouse gas emissions?

Australia's greenhouse gas emissions result from the activities of many commercial, public and individual decision makers. The largest emitters, the energy industries, have taken no measures to limit their emissions specifically in response to the climate change issue, although they have been quick to claim any greenhouse benefits associated with actions undertaken for commercial reasons, such as the early retirement of older power stations made possible by excess capacity arising from the planning mistakes of the early 1980s.

Governments have established no new structures or programs aimed solely at reducing greenhouse gas emissions. There is no single authority, either at the Commonwealth or State level, with clear responsibility for planning or pursuing greenhouse gas reductions. Major decisions bearing on greenhouse gas emissions have been left to normal commercial processes, to the *ad hoc* decisions of State governments and to existing Commonwealth-State working arrangements, however loose these may be. Under these circumstances it is hardly surprising that progress on the NGRS has been glacial.

3.1 Energy supply

The NGRS objective for energy supply is to 'limit greenhouse gas emissions arising from energy production and distribution wherever economically efficient by minimising greenhouse gas emissions per unit of each type of energy supplied to end users, and by promoting alternative energy sources that have the potential to lower greenhouse gas emissions per unit of energy supplied' (NGRS 1992, p.16).

'Governments agree that a high priority will be given to ...

- * measures to address greenhouse gas emissions in the production and use of energy, including the transport sector, with initial emphasis on:
 - * an integrated least-cost approach to energy planning;
 - * energy pricing to reflect economic, social and environmental cost better;
 - * promoting greater use of cogeneration schemes in energy supply... (NGRS 1992, p.13)

A number of energy supply strategies are listed, relating mainly to increasing the efficiency of electricity and gas markets, requiring utilities to report performance against greenhouse indicators, and encouraging the greater use of renewable energy forms in energy supply.

Key energy supply decisions

State and Territory governments have considerable influence over the decisions of the publicly owned energy utilities, and nearly every major energy supply decision they have taken in the two years since the NGRS was adopted has favoured the options with the *higher* greenhouse gas emissions:

- * the current Western Australian government endorsed the decision of its predecessor to build a coal-fired power station at Collie, even though an independent inquiry found that natural gas, of which WA has plentiful supplies, is the cheapest option (quite apart from being less greenhouse gas-intensive);
- * the NSW government has proceeded to subsidise the extension of the electricity grid into the sparsely populated north-west of the State, despite the fact that this represents the prime target market for renewable energy-based remote area power systems (RAPS), and RAPS supply would have been cheaper. Furthermore, the government suspended its own RAPS subsidy scheme to force people in the area to connect to the grid; and
- * the Victorian Government has cancelled an undertaking to purchase energy from a proposed 10 MW wind farm at Toora, effectively leading to the cancellation of the project.

In instances where governments have not themselves directly made the decisions which will lead to higher greenhouse gas emissions, they have failed to give the decision makers concerned any signal that greenhouse gas emissions need serious consideration.

In a recent case before the Land and Environment Court of NSW, the approval for a new 135 MW coal-washery power plant in the Hunter Valley was challenged on the grounds that there is no need for it, given the massive over-capacity of electricity generation in NSW, and that over its 30 year operating life it would increase carbon dioxide (CO₂) emissions by between 12 and 28 million tonnes compared to the alternatives. The Court accepted that the power station 'will emit CO₂, which is a greenhouse gas, and will contribute to the enhanced greenhouse effect, a matter of national and international concern' (LECNSW 1994). However, the Court could find no guidance on what, if any, weight this should be given in decisions about actual projects:

It is important also to bear in mind that the Framework Convention, the IGAE (Inter-Governmental Agreement on the Environment) and the NGRS do not constrain individual action. There are as yet no specific directives or obligations cast upon individual operators in the energy field. This may come, as a result of further response measures, but thus far the response to the enhanced greenhouse effect is in the realm of government policy.

It is clear, therefore, that the NGRS has had no impact on the greenhouse-intensity of energy supply, and will not have until the general intent of the NGRS is translated into clear and specific guidelines against which each proposal for energy supply can be judged.

Energy planning, pricing and co-generation

Contrary to the stated objectives of the NGRS, governments are reducing rather than enhancing the scope for coordinated planning in the energy system, and limiting the introduction of cost-reflective pricing.

Integrated least-cost planning, or integrated resource planning (IRP), is a planning methodology that seeks the least-cost option for meeting customers' needs for energy services such as lighting, space heating, air conditioning, cooking, motive power and so on. 'Least cost' is determined from the perspective of the community as a whole and should include all costs, including environmental costs. The IRP methodology specifically compares both supply-side options (such as building power generating units) with demand-side options (such as introducing energy efficiency) on an equal basis in determining the least-cost option.

Vertically integrated utilities, which generate, transmit and retail energy, have both the capability and (given the right incentives by government) the motivation to practice IRP. The current fashion for utility disaggregation in the hope that it will encourage competition makes utility-driven IRP virtually impossible. Governments can either impose an external IRP framework, or take steps to contain the increases in energy supply cost that will come from an inability to implement IRP (IRP 1994).

Some people believe that 'correct' energy pricing is the key to all energy policy objectives, including IRP and greenhouse gas reduction. However, many avenues to increase the efficiency of pricing during the progression to a national electricity market have been closed off. Governments in Victoria and in NSW have already deferred the introduction of pricing regimes to reduce regional cross-subsidies. The Victorian Government has made a commitment to maintain the existing cross-subsidies from urban to rural household electricity consumers for the rest of the century, and the NSW Government has ruled out cost-reflective transmission pricing for the present. Electricity users in outlying areas will have no more reason to use energy efficiently, or to substitute renewables for electricity, than they have now.

Co-generation is one area where some activity is discernible. However, gas-fired co-generation has been economical in many parts of Australia for years, but has not developed further due to the restrictive conditions for grid connection imposed by electricity utilities, and the fact that overcapacity has allowed generators to offer electricity at predatory prices to keep out competitors. Governments are only now addressing these barriers, and in some cases offering subsidies to cogeneration projects that are marginally economic, in order to demonstrate that their electricity industry reforms do indeed bring new firms into the industry.

3.2 Energy efficiency

Apart from energy supply issues, the NGRS also emphasises efficiency of *energy use* and the integration of supply and demand. It states that

Governments agree that a high priority will be given to ...

- * measures to address greenhouse gas emissions in the production and use of energy, including the transport sector, with initial emphasis on:
 - minimum performance standards for appliances and equipment in the household, industrial and commercial sectors;
 - fuel efficiency improvement in new motor vehicles; and
 - provision of information for energy users; and
- * research and development in relation to energy efficiency, energy demand reduction, renewable energy systems and reduction of adverse environmental impacts. (NGRS 1992, p.13).

The NGRS may turn out to have some limited impact on the efficiency of energy use in Australia, but the early signs are far from promising. Existing programs have been strengthened to some extent. The Commonwealth Government has operated a National Energy Management Program (NEMP) since the late 1970s. This was allowed to decline continuously during the 1980s, and expenditure was well below \$1 million per annum between 1983 and 1990. The Commonwealth expanded the NEMP after its October 1990 decision on interim planning targets, and expenditure has now increased to about \$6 million per annum.

Most of the States and Territories also had pre-existing energy management programs. Those concerned with increasing energy efficiency within the respective governments' own buildings and vehicle fleets, and with the operation of energy information centres and services, continue to operate independently.

During the 1980s, many energy efficiency measures which had originally started as State programs, such as appliance energy labelling, became national in their scope and greater coordination became necessary. The pre-existing framework for coordination of energy efficiency measures between Commonwealth and State energy ministers was strengthened in 1990, with the ANZMEC's establishment of the Energy Management Task Force (EMTF) of senior officials. The EMTF is now responsible for most of the large scale energy efficiency programs in the NGRS, the status of which is reviewed below.

Provision of information

General information programs inform people about how energy is used in the home, office or factory and what they can do to use it more efficiently. The Commonwealth Department of Primary Industries and Energy, most State energy agencies and most electricity and gas suppliers have produced and distributed information of this kind since the mid-1980s, and it is now freely and universally available. Perhaps the largest scale general information program to date has been the *Energy Guide* booklet, which the Commonwealth distributed to every Australian household in 1991 as a first stage of the government's greenhouse response strategy.

Some people unfamiliar with the energy sector imagine that such information is not yet available, and that considerable gains in efficiency and reductions in greenhouse gases will result simply from making it available. On the contrary, most householders and businesses now have access to basic information but do not have the opportunity, the motivation or the means to act on it. Where they are prompted to act on it (eg. in response to promotional campaigns to use energy wisely) the gains are minor, expensive to obtain and evaporate once the campaign is over.

Specific information programs encourage and enable people to make the most energy-efficient choices at the time of purchasing an appliance, or designing, purchasing, building or renovating a house. They provide specific information on the relative energy efficiency and sometimes the relative costs of models on the market or alternative construction practices, so that choices can be based on life-cycle costs rather than initial cost alone. Energy audits also yield specific information, related to particular buildings or manufacturing sites, and their existing combinations of equipment and operating practices.

The best known example of a specific energy program is electric appliance labelling, which was implemented jointly by the governments of NSW and Victoria in 1985, and was effectively a national program by 1990. The NGRS commitment to 'develop ... and implement as soon as practicable a national scheme for mandatory energy labelling for major domestic appliances' (NGRS 1992, p.21) was largely an administrative catch-up with market reality. It will not on its own lead to significant increases in energy efficiency or lead to the revitalisation of the labelling program, which was reaching the limits of its effectiveness as early as 1991 (GWA 1991). Although the energy efficiency improvements brought about by labelling in the late

1980s have made a permanent impact on ‘business-as-usual’ energy trends, the impact of energy labelling on the energy efficiency of new appliance purchases will continue to decline unless the program is substantially overhauled.

Labelling programs for some classes of commercial and industrial equipment, for houses (i.e. the Home Energy Rating Scheme or HERS) and even for commercial buildings (i.e. the disclosure of energy costs to prospective buyers or tenants) are envisaged in the NGRS. However, these programs are still some way from implementation, and no work has been done to estimate their potential impacts.

Minimum performance standards

Some decision makers do not respond to general or even specific information programs for one or more of the following reasons:

- split incentives (sometimes called the ‘landlord/tenant’ problem): the person who makes the investment decision is not the ultimate beneficiary of lower energy costs, and cannot recover any additional investment costs from the beneficiary. A typical example is the decision to insulate a rental house;
- decision-making under pressure: this is typically the case with the replacement of a failed water heater, where there is little time to shop around (i.e. the costs of delay are high) and the easiest course is to install a unit identical to the failed unit;
- lack of variety in the market: all products may be made to the same mediocre standard of energy efficiency, so information programs such as energy labelling will not allow the selection of a more efficient model; and
- income constraints: some people are able to identify the most cost-effective investment, but do not have access to the additional funds required at the time.

One effective way to address these barriers is to set minimum energy performance standards (MEPS). MEPS for a wide range of appliances have been in force in the USA since the late 1970s, and nearly all OECD countries have some form of MEPS for buildings. MEPS for refrigerators, freezers and electric storage water heaters are currently under consideration by the Australian and New Zealand Minerals and Energy Council of Ministers (ANZMEC, the successor to AMEC). The MEPS levels recommended for refrigerators and freezers are ‘low level’ in that over half the models on the market today already meet them, so MEPS would eliminate the least efficient. The MEPS levels recommended for water heaters are ‘high level’ in that manufacturers would have to introduce new, more highly insulated products in order to meet them.

These recommendations were subject to rigorous cost-benefit analysis, to establish with reasonable confidence that likely increases in average product price would be

more than matched by the net present value (discounted at an appropriate rate) of projected energy savings (GWA 1993). In other words, the proposals met the 'no regrets' criterion in the NGRS. Even so, the MEPS levels for water heaters were reduced substantially during negotiations between governments and the water heater industry. The refrigerator and freezer industry accepted the recommended levels.

At the ANZMEC meeting in September 1994, Ministers considered whether to proceed with mandatory MEPS, but did not agree to do so because of the position taken by the Victorian Minister for Energy, who was opposed to regulations of any kind, and who did not believe that the case for mandatory MEPS was strong enough to overcome the preference for 'market forces'. This was a clear case of ideology getting in the way of rational policy making.

The industry has since pointed out publicly (on the ABC's *Four Corners* program on 31 October 1994) that the only practical and fair way to implement MEPS is through regulation, something which was never in dispute in all of the negotiations leading up to the ANZMEC meeting. The minimum energy performance standards proposal was ANZMEC's first opportunity to demonstrate a commitment to the NGRS, and it conspicuously failed to do so. Whatever happens with MEPS now, the episode has demonstrated to the public and to the appliance industry how tenuous is the ANZMEC commitment to the NGRS, and how easy it is for individual State Ministers to delay or even derail its key programs.

The progress of MEPS for commercial buildings is another example of the tendency to water down the intent of the NGRS. The development of a Commercial Buildings Energy Code was the initiative of the previous Victorian Government, and was taken over by ANZMEC as part of the NGRS. A major cost-benefit study was completed in 1993, but during the subsequent public consultations it emerged that influential parts of the commercial buildings industry were opposed to a mandatory code. Without investigating the likely differences in effectiveness between mandatory and voluntary compliance, and without referring the matter to ANZMEC ministers, ANZMEC's Energy Management Task Force agreed that compliance with the Code should be voluntary for the private sector, but that consideration should be given to its adoption as the minimum requirement for all new buildings and refurbishments undertaken by governments. ANZMEC itself would not necessarily have pursued the issue with any more vigour. At its September 1994 meeting, Ministers 'agreed that the Commercial Buildings Energy Code, currently being developed is to be a voluntary code' (ANZMEC press release, 5 September 1994).

Fuel efficiency improvement in new vehicles

If the failure to apply the NGRS to decisions about energy supply is the responsibility of the States, and the poor performance on nationwide energy programs is the joint responsibility of the Commonwealth and the States, then the lack of progress on vehicle fuel efficiency is almost entirely the responsibility of the Commonwealth.

Fuel consumption targets for the car industry and information programs for car buyers are two closely linked ways in which governments can influence vehicle fuel efficiency trends. In the absence of a mandatory obligation, manufacturers are only likely to offer and promote more fuel-efficient vehicles if they perceive a consumer demand for it, and consumer demand for such vehicles increases in response to effective information programs. (It also increases in response to higher fuel prices, but this option has not so far been proposed as an NGRS response action).

A National Average Fuel Consumption (NAFC) program for passenger vehicles was in place from 1978 to 1987. The principal element of the program was a voluntary agreement between the Commonwealth Government and Federated Chamber of Automotive Industries (FCAI) that the industry would take steps to ensure that the trend in the sales-weighted national average fuel consumption (NAFC) of new passenger vehicles sold in Australia continued to decline in relation to what the trend would have been in the absence of such a program.

The 1993 review made the following findings on the effectiveness of the NAFC program:

Steps beyond those taken so far would be necessary to make the NAFC target program effective. There is no evidence that the 'voluntary' NAFC targets in place from 1978 to 1987 produced any reductions in automobile fuel consumption below what would have occurred in any case, and there is nothing to indicate that continuation of the present 'voluntary' approach pursued by the Government since the reactivation of the NAFC target program will have any different outcome, unless supported by additional taxation or financial measures, and by vehicle information programs more effective than those so far implemented. (GWA & EEA 1993, Vol. 2, J1)

A new NAFC arrangement has been negotiated between the Commonwealth Government and the FCAI. While the details have yet to be announced, it is understood that any targets in the new arrangement will be expressed in substantially similar terms to those in force between 1978 and 1987, i.e. there will be no penalties for failure to reach the targets (as there are in the USA, for example). Therefore, there is no reason to believe that the new arrangement will have any greater impact on the trend in motor vehicle fuel consumption than the previous NAFC program, which was found to be 'negligible' (*ibid.*, Vol. 1, p.118).

It is also understood that the Commonwealth has declined to proceed with a motor vehicle labelling program, which has proved promising in consumer trials, in the face of opposition from the industry. At present the main information program is DPIE's annual *Fuel Consumption Guide*, which is seen by about 5 per cent of new car buyers and used in the purchase decision by only 1 per cent (*ibid.*, Vol. 1, p.119). The guide has now been published for 15 years, so its effect can now be considered as an integral part of the 'business-as-usual' operation of the market.

In other words, the Commonwealth Government has essentially decided to take no effective action in the one area of national energy use over which it has most direct control. It is hardly in a position to criticise the States, private industries or other countries for their slowness to act.

Industry programs and partnerships

Up to the present, almost all large companies and industry associations in Australia have opposed government proposals to reduce greenhouse gas emissions which are likely to be effective and therefore likely to have a real impact on their business activities (there are a few honourable exceptions, such as the whitegoods industry).

The Commonwealth government is now thought to be considering a new program of 'industry programs and partnerships', under which major firms will be invited to adopt targets for reducing the greenhouse gas emissions associated with their activities. This offers an opportunity for industry to participate in the greenhouse debate in a constructive way, and to retain for each firm the freedom to reduce emissions in the most cost-effective and least-disruptive manner. However, since the program may well be the *only* initiative taken to address the demonstrated failure of the NGRS, the likelihood of its effectiveness needs to be carefully considered. Otherwise, it may well follow the pattern of over-stated expectations, lack of commitment and ultimate failure which has become an all too familiar feature of the NGRS.

It is reasonable to conclude that 'industry partnerships' are merely window-dressing to give an illusion of action to both the domestic and international audience, and to further delay the time when real action will be taken, unless the following issues are publicly clarified:

- What classes of greenhouse gas emissions are covered: only those associated with the on-site manufacturing activities of the firms concerned, or also those associated with external energy purchases (eg. electricity) and with the products of the firms (eg. motor vehicles)?
- The ownership structure of many large companies is very complex: how is responsibility for the emissions of partly owned entities accounted, and what happens to agreements as manufacturing units are acquired or divested?
- What is the projected trend in greenhouse gas emissions in the absence of the program, and what is the projected trend as a result of the firm's participation in the program, i.e. what levels of reductions are anticipated?
- Are the reductions to be achieved absolute, or relative to output (i.e. is it acceptable for the firm to increase emissions so long as the emissions intensity per unit output declines)?

- What specific action is the firm taking to secure the projected reductions?
- Will the reductions achieved be independently audited and reported?
- What proportion of national greenhouse gas emissions is covered by the agreements, and what is the projected national impact if all participating firms meet their agreed reduction targets?
- What fall-back options will be contemplated if firms fail to meet their agreed targets: for example, a similar program in New Zealand has been accompanied by a Government commitment to introduce a carbon tax in three years time unless the reductions are on target (Upton 1994).

3.3 What reductions are likely to be achieved?

The first realistic attempt to date to quantify the impact of the measures taken or planned under the NGRS was carried out as part of the preparation of Australia's national communication to the FCCC. The details of the estimates have not been made public, but the most important values were contained in, or may be inferred from, a statement by the Minister for Environment released in September 1994 (Faulkner 1994).

National greenhouse gas emissions totalled 572 millions of tonnes (Mt) of CO₂-equivalent in 1990, and are projected to increase to 654 Mt in 2000. If all measures currently envisaged under the NGRS are implemented, emissions in 2000 are likely to total 610 Mt, i.e. still 7 per cent above the 1990 level. About four-fifths of the increase in emissions is expected to arise from the energy sector, which already accounts for 53 per cent of emissions, so increasing its share still further to 57 per cent.

However, it is now thought that the impact of the NGRS on the energy sector will be minimal, and will reduce energy-related emissions by only about 3 per cent (12 Mt) below the business-as-usual case. This means that a very large share of the 44 Mt of projected reductions which the Minister envisages must come from non-energy sources and from enhanced sinks. Since non-energy sources accounted for 267 Mt net emissions in 1990 and are projected to account for 283 Mt in 1990, the relative impact would need to be major, 32 Mt, or over 11 per cent by 2000.

Non-energy sources and sinks are even more difficult to affect and to monitor than are energy sources. It is unrealistic to imagine that they will yield a *demonstrable* reduction in emissions of a magnitude approaching 11 per cent, when the impact of detailed NGRS programs on energy emissions is now thought to be only 3 per cent. In other words, Australia's shortfall from the FCCC aim -- to return emissions to 1990 levels by 2000 -- is likely to be far greater than has been admitted by the government.

This purported reliance on emissions reduction from the non-energy sectors of the economy and on sink management has not been developed as a considered greenhouse policy option. Rather, it is a means to avoid confronting the lack of success of the NGRS in the energy sector.

4. Why the Strategy Has Failed

4.1 Unrealistic targets

There has never been any real prospect that Australia would meet the 'interim planning target' adopted by the Commonwealth in 1990, which was to reduce greenhouse gas emissions to 20 per cent below the 1988 levels by the year 2005. This 'target' has proven to be a barrier to effective action, since it has made it possible for opponents of action to demonstrate the unacceptability of the measures required to achieve reductions of this magnitude within the ever-shortening time frame. The abandonment of this 'target' is only a matter of time and timing, and it is important that some other quantifiable, and preferably realisable objective take its place.

The FCCC designates 2000 as the year by which signatories will endeavour to return greenhouse gas emissions to their 1990 levels. Although this is not yet an obligation, it is likely that the issue of such an obligation will be raised at the Conference of the Parties in March 1995. The Minister for Environment, Sport and Territories, Senator Faulkner, has already signalled that the FCCC objective is not achievable, unless Australia takes far more vigorous action than so far contemplated. This is one reason for the current interest in developing formulae which would somehow allow Australia to claim credit for greenhouse gas reductions which take place outside its territory. Whether or not such formulae prove acceptable to the other FCCC parties, it is still essential to adopt a realistic target for reductions in greenhouse gas emissions within Australia. The critical aspects of this are the target level and the year, which taken together indicate the required rate of reduction below business-as-usual trends -- although official business-as-usual trend projections are themselves uncertain and questionable.

The Electricity Supply Association of Australia (ESAA) has recently developed a mix of policy measures which, it claims, would return electricity sector CO₂ emissions to 1990 levels not by 2000 but by 2020 (ESAA 1994). This implies a peak in emissions around 2005. It is probable that a broader range of actions than contemplated by the ESAA would be feasible and cost-effective: for example, major shifts from electricity to natural gas at the point of use, not only at the power station. With the aid of the full spectrum of measures, it is a feasible national objective to ensure that domestic net greenhouse gas emissions peak in the year 2000, return to 1990 levels no later than 2010 and continue to fall thereafter.

Obviously, more work needs to be done before a new national target is adopted, and it should be based on independent analysis rather than the work of commercial interests such as the ESAA. Australia would make a more effective and honourable contribution to the FCCC if it embraced such a target and detailed how it proposed to attain it, rather than seem to endorse a target which it had no intention of trying to reach (as occurred in 1990), or withdrawing from the FCCC over the issue.

4.2 Misconceptions about markets

It will be more effective to pursue greenhouse gas reductions through a mix of measures rather than relying on a single policy measure. Effective policy will focus both on energy supply and energy demand, as well as non-energy sources of emissions. The carbon tax has mostly been considered only as an economic instrument operating on energy demand, but recent work has indicated that the impact of a carbon tax depends heavily on how the revenue from the tax is used (Common and Hamilton 1994). Thus the net impact of the tax depends on the level at which it is set and the energy programs funded from the revenue. In addition, even a low-level tax could have a powerful psychological impact insofar as it sent a clear message to industry, and energy consumers generally, that greenhouse policies were here to stay.

Some of the emphasis on blunt economic instruments in the policy debate has been disingenuous, and promoted by business interests in order to deflect government from the pursuit of more realistic and balanced greenhouse policies. However, there has also been a body of opinion, particularly within the Commonwealth bureaucracy, that economic instruments are the only acceptable means of market intervention. The desire to adopt measures which conform to a myth of market perfection has exceeded the desire to be effective.

This is not a view shared by State bureaucrats, who have no illusions about the range of distortions and cross-subsidies embedded in energy pricing, and the determination of their governments to preserve many of them even in the face of micro-economic reform. Furthermore, as this paper has demonstrated, there are still many market barriers and some market failures which prevent customers from responding to energy prices, particularly in the residential sector (ABARE 1991). The rational response to this situation is to continue to work towards cost-reflective pricing, but at the same time to recognise that progress will be slow and incomplete, and so adopt measures which address market imperfections directly through programs such as information, product standards and financing schemes.

4.3 The myth of perfect technologies

There is a body of opinion that claims we need more research, especially on renewable technologies, before committing to a course of greenhouse gas reduction, so that fossil fuel use can be phased out and because more cost-effective technologies will become available the longer we wait. This argument serves the interests of the research communities, as well as the fossil fuel industries who are well aware that renewable sources can have only minimal impact on the energy system in the medium term.

By concentrating attention on renewable sources as the 'perfect' greenhouse response technology, the electricity industries have managed to appear green, while at the same time keeping public attention away from more prosaic programs such as energy efficiency and less greenhouse-gas intensive end use fuels such as natural gas. These

measures would have a far greater and more rapid impact on greenhouse gas emissions and -- unlike renewable means of electricity generation, which they are supporting -- would be beyond their corporate control.

Governments have also been content to spend money on technology research and development as a means of appearing to address the climate change issue while actually deferring real action. The urgency of the climate change issue means we have to use the technologies which we already have, which are in any case more than adequate to realise our objectives. This means focussing (for the next 10-20 years) on the efficient use of fossil fuel technology, and the substitution of gas for electricity at the point of use, as a transition to a substantially renewable energy economy in, say, the period 2010-2030.

The greenhouse issue has also become confused with urban land use and public transportation debates. There are certainly social and environmental advantages in planning for greater public transport use in our cities and for greater use of rail freight. However, it is necessary to recognise that for the foreseeable future the great majority of travel will still be by petrol-powered cars and the great majority of non-bulk freight will be hauled by diesel trucks, so increasing their energy-efficiency will have a far greater and more rapid impact on greenhouse gas emissions than any other transport measure.

4.4 Preoccupation with the National Electricity Grid

In the last few years the focus of electricity policy has been the creation of a 'national' market (at least in the three south-eastern states). Arguments have been advanced that this market will somehow make a major contribution Australia's greenhouse gas reduction aims. Indeed, as the failure of the NGRS becomes evident, these claims have become more exaggerated. In reality, there has been no attempt to reconcile and integrate two quite different sets of national objectives.

For the electricity industry, the introduction of a competitive market will introduce greater uncertainties and instabilities in the balance between supply and demand. These will be exacerbated by the likely market response to the existence of substantial excess generating capacity in NSW and Victoria. This will make it more difficult for new, independent generators using gas or renewable energy sources to enter the market.

The claimed benefits of more cost-reflective pricing of electricity to consumers, as an incentive for energy efficiency and renewable energy, will only apply to the relatively small number of consumers located in remote rural areas, and have in any case been undermined by the decision of all State governments to continue cross-subsidies in the pricing of electricity. For many business users, cost-reflective pricing will mean *lower* prices, at least in the short term, and less incentive to use electricity efficiently.

Electricity distributors may have incentives to help their customers use electricity more efficiently, by means of demand management programs, but this will only occur if they are provided with the right kind of regulatory framework (and in any case may simply shift the time of use rather than save energy).

There has been little discussion of the form of regulation which will be used to protect customers, most of whom will still have no practical choice between suppliers of electricity. The Victorian and Queensland Governments have already said that they intend to regulate electricity distributors in a way which will give them strong incentives to maximise sales of electricity, and no incentive to pursue demand management alternatives (the NSW Government has not yet indicated whether it will accept its Government Pricing Tribunal's recommendation of a new incentive structure for electricity distributors).

On balance therefore, it is probable that the implementation of the competitive national market in electricity, in the form presently envisaged, will make it more difficult for Australia to reduce greenhouse gas emissions (Saddler 1994). This will compound the failure of the NGRS, unless mechanisms to counter these tendencies are built in to the market structure at the outset. An example would be a levy on all electricity users, the funds from which are directed to large-scale energy efficiency and renewable energy programs.

4.5 Fixation with the 'voluntary'

A number of the energy efficiency programs in the NGRS have been developed to a stage where decisions have had to be taken whether compliance with the programs should be voluntary or mandatory for the industries concerned. Voluntary programs may be effective in some cases, given the nature of some products and the structure of some industries, but in many cases programs will simply not work unless governments make compliance mandatory. A case in point is MEPS for electrical appliances.

A rational approach to the implementation of NGRS programs would be to identify the costs and benefits of alternative implementation paths, and to present these to Ministers so that they can make an informed decision. However, there is a mindset in some parts of the bureaucracy that any policy or program which requires mandatory compliance is unacceptable, irrespective of its advantages. In other words, there is a presumption that deregulation is the highest objective of public policy.

4.6 Confusion of commercial interest and the public interest

All large companies will claim that their interests (i.e. continued profitability, freedom from disruption) are identical with the public interest. It is up to the bureaucracy to distinguish the two, and to advise governments accordingly. However, various parts of the bureaucracy have become advocates and champions for the industries to which

they are closest. For example, the coal, the electricity and the motor vehicle industries all have powerful advocates within Commonwealth and State government departments.

By contrast, the renewable energy and energy efficiency industries enjoy relatively weak patronage, and greenhouse policy approaches such as fuel shifting from electricity to gas have virtually no advocates within the bureaucracy. Such shifts are seen as a 'matter for the market' rather than for policy. In fact, the separation between the market and the government is far from clear; the more powerful commercial interests already exercise a disproportionate influence on greenhouse policy-making through their paid lobbyists and through their advocates within the bureaucracy.

Some advocates of established fossil fuel industries have further confused the debate by suggesting that any measure which makes their particular industry worse off is, for that reason, not a no-regrets measure, irrespective of non-greenhouse benefits which it might bring to other parts of the economy. This is incorrect. A no-regrets measure is one for which the non-greenhouse benefits exceed its costs. As with any economic reform measure (such as tariff reductions) 'no regrets' does not mean 'no losers'. It is to be expected that the losers from a no-regrets greenhouse measure will be the fossil fuel industries, just as the losers from tariff reductions have been highly protected sectors. Society has decided, through the political process, that tariff reductions should be pursued because the benefits, spread broadly across the economy, have been judged to outweigh the losses to particular industries. If the non-greenhouse benefits of a greenhouse reduction measure exceed its costs then it should be pursued.

4.7 The myth of national reliance on coal

It is certainly true that coal production is currently one of Australia's largest industries. Australia accounts for about a third of world trade in coal, and coal accounts for about 12 per cent of the value of Australia's commodity exports. It is also true that the most cost-effective strategies to reduce greenhouse gas emissions within Australia would lead to a gradual reduction in the domestic use of coal, and that if other countries also pursue greenhouse gas reductions then the price and demand for export coal may decline.

However, it is important to keep in mind that the domestic and export markets for coal are quite separate. It is not necessary to perpetuate our domestic dependence on coal - in the face of cheaper alternatives such as energy efficiency -- in order to demonstrate to the world our faith in the product. After all, Australian uranium finds overseas customers despite the fact that we have no domestic nuclear power industry.

It is also fallacious to argue that the imposition of a domestic carbon tax would affect the price-competitiveness of our coal exports. The amount of tax-attracting energy used to mine and process each tonne of coal is negligible, and since carbon would be taxed at the point of combustion, there is no reason to impose a carbon tax on export

coal. Of course, if importing countries choose to tax coal, this would affect Australia's exports, but probably to a lesser degree than normal fluctuations in the terms of trade and normal competition in the global coal market.

Ultimately, the global coal market may well be affected by international greenhouse arrangements. That is a business risk the coal industry must bear, just as the Australian agriculture sector must bear the comparable risks of a *failure* to address global warming. If the coal industry declines as a result, it will not be the first time that changes in the global market have seen the decline of a major Australian energy industry. The exploitation of whale and seal oil, mainly as a lighting fuel, first began off the NSW coast in 1791. By the 1830s, the industry was contributing 35-40 per cent of the total value of the colony's exports. Its peak year was 1840, after which it declined rapidly as the resource was depleted, and as coal gas and, later, kerosene came to dominate the British lighting market. By 1850 the whaling and sealing industry contributed to only 3 per cent of the value of NSW exports, and by 1860 it had virtually disappeared (Linge 1979).

Rather than frame government policy in a way which favours the commercial interests of the coal industry above all others, it would be more productive to stimulate industries which have their growth years ahead of them, and, if necessary, to compensate those few workers in the coal industry who may be disadvantaged as a result of government domestic policy, but not those affected through the normal operations of the global energy market.

4.8 Lack of balanced debate and informed scrutiny

An important reason for the failure of the National Greenhouse Response Strategy has been the lack of informed public scrutiny and the way in which important decisions have been taken. The ESD process from which the NGRS evolved was broadly based, and the initial consultations on most NGRS programs were relatively public. However, the further the programs have developed the more industry and business groups have been allowed to take the running, and conservation and other public advocacy groups have been excluded.

The public voice of industry in the greenhouse debate has not been representative of the full spectrum of business opinion. It has been dominated by a small number of large energy and mineral processing companies, those that would be the main losers from emissions reductions. These companies also dominate the Business Council of Australia which sees itself, and is seen by most (including the Government), as representing all business. Many small, innovative companies, including those in the renewable energy sector, stand to benefit from greenhouse measures. Their voice has been largely unheard.

The media have generally failed to present a balanced view of the debate. A recent study for The Australia Institute (Rodgers 1994) reviewed 74 articles on greenhouse

appearing between 1991 and 1994 in the *Financial Review*, the *Age*, the *Sydney Morning Herald* and the *Canberra Times*. and classified them according to whether they focussed on the ‘industry’ side of the argument (i.e. a negative view of targets and the economic impacts of abatement measures), the ‘conservationist’ side, or both.

The study found that 53 per cent gave the arguments of industry, 19 per cent the arguments of conservationists, and only 28 per cent both sides. It concluded that ‘resource industries have been able to use the media to a greater extent than conservation interests since the interim target was announced, particularly to put forward their position and advertise research carried out on the impacts of abatement measures’ (*ibid.*, p.16).

The climate change debate would have been less polarised had governments been more forthcoming about the real progress of the NGRS since its adoption in 1992, and shown a willingness to present detailed and balanced policy options to the public. Instead, the climate change debate has been abrogated by special interest groups within and outside the bureaucracy, and those with more resources and better press connections have generally dominated public discussions.

5. An Effective Greenhouse Response Strategy

5.1 The role of public intervention

The issue of global warming is a classic case of an externality, that is, a cost associated with an activity which is not met by the producer or consumer. The community in general will bear the costs of global warming and it is appropriate that the community through its governments take steps to avert or reduce those costs. The Commonwealth government in particular must exercise leadership, and cannot continue to allow special interests to undermine the national strategy.

The greenhouse issue presents an important test of the competence of government and of public administration in Australia. Due to the very long-term nature of global warming, an effective greenhouse gas reduction strategy will require long-term planning. This can only come from government. In addition, the costs associated with global warming are very uncertain and assessments will change over the years. Both the 'external' nature and uncertainty of global warming will require a clear but flexible policy framework.

In reducing greenhouse gas emissions, there will be winners and losers, and policies will be needed to ensure equitable burden sharing (within countries as well as between countries). Australia is nowhere near the point of taking on a disproportionate burden as a result of greenhouse gas emissions reductions. On the contrary, we are continuing to bear the economic burdens of inefficient energy use and the environmental burdens of land clearing because of our inability to coordinate and manage national policy. For the foreseeable future, the national gains from effective action will far exceed the national losses, and substantial greenhouse gas reductions can be achieved at zero or negative cost.

Greenhouse gas reductions will ultimately be brought about by changes in the activities of firms and consumers, but they will need to be induced to change through measures adopted and implemented by governments. Contrary to the argument of economic fundamentalists that markets should be left to find their own solutions, and that any agreements should be voluntary, industry prefers a stable and predictable set of rules, and no firm is likely to assume the risk of unilateral moves towards greenhouse gas reductions. However, collective action can be risk-free.

Although we have seen industry, especially the fossil fuel industries, lobbying hard against any measures that would require them to reduce emissions, experience shows that a point will be reached at which industry will accept that change is inevitable. At that point, the position will change from one of opposition to acceptance and the industry will focus on the set of rules through which targets will be achieved. The main concern will be that all competitors face the same set of rules. This will then allow firms to pursue investments in capital equipment to meet energy standards or other public requirements confident that other firms will be under the same constraint.

The leadership of government is also necessary because the long planning horizon needed for addressing climate change. An effective strategy for reducing emissions of greenhouse gases must attempt to make projections for the state of the environment and of human society in 50 and 100 years time, and then plan for it. This is not an argument for delaying action; quite the contrary. It is an argument for recognising that what we do now, this year, will have a major impact on the world in 100 years time.

The long-term nature of greenhouse question is due to several factors:

- the extremely long-term dynamics of the global carbon cycle and atmospheric systems. The coal we burn today will probably still be affecting the world's climate in 300 hundred years time. When climate scientists compare the global warming potentials of various greenhouse gases they are calculated over time frames of 100 and 200 years;
- the long lives and long investment lead-times associated with energy supply and energy-use infrastructure. A coal-fired power station planned today will still be emitting greenhouse gases in 2030;
- the need for substantial restructuring of the economy to accommodate reductions in emissions. The Government's car plan envisaged radical restructuring of the industry over a 10-15 year planning period. Greenhouse policies need to be integrated with other reform programs that have long time horizons, including microeconomic reform, international trade agreements and urban planning.

5.2 Primary focuses for emissions reduction

Australia has a wide range of greenhouse gas emission sources and sinks. There is a vast difference in their magnitude, in the scope for policy to affect them and in the cost and rapidity with which net emissions can be reduced or natural sinks enhanced. A major failing of the NGRS is that it was not sufficiently clear about its focus.

It is now evident that strategies should focus on, in order of priority:

- halting land clearing and reforestation cleared lands where possible;
- reducing the greenhouse-gas intensity of energy use;
- reducing the greenhouse-gas intensity of energy supply.

Land clearing and forestry

A large part of Australia's emissions are accounted for by land clearing, and this source of greenhouse gases can probably be eliminated without substantial economic

cost. Indeed, ending land clearing is probably a no-regrets measure -- it makes sense to end land clearing even if we do not take account of the greenhouse effect.

Furthermore, there would be advantages -- in terms of soil and water management, as well as greenhouse -- in returning some previously cleared land to native vegetation, or else to plantation forestry. But greenhouse mitigation, however important, is by no means the only environmental objective. It is absurd to claim greenhouse as an excuse for continued destruction of native forests, on the grounds that replacement with more rapidly growing managed forests would enhance the carbon sink. This strategy can only buy time since felled trees will sooner or later release their carbon. In addition, the costs in terms of loss of species and degradation of environmental value would be extremely high. There is far greater scope for reduction of net emissions, at far lower cost, through management of emission sources.

Concentration on the energy sector

Historically there has been a strong link between increasing fossil fuel consumption and economic growth. However, the more advanced an economy, the weaker the link. It has sometimes been argued that Australia's geography, high rate of population growth and the structure of its economy make it uniquely difficult to break the link. There is no evidence to support this.

Contrary to the usual view that Australia has high emissions partly because of the dispersion of its population, the contribution of the transport sector to Australian emissions is a little below the OECD average. In addition, the belief that Australia is disproportionately dependent on energy-intensive industry is not borne out by analysis. While the non-ferrous metals sector in Australia accounts for a larger share of industrial emissions than in Canada, the USA, Germany, the UK, Japan, the Netherlands and the OECD as a whole, the share of the energy-intensive chemicals sector is much larger in the other countries (Hamilton, 1994). Between 1970 and 1992 energy-related CO₂ intensity per unit of GDP declined only 13 per cent in Australia, compared with 34 per cent in the USA and 38 per cent in Canada, and 48 per cent (from an already low base) in Japan (ibid., p.14). The main difference between Australia and other countries appears to be our lower level of energy efficiency. In effect, this gives us an *advantage* over other OECD countries in greenhouse gas reductions, since we have yet to make many of the low-cost investments in energy efficiency that they have already made.

Reducing the greenhouse-gas intensity of energy use

The greenhouse gas-intensity of energy use can be reduced in a number of ways:

- meeting the need for energy services in ways other than through delivered energy systems, eg. by building insulation and the use of ambient solar heat and daylight;

- better matching of equipment operation with variations in demand, eg. through smarter controls; and
- increasing the efficiency of end use equipment, such as motors, lights or water heaters.

Many of these measures are included in the NGRS; the problem has been that they have not been given clear enough priority nor pursued effectively.

Another important means of reducing the greenhouse gas intensity of energy use is through switching to end-use equipment with a lower greenhouse gas intensity per unit of output. This may be achieved by shifting from fossil fuel-generated electricity to natural gas, or, in some cases, to renewables. However, it is a fallacy to assume that all technologies which involve renewable energy are preferable to all fossil fuel-based technologies on greenhouse grounds.

Reducing the greenhouse gas intensity of energy supply

It should be accepted that nearly all existing energy supply infrastructure is likely to remain in use for the rest of its economic life. The very high costs of greenhouse gas mitigation found in many studies are due largely to the assumption that relatively new power stations will have to be scrapped or converted from coal to gas. Instead, energy supply strategy should focus on:

- avoiding any new investment in supply infrastructure: this is quite possible because of the massive scope for greater efficiency of use and the high level of excess capacity in the supply system;
- shifting to less greenhouse gas-intensive generating fuels: standards for maximum greenhouse gas-intensity of power stations should be set at a level equivalent to that of combined cycle gas generation, effectively excluding conventional coal plant; and
- ensuring that renewable forms of electricity generation, such as wind, solar thermal and photovoltaics are allowed to establish niches in the markets for which they are most suited, and developing them to the stage where they become real alternatives when existing energy supply infrastructure needs replacement.

For the next 10 to 20 years at least, Australia's energy system will remain dependent on fossil fuels. The main priorities should be to reduce the greenhouse gas intensity of the system, starting with the demand side, and to carry out the detailed planning without which a transition to renewable energy will not occur. It is also necessary to recognise that none of this will occur if left solely to the market.

5.3 Key components of an effective greenhouse strategy

An effective greenhouse gas reduction strategy will require adoption of ambitious but achievable targets. The key components of an effective strategy should include the following measures, measures that can be implemented by government immediately.

1. No new coal-fired power stations

The Government should announce that no new coal-fired power stations will be built in Australia, unless it can be shown that all alternative means of meeting projected demand for energy services -- including greater energy efficiency, renewable energy and the direct use of natural gas -- have been exhausted. Electricity produced from coal is the most greenhouse gas-intensive way of supplying energy. Once a new power station is built, its owners have every incentive to use it to its full productive capacity for about 30 years, and if necessary to dump electricity into the grid at prices below the average cost of production.

The present period of excess generation capacity in south-eastern Australia provides the ideal opportunity to make this commitment, since there is no pressing need to order new power stations (provided we make rational use of our present ones) and time to make the adjustments in energy planning which will dramatically slow the rate of growth in electricity demand.

2. Carbon tax to promote energy efficiency and renewables

Following international trends, Australia should impose a carbon tax, beginning at a low level (about \$2 per tonne of carbon dioxide, which would raise the cost of petrol by about 2 cents per litre) and rising significantly over the next decade. Revenues from the tax would be used in part to promote energy efficiency programs and commercialisation of renewable energy technologies. As revenues increase they could be used to reduce taxes on labour or to fund employment creation schemes.

3. Establishment of a Sustainable Energy Authority

Part of the revenue raised by the carbon tax should be used to fund a new statutory Sustainable Energy Authority which would take over responsibility for, and management of, all existing national energy efficiency and renewable energy programs. It should have the freedom to initiate new programs. All program priorities and expenditures of the authority should be justified with reference to the greenhouse gas reduction targets, that is, the least-cost means of reducing emissions should be pursued first.

4. Energy standards for buildings and equipment

Minimum energy performance standards for all major household appliances, key industrial equipment, houses and commercial buildings should be a basic and

uncontroversial part of any effective strategy. Energy pricing alone will not achieve the levels of efficiency required. Governments have already investigated a number of standards programs but have not had the will to implement them, partly because existing Commonwealth-State arrangements promote the lowest common denominator.

5. Increase the fuel-efficiency of vehicles

An effective program to encourage more fuel-efficient vehicles, an area where lack of progress is due almost entirely to the Commonwealth, is well overdue. Australia has no effective program to encourage customers, especially corporate customers, to prefer more fuel-efficient vehicles or for Australian manufacturers to supply them. The Government should negotiate sales-weighted fuel efficiency targets directly with each major manufacturer.

6. Coordination with microeconomic reform

Integration of greenhouse policy measures with the microeconomic reform process will avoid contradictory measures. At present, the microeconomic reform process in the electricity sector aims to reduce costs and increase consumption of electricity. An incentive system is needed that will reduce both costs *and* demand for electricity.

7. End land clearing

Immediate cessation of land clearing should be undertaken in any case on environmental grounds other than greenhouse. In addition, reforestation as a means of storing carbon is likely to be an effective way of buying time while more far-reaching measures to reduce fossil fuel consumption take full effect.

8. A national renewable energy strategy

A detailed national strategy for making the transition to a mainly renewable energy economy is urgently required. This strategy should recognise that large-scale use of renewable resources will not occur without government action, not least through changing the incentive structures for and obligations on electricity suppliers.

9. Adopt a feasible greenhouse gas reduction target

It is necessary to formally abandon the fiction of the Toronto Target and to adopt a *realistic* greenhouse gas reduction target, ambitious but achievable. If 'business-as-usual' projections can be relied on, and we carry out all of the measures above, Australia's greenhouse gas emissions should peak in about 2000, and then decline to the 1990 levels no later than 2010. Pending further analysis and planning, this should be adopted as the national target.

6. Conclusions

The threat of climate change is a global one, and all nations need to consider whether they will participate in global efforts to address it. A rational and prudent assessment of the risks means that governments, companies and individuals must all take steps to reduce the greenhouse gas intensity of those activities over which they have control.

The sheer scale of the problem means that an effective response is beyond the capacity of individuals or companies, however well-intentioned, unless governments lead and coordinate their efforts. The governments of Australia have so far failed to do so.

We have reviewed progress on the National Greenhouse Response Strategy, and conclude that it has failed. As a result, Australia has passed up important 'no-regrets' gains in energy efficiency, and our ability to participate constructively in international efforts to address climate change has been diminished.

The reasons for the failure of the NGRS derive from a failure of governments to show leadership, to reconcile conflicting policy objectives and to distinguish the national and the public interest from narrow commercial interests. This has been compounded by a lack of knowledge of the energy market in parts of the bureaucracy, and a lack of informed public scrutiny and debate.

Finally, we have set out what we believe to be the elements of an effective greenhouse strategy.

The governments of Australia thus have a choice in the message they present to the citizens of Australia and to the international community. The first one might read as follows:

We, the Commonwealth, State and Territory governments of Australia acknowledge that the threat of climate change requires some action to be taken. We have gone to the trouble of setting out some general principles, but have ignored some and have made a half-hearted start on others. We believe we have done all that we can, since on this issue we are unable to muster the will to overcome even modest opposition (some of it within our own ranks) however self-interested or spurious its basis may be.

We say to you, the people and businesses of Australia, that we would like you to try to do what *you* can. However, do not fear that we will ask anything difficult of you, or even hold you to any undertakings you may give; after all, we cannot ask you to do what we are unable to do ourselves.

To the international community, we say that we hope you will take effective action. We are even happy to take part, but only if you will agree to an arrangement that will let us expand our trade (especially in coal) and not force us to make any real changes in the way our domestic economy emits

greenhouse gases. After all, we are sure that none of you will allow a global environmental threat to deflect you from your own self-interest, so we must hope that self-interest and global interests align in your case. Unfortunately, this is not the case with us.

This, in plain language, is the statement that Australian governments have been making to the people of Australia and, on our behalf, to the international community. An alternative statement, one based on good economic planning and taking our moral obligations seriously, would read as follows:

We, the Commonwealth, State and Territory governments of Australia acknowledge that the threat of climate change requires some action to be taken. We have gone to the trouble of setting out some general principles, but we now acknowledge that the action we have taken has been wholly inadequate. Fortunately, there are many steps we can take that will make us better off as a nation, and better able to compensate the few of us who may be adversely affected.

We therefore commit ourselves, in good faith, to carrying out the following actions and reporting regularly and openly on their progress. We know now that we cannot return our emissions to 1990 levels by the year 2000, but we believe we can manage our economy in a way which means that our greenhouse gas emissions will peak no later than the year 2000, and will decline thereafter. We are prepared to give undertakings to this effect to the other countries of the world, so that we have the best chance of building an international consensus capable of addressing this global threat.

In order to follow through these undertakings, we need to have a clear understanding of what actions each of us must take, what we expect these to achieve, and what further actions we will need to take if we appear to be in danger of failing in our objectives.

To the international community, we say that we will join you in effective action. As a trading nation (and a mainstay of the GATT and APEC) we recognise that our self-interest is inseparable from the global interest. We think that the burden of action on this truly vital issue should be shared equitably. We recognise that we have benefited, no less than other developed countries, from the exploitation of fossil fuels which has contributed to the threat of climate change. However, we believe that our fossil-fuel technology can assist in minimising global emissions during the transition period when fossil fuels must still be used. We ourselves are planning for such a transition in our own economy. Here, in detail, are the steps we have taken.

References

- ABARE (1991) *The issue of domestic energy market failure*. Australian Bureau of Agricultural and Resource Economics. Canberra, October 1991.
- AMEC (1990) *Energy and the Greenhouse Effect* (AGPS Canberra, June)
- Common, M. and C. Hamilton (1994). *The Economic Consequences of Carbon Taxation in Australia* Proceedings, Greenhouse 94, CSIRO (forthcoming).
- Commonwealth of Australia and Australian Consumers' Association (1993) *Energy Guide for New Appliances* (AGPS Canberra)
- CSIRO (1992) *Climate Change Scenarios For The Australian Region*, Climate Impact Group, CSIRO Division of Atmospheric Research. Issued November 1992.
- CSIRO (1994) *Climate Change Scenarios For The Australian Region: Supplementary Statement for Greenhouse 94*. Climate Impact Group, CSIRO Division of Atmospheric Research. Issued November 1992.
- ESAA (1994) *Measuring the Impact of Reducing Greenhouse Gas Emissions - Volume 1*. Electricity Supply Association of Australia, September 1994.
- ESD (1992) *Greenhouse Report* Ecologically Sustainable Development Working Group Chairs, AGPS Canberra, January 1992.
- ESD Steering Committee (1992) *Draft National Strategy for Ecologically Sustainable Development, A Discussion Paper* (AGPS Canberra, June)
- FCCC (1992). United Nations *Framework Convention on Climate Change*, adopted 9 May 1992.
- Faulkner, J (1994) Opening Statement, Greenhouse gas inventory summary release media conference, Senator John Faulkner, Canberra, 7 September 1994.
- GWA (1991) *Review of Residential Appliance Energy Labelling*, George Wilkenfeld and Associates, with Test Research and Artcraft Research. Prepared for the State Electricity Commission of Victoria, September 1991 (2 vols).
- GWA (1993) *Benefits and Costs of Implementing Minimum Energy Performance Standards for Household Electrical Appliances in Australia*. George Wilkenfeld and Associates, with Lawrence Berkeley Laboratory. Prepared for the State Electricity Commission of Victoria, July 1993 (3 vols).

GWA & EEA (1993) *Evaluation of the National Energy Management Program*. George Wilkenfeld and Associates, Economic and Energy Analysis *et al.* Prepared for the Department of Primary Industries and Energy, November 1993 (3 vols).

Hamilton, C. (1994) *Comparison of emission sources and emission trends among OECD countries*. Australian Conservation Foundation, November 1994.

Huntley, B. (1990) 'Lessons from Climates of the Past', in Legget, J.K. (ed.) *Global Warming: the Greenpeace Report*, Oxford University Press, Oxford 1990.

IC (1991) *Costs and Benefits of Reducing Greenhouse Gas Emissions*. Industry Commission, AGPS Canberra, November 1991.

IRP Management Committee (1994), *Least Cost Energy Service for Australia: Demand Management and Integrated Resource Planning in a Competitive Electricity Market* Prepared for ANZMEC by the IRP Management Committee (Draft Final Report) 29 April 1994.

LECNSW (1994) *Record of Hearing: Greenpeace Australia vs Redbank Power Company Pty Ltd and Singleton Council*, Land and Environment Court of NSW, 10 November 1994.

Leggett J.K. (1993) *Climate Change and the Insurance Industry*. Greenpeace, 24 May 1993 (2nd edition).

Linge, G.J.R (1979) *Industrial Awakening: A geography of Australian manufacturing 1788 to 1890*. ANU Press, Canberra.

Mitchell, N.D. and Williams, J.E. 1994. *The State of current ecosystems under climate change - our present state of knowledge*, in Proceedings, Greenhouse 94, CSIRO (forthcoming).

NGRS (1992) *National Greenhouse Response Strategy*, AGPS, December 1992.

Rodgers, R. (1994) *An assessment of the political influences on the Federal Government's greenhouse policies 1990-1994* Australian National Internship Program, October 1994.

Saddler, H (1994) *Greenhouse Policies and the Australian Energy Supply Industries*, in Proceedings, Greenhouse 94, CSIRO (forthcoming).

Upton, S (1994) Opening speech at Greenhouse 94 Climate Change Conference, the Hon Simon Upton, Minister of Research, Science and Technology and Minister for the Environment, New Zealand. Wellington, 10 October 1994.