EXECUTIVE SUMMARY

The international community has accepted the reality of human-induced climate change, and has begun to heed the warnings of scientists that, if action to reduce emissions is not taken, it will lead to substantial and damaging changes in global climate over the next century and beyond.

The Australian Government has endorsed these findings, and is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) which will frame international efforts to reduce greenhouse gas emissions during the coming century. When the Kyoto Protocol to the UNFCCC was negotiated in 1997, Australia bought valuable time in which to reduce its greenhouse emissions by accepting a comparatively generous target to limit the increase in emissions to an average 108 per cent of 1990 levels.

Australia's per capita emissions have shot to the highest in the world, and the most recent National Greenhouse Gas Inventory (NGGI) showed that Australia's national emissions in 1998 were 16.9 per cent over 1990 levels (excluding land clearing). Official projections indicate that current abatement measures are unlikely to achieve our reduction target, and emissions could be at more than 123 per cent of 1990 levels by 2010. With 2008 rapidly approaching, it seems unlikely that we will meet our Kyoto target unless more effective responses are implemented.

There is now scientific consensus that climate change is gathering momentum and that a 70 per cent reduction in global emissions over the next 200 years will be necessary to stabilise climate systems and prevent dangerous levels of climate change. Australia will likely face far more stringent targets after 2012 in the second Kyoto commitment period.

Australia needs concerted action to reduce its emissions now. A *global* effort will be required to avoid the most damaging impacts of climate change on Australia and we must make a commensurate effort to reduce emissions. Australia should also look upon early ratification as an opportunity to place us in a more constructive light internationally, a more favourable bargaining position and take the positive industry opportunities offered through ratification.

Climate Change Science

The Intergovernmental Panel on Climate Change (IPCC), the independent grouping of scientists which advises governments on the current state of (and future possibilities for) global climate, has strengthened its conviction that human-induced climate change is occurring. The IPCC's assessments of climate models suggest that if greenhouse emissions continue unchecked, global mean temperatures could increase by between 1°C and 3.5°C by 2100, and sea level rise by between 30 and 95 cm. Such increases would be the fastest sustained global rate seen for the last ten thousand

years and, within a century, could take the Earth to temperatures not experienced for over one hundred thousand years.

Climate change scientists are also saying that, while some climate change is inevitable, there are achievable paths to stabilising atmospheric concentrations of greenhouse gases. Achieving stabilisation would require a cut of 70 per cent from business as usual emissions within 150 to 200 years, but if successful, much damaging climate change can be avoided.

Assessments by the IPCC and the CSIRO of the potential impact on Australasia suggest that there could be dramatic changes to rainfall, potentially longer droughts or increased flooding, a loss of biodiversity, severe damage to coral reefs, reduced snowfalls, and further aggravation of soil salinity and land degradation. Higher temperatures could bring health problems relating to heat stress and increased incidence of vector-borne diseases such as malaria.

Australia's Vulnerability

Evidence suggests that Australia will be very negatively affected by climate change given the size of its land mass, its long coastline, current extremes of climate, vulnerability to cyclones and the El Nino/La Nina cycle, existing problems with soil salinity, and its economic dependence on agriculture and tourism.

Public debate on greenhouse includes scepticism about the legitimacy of greenhouse science and sectors of industry have claimed that the costs of reducing emissions will have detrimental impacts on Australia's national interests and economic growth. While there does remain a level of scientific uncertainty about the regional impacts of climate change, the Committee heard evidence which convincingly refutes such views.

Given its climatic vulnerability, Australia has a strong national interest in global action to dramatically cut emissions over the long term.

The Committee:

- accepts the findings of the IPCC and is seriously concerned about the potentially significant economic, social and environmental impacts of climate change, particularly on Australia;
- rejects the assertions of the so-called 'greenhouse sceptics';
- recommends that the Commonwealth Government reiterate their support for the IPCC findings and establish an awareness raising campaign to communicate the facts of climate change to the community; and
- recommends that the Commonwealth undertake an assessment of the economic, social and environmental costs of a failure to adequately address climate change, particularly at a regional level.

Ratification of the Kyoto Protocol

To effectively address climate change, there is an urgent need for global action and a transparent and enforceable regime to ensure emissions abatement.

The Australian Government signed the Kyoto Protocol to the UNFCCC in 1998, but as yet has not ratified it. It is not clear whether the Howard Government intends to delay ratification of the Protocol until developing countries agree to take on binding targets, as industry groups have suggested, or whether it will wait until large developed country emitters, like the United States, choose to ratify. The Government has indicated that outstanding design issues and rules relating to the use of carbon sinks, flexibility mechanisms such as emissions trading, and the Clean Development Mechanism and penalties need to be resolved before Australia ratifies.

Australia has a legitimate interest in ensuring that key features of the Protocol are well designed, and that developing countries agree to take on binding targets at an appropriate time. However, the Kyoto Protocol is widely recognised as a first step towards stabilising the climate system and these issues do not, in themselves, justify a delay in ratification.

If the Protocol was to remain unratified, the development of a new instrument could set back effective action by a considerable period of time, during which emissions growth would continue largely unabated. This is not in the interests of Australia. In a worst case scenario, a new Protocol may be delayed for much longer and the opportunity to stabilise global climate may be lost. The long term aim of the UNFCCC to stabilise atmospheric greenhouse gas concentrations will inevitably require more stringent emission reduction targets beyond the first commitment period of the Kyoto Protocol.

If Australia were one of a small number of countries who refused to ratify, it is likely that our ongoing interests in sensitive negotiations over security, trade, human rights, and other environmental issues would be seriously prejudiced. Australia also has important strategic interests in the Pacific region, where a number of nations are particularly vulnerable to the impacts of climate change.

Furthermore, having been treated so generously in the Kyoto round, Australia is unlikely to achieve such an ‘advantageous’ result in any renegotiated agreement. The international community views with suspicion Australia’s ability to inflate its 1990 emissions baseline through the inclusion of land use change, its generous 108 per cent target (compared with 95 per cent for most other Annex 1 countries), and its greater potential to utilise greenhouse sinks as an offset to fossil fuel emissions.

Concerns have been raised regarding the Howard Government’s position on outstanding issues for discussion at the next Conference of the Parties. The Committee is concerned about the possible inclusion of nuclear technology in the Clean Development Mechanism and the rules regarding the treatment of sinks in national inventories and the flexibility mechanisms.

The Committee:

- considers the ratification of the Kyoto Protocol an important first step towards achieving global greenhouse emissions constraint;
- recommends that the Australian Government should take a leadership role in negotiations with a view to moving through Australia's treaty-making process in a timely manner to achieve ratification of the Kyoto Protocol and to urge ratification by other countries;
- recommends that the Australian Government take a leadership role in encouraging developing countries to commit, at an appropriate time, to binding emission reduction targets as part of a global strategy;
- recommends the exclusion of nuclear technology from the Clean Development Mechanism and the inclusion of sustainability criteria in determining eligibility of sinks, with a recognition of the accounting uncertainties and permanence risks; and
- recommends that the Australian Government seek to ensure the integrity of the Protocol through the adoption of firm sanctions for non-compliance and provisions for assistance to those falling behind in their commitments.

The Enormity of Australia's Greenhouse Challenge

The most serious developments in Australia's greenhouse performance identified by the Committee are:

- the rapid and unrestrained **growth in energy emissions** which accounts for over 79 per cent of national emissions, particularly electricity generation and transport, which between 1990 and 1998 increased by 24.3 per cent and 18 per cent respectively;
- the **limitations of voluntary programs**, such as the flagship *Greenhouse Challenge*, to achieve significant, verified emissions reductions;
- a lack of commitment to tackle the **structural impediments** to greenhouse abatement;
- **the failure to integrate greenhouse policy** with taxation, competition reform, transport, industry, agriculture and energy policy;
- the poor performance of the Commonwealth and most states and territories in meeting commitments under the **National Greenhouse Strategy**;
- disturbingly **high rates of land clearing**, especially in Queensland, which is a large source of greenhouse emissions and undermines Australia's ability to sequester (absorb) carbon dioxide;

- an **inadequate level of funding for research** into the specific social, environmental and economic impacts of climate change on the Australasian region and its sub-regions; and
- a lack of commitment and leadership in **communicating** to the general public what **climate change** could mean for Australia, including the structural changes and action necessary for abatement.

Far more serious efforts are needed now to reduce emissions. Voluntary measures have not resulted in effective abatement action for the large emissions sectors such as energy, transport and agriculture.

The Costs of Meeting that Challenge

The Committee is of the view that the cost to Australia of new investment in abatement measures, and anticipated higher fuel and energy prices, would be lower than the potentially vast economic, environmental and social costs of not acting to reduce emissions.

Economic modelling undertaken to estimate the costs of emissions abatement have been generally characterised by a lack of public scrutiny, flawed assumptions, a failure to incorporate costs from inaction, and a failure to acknowledge the full scope for the accelerated uptake of low and negative cost energy efficiency opportunities.

While there remains some uncertainty with regard to regional impacts, it is clear that climate change could be very damaging for Australia and disproportionately higher than its 1.4 per cent share of global emissions.

The Committee:

- recognises that current policies and programs will not achieve Australia's Kyoto target;
- acknowledges that Australia will have to adopt policies beyond the no-regrets strategies currently under consideration;
- notes that the most recent ABARE assessment of the economic cost of greenhouse abatement required to meet Australia's Kyoto target concluded that it would reduce GDP in 2010 by only 0.6 per cent (relative to expected growth in GDP over the same period of between 30 and 40 per cent);
- notes that domestic and international emissions trading, if it is well designed and sensitively implemented, will reduce the cost of greenhouse abatement and offers the best chance for Australia to meet its Kyoto targets at least cost to the national economy; and
- recommends that economic modelling of the economic impact of abatement policy be subject to closer scrutiny and include the cost of failure to take action.

An Examination of Existing Government Programs

The first national action to address climate change was the National Greenhouse Response Strategy (NGRS), which was formally endorsed by the Council of Australian Governments (COAG) in 1992. An interim planning target was set to reduce greenhouse gas emissions by 20 per cent by 2005, based on 1988 levels, however, this target was overtaken by later negotiations associated with the UNFCCC and 1997 Kyoto Protocol. In 1995, the Keating Government announced additional greenhouse measures including the National Greenhouse Gas Inventory (NGGI) and the Greenhouse Challenge Program.

Since coming to office in 1996, the Coalition has introduced a number of programs, including:

- *Safeguarding the Future: Australia's response to climate change - 1997* - an $180 million package of measures announced by the Prime Minister including: the establishment of the Australian Greenhouse Office (AGO), the extension of the Greenhouse Challenge Program, the development of mandatory renewable electricity targets, energy efficiency measures in building and appliance codes, efforts to treble Australian plantation estate by 2020 and supporting the uptake of the Cities for Climate Protection™ Program by local government;
- *The National Greenhouse Strategy - 1998* - the NGS replaced and updated the earlier NGRS. Agreed by all Australian governments, it sets in place a policy framework and measures aimed at meeting our international commitments. A key consideration in the development of the NGS was a need to integrate greenhouse with other policy objectives, and a least-cost approach to abatement with the least effect on competitiveness; and
- *Measures for a Better Environment Programs - 1999* - this 4-year package, negotiated with the Australian Democrats, was part of A New Tax System, with most commencing in July 2000, and includes $400 million in grants for greenhouse gas abatement, $198 million for remote communities to replace diesel-based power generation with renewable energy, $31 million in grants for photovoltaic systems; and $16 million to promote the commercialisation of renewable energy.

The Effectiveness of Current Programs

Safeguarding the future

Measures included in the Prime Minister's Statement of 1997 have not yet been fully implemented and there has been little progress on many of the measures. Progress to date includes:

- extension of the voluntary Greenhouse Challenge Program, although the level of additional emissions reductions is questionable;

- introduction of the renewable energy legislation to Parliament in June 2000, amidst concern regarding its ability to achieve its objectives;
- establishment of a framework for the implementation of electricity generator standards, which were expected to be in place in 2000 (there are currently no agreements in place and the measure is now not expected to be fully implemented until 2005);
- some progress towards the inclusion of mandatory requirements for energy efficiency in building codes, however, the codes are still some years off completion. There is still no voluntary program established by industry despite calls by the Prime Minister, yet over the same time period, both New South Wales and Victoria have introduced voluntary programs targeting building efficiency;
- an aim to treble the plantation estate, amid concerns that the measure will be neutralised by high rates of land clearing, and could have negative implications for regional development in some cases; and
- efforts to expand the Cities for Climate Protection™ Program among local councils and develop greenhouse inventories, emissions reduction targets and local action plans. Only 96 councils (out of a total of 700) have joined the program and only 2 have developed action plans.

The National Greenhouse Strategy

Implementation of the National Greenhouse Strategy (NGS) is occurring at all levels of government, however most measures are not yet fully operational. The intended extent and timing of implementation by all governments has still not been announced. Some of the minimal progress that has been made appears to be seriously undermined by events and policy direction outside the NGS - such as land clearing, increasing energy use and greenhouse intensity of electricity supply, and approvals for new coal-fired power stations.

The Committee examined whether Australian government programs and policies were sufficient to provide for the development in Australia of emerging renewable energy and energy efficiency industries, the more efficient use of energy sources, and the implementation of new energy technologies (eg fuel cells, hydrogen). It found that Australia's efforts have been modest and erratic.

A key aim of the NGS was to reduce duplication across government activities and programs, and provide an integrated and consistent response to climate change. Evidence presented to the Committee highlighted significant limitations in the NGS, including:

- the slow pace of implementation planning, the haphazard approach taken by governments in developing greenhouse policy and gaps in programs and action;

- the lack of integration of greenhouse into other strategic Commonwealth policy objectives, including energy market reform, competition policy, taxation, resource management, industry development or transport;
- slow progress in implementing agreed measures under the NGS by the States. It is a matter of some regret to the Committee that only Western Australia, New South Wales, South Australia and Tasmania made submissions to the inquiry, and only New South Wales and Western Australia accepted an invitation to appear at a hearing;
- qualified endorsement of the NGS by some states, with Western Australia seeking a 240 per cent increase on 1990 emissions, offset by 3 million hectares of plantation sinks; and
- inadequate resources devoted by the states to ensure the effective implementation of greenhouse abatement measures and ineffective coordination with the Commonwealth over design, progress and adequacy of measures.

Measures for a Better Environment

It is too early to judge the effectiveness of programs which commenced in July 2000, such as the renewable remote power program. However, the household photovoltaic rebate program (commenced in January 2000) has already exhausted its funds in the first year, while subsidies for conversion to CNG fuels and grants for alternative fuels began in July 2000.

An undertaking to consult with the states and territories on the insertion of a greenhouse trigger into the *Environmental Protection and Biodiversity Conservation Act 1999* seems stalled at this stage.

The Greenhouse Challenge Program

The industry sector contributes the major proportion of emissions from stationary energy and transport, and appear likely to escalate in the absence of binding targets for emissions abatement. The primary vehicle for engaging industry support for climate change activity has been the Greenhouse Challenge Program, which targets 55 per cent of Australia's total emissions and claims to cover most industry sectors.

The Greenhouse Challenge aims to capture potential emissions reductions through voluntary, no-regrets measures under a partnership agreement. This approach has strong support from many industry members.

Evidence presented to the Committee highlighted significant limitations in the Government's current partnership arrangements with industry:

- the Greenhouse Challenge makes no clear distinction between the reduction of industry emissions as a result of normal business improvements and emissions reduction achieved through extra effort as a result of government investment in industry programs;

- there are no obvious market disadvantages for non-participants and there are no explicit penalties for participating companies which do not meet agreed emissions reduction targets;
- emissions reduction targets and the rate of progress in emissions abatement are not assessed against sectoral abatement benchmarks;
- only a small number of companies appear to be meeting their forecast level of emissions reduction; and
- the Greenhouse Challenge does not provide incentive for industry members to implement reductions 'beyond no regrets' measures.

Whilst the Committee believes these are serious flaws with the Program, it also found that the main contribution of the Greenhouse Challenge to emissions abatement consists of:

- raising industry awareness of and expertise in emissions abatement, particularly by creating CEO support for a greater focus on improving energy efficiency;
- stimulating the development and implementation of practical efficiency measures;
- prompting the development of methodologies capable of delivering a richer analysis of sectoral behaviour and opportunities for greenhouse gas abatement; and
- providing a forum for industry to consider the features of a future emissions trading system which might operate domestically or internationally.

Effectiveness of government programs - Committee conclusions

The Committee:

- criticises the Government for the lack of commitment to implementation of existing greenhouse measures, particularly the NGS;
- recommends that the implementation of the Safeguarding the Future commitments and the NGS is accelerated;
- recommends that the proposed 2002 review of the NGS be brought forward to 2001;
- does not accept the Western Australian Government's argument that any one state should be substantially exempted from action to help meet Australia's Kyoto commitments. Australia has a national responsibility to meet its Kyoto commitments;
- recommends that states and territories accept their fair share of emissions limits, adopt the reduction of greenhouse emissions as a central objective of government at all levels, set out emissions reduction benchmarks and set targets across all areas of government;

- recommends that the Commonwealth devote adequate resources to ongoing efforts to coordinate abatement measures with the states, and to provide appropriate assistance with the design and implementation of greenhouse abatement policies;
- recognises the positive contribution that voluntary programs can make, but does not accept the view that voluntary measures alone will allow Australia to achieve its Kyoto emissions target;
- believes that market mechanisms, financial incentives and regulations are necessary for real progress in removing market and institutional barriers to emissions abatement;
- recognises the potential to use the Greenhouse Challenge Program as a transitional mechanism to advance the introduction of a national emissions trading system;
- recommends that the Greenhouse Challenge establish benchmarks for emissions abatement by sectors of activity, require participants to develop their emissions forecasts using business as usual methodologies; and develop its capacity to verify and compare the emissions output of individual enterprises to sectoral benchmarks; and
- recommends that Greenhouse Challenge participants be required to verify assessments of emissions savings, and publicly disclose details of that verification and any changes to the level of forecast emissions reductions.

Structural Change and Economic Opportunity

The Minister for Industry Science and Resources, Senator Minchin, has argued that the Government 'will avoid greenhouse gas abatement policies and measures that will distort investment decisions between particular projects and locations', and that it will 'avoid greenhouse gas abatement policies that unduly limit access to the most cost effective greenhouse gas mitigation options'.

The Committee interprets this as reluctance on the part of the Commonwealth to tackle the current market structures, particularly in energy and transport, which reward environmentally unsound investment and behaviour. It also suggests a preference for short term, cheap abatement options such as burning of biomass and efficiencies in coal-fired power generation without complementary measures for long term strategic investment in industries of the future.

The Committee was not able to establish the economic impacts of greenhouse abatement on each state and territory, but it was persuaded that Australian scientists are world leaders in innovation, particularly in renewable energy and fuel efficiency, and that a future, low –carbon-based economy would provide more jobs and manufacturing opportunities. Export of renewable energy technology, particularly into Asia, is expected to provide multi-billion dollar growth opportunities for

Australia. Rural areas could be expected to benefit from the ready availability of agricultural biomass, sink opportunities and good wind and solar resources.

There is also promising potential for Australia to export its carbon accounting and atmospheric measurement technology.

Revenue from emissions trading could be directed to employment opportunities, particularly in regional areas, by investing in energy-efficient, low greenhouse gas processes and products.

Policies for a Carbon Constrained Future

It is largely undisputed that current measures in place will not allow Australia to meet the emissions reduction target agreed under the Kyoto Protocol. To meet its likely future Kyoto targets Australia must begin making the transition to a low-emissions economy. The Australian Democrats believe that this means shifting to renewable energy sources and eventually phasing out high carbon content fossil fuels.

Greenhouse legislation

Comprehensive legislation will undoubtedly be required when the full implications of commitment to the Kyoto Protocol are negotiated and a legislative framework will be needed to implement greenhouse gas reduction initiatives.

With this objective, Senator Bob Brown introduced a private senator's bill, the Convention on Climate Change (Implementation) Bill 1999. The Bill is intended to create legally binding targets for each source of greenhouse gas emissions; establish a Greenhouse Office as a statutory body; ensure Australia meets its obligations in relation to the Clean Development Mechanism (CDM); provide Ministerial approval for actions which are likely to result in greenhouse gas emissions in excess of 50,000 tonnes within a 12 month period; provide a procedure for greenhouse impact assessments; and establish a greenhouse taskforce in relation to each source category.

Although there the objectives of the Bill have some merit, the Bill in its current form does not take into account a number of uncertainties relating to the Kyoto Protocol which remain unresolved, including Australia's national target and 1990 baseline, and rules for the flexibility mechanisms. Some of the Bill's provisions are also flawed and better mechanisms may be available to implement some of its proposed measures.

Another legislative measure considered in this inquiry was the inclusion of greenhouse emissions as a matter of national environmental significance in the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). This would provide a 'greenhouse trigger' for Commonwealth environmental impact assessment of new projects. Queensland's recent approvals for nearly 2,000 MW of new coal-fired capacity demonstrates the need for the Commonwealth to have oversight of major new and even recommissioned projects which would have an impact on Australia's greenhouse emissions.

The Committee:

- considers that legislation to implement the UNFCCC and the Kyoto Protocol is inevitable;
- recommends that improved legislation be designed once some of the uncertainties have been resolved at the next Conference of the Parties in November 2000, and that such legislation is introduced in a timely manner; and
- recommends the immediate introduction of legislation to give effect to a greenhouse trigger under the EPBC Act.

Emissions Trading

The introduction of a system of domestic emissions trading was widely seen as an ideal mechanism to stimulate markets to reward abatement and to recognise the environmental costs of greenhouse pollution. Economic modelling by governments has consistently shown that emissions trading represents a least cost approach to emission reductions.

Emissions trading would ensure that markets internalise environmental costs and reward investment in greenhouse abatement, while creating flexibility which ensures that lowest cost abatement opportunities are taken up first and that permits flow to areas where abatement costs are too high. Other submissions noted that a carbon levy or tax was a more direct way to ensure that all sectors of the community had a price incentive to move towards energy efficiency and alternatives to fossil fuels. Revenues generated from emissions trading or a carbon levy could be recycled into the economy as cuts to business taxes on employment or investment in greenhouse abatement and employment opportunities, particularly in regional areas.

However, the Government has ruled out the early introduction or trial of a domestic emissions trading system. In August 2000, the Minister for Industry, Science and Resources, Senator Minchin, announced that: 'The Government will only implement a mandatory domestic emissions trading scheme if the Kyoto Protocol is ratified by Australia, has entered into force and there is an established international emissions trading regime'. This is at odds with the views of many witnesses, including witnesses from large players in the energy industry, that an early introduction of emissions trading would allow for design issues to be trialed, for companies to gain experience and to ease the transition to a more constrained emissions environment.

The Committee:

- considers that a domestic trading system, coupled with an international emissions trading system, will allow Australia to meet its Kyoto targets at least cost to the national economy and ease the transition to a carbon constrained future;
- recommends the early introduction of a national emissions trading system, with the aim of building capacity and experience, encouraging uptake of fuel switching and energy efficiency and positioning Australia to lead the international debate in the development of a global trading scheme;

- recommends a phased introduction of an emissions trading scheme, with the possible introduction of a voluntary scheme in advance of a mandatory scheme, designed to direct the economy on a path to meeting Australia's Kyoto target in the first commitment period, and to meet potentially lower targets in the subsequent commitment periods;
- recommends that a future emissions trading scheme be as comprehensive as administratively feasible, taking in a wide range of sources and emitters;
- acknowledges that an emissions trading scheme will not achieve all desirable emissions reductions, and recommends that additional and complementary policy measures must be implemented;
- recommends that allocation of permits by auction be considered as the basis for a domestic emissions trading system;
- recommends that any interim concessional allocations are made on the basis of clear and widely accepted principles such as life-cycle environmental benefits, a severe loss of international competitiveness or credit for early action; and
- recommends that the Government seeks to ensure that a future emissions trading system does not penalise early action to reduce greenhouse emissions.

The Energy Sector

Electricity

The 1998 NGGI showed that stationary energy was 56.8 per cent of total national emissions. Between 1990 and 1998 emissions in this sector increased by 24.3 per cent and increased by 7.6 per cent alone between 1997 and 1998. In 1998 electricity generation contributed 65.2 per cent of stationary energy emissions and 37 per cent of total national emissions. Between 1990 and 1998 electricity emissions saw a raw increase of 39.5 million tonnes, from 129.1 Mt to 168.6 Mt. Almost half this growth, 15.9 Mt, occurred in a single year, from 1997 to 1998.

Electricity emissions are currently showing phenomenal levels of growth: 30.6 per cent between 1990 and 1998 and 10.3 per cent from 1997 to 1998. It is clear that constraining energy emissions will be a difficult task in Australia's abatement effort.

Electricity emissions are predicted to rise even further over the next decade. The Electricity Supply Association of Australia (ESAA) has predicted that demand will rise by at least 53 per cent over 1990 levels by 2010, resulting in an emissions increase of 41 per cent by 2010. Pacific Power told the Committee that, if emissions were not constrained, the electricity industry would reach 150 per cent of 1990 emissions levels by 2010. The only measures which are currently expected to make a dent in these trends are the mandatory 2 per cent renewable electricity target and the generator efficiency standards, which combined may produce savings of up to 10 Mt by 2010. McLennan Maganasik has conducted modelling for the AGO which incorporates these savings - it predicts that electricity emissions will reach 190 Mt in 2010, 147 per cent of 1990 levels.

Australia's high emissions in the electricity sector result from:

- direct and indirect subsidies to the fossil fuel industry in the order of $6 billion per annum;
- national electricity reform under competition policy, introduced at a time of oversupply and resulting in intense price competition which favours existing brown and black coal power generation;
- an outdated transmissions pricing regime which does not account for the costs of transmission and is thus biased against localised generation, cogeneration and embedded generation such as small scale renewables;
- a plentiful supply of cheap coal, a lack of effective emissions standards for generators and a lack of clear policy intent combined with a regulatory regime which might have prevented the establishment of new coal-fired power stations;
- an oversupply of capacity in the market which is acting as a barrier to the construction of new (lower emissions) gas-fired generation;
- market distortions such as long term fixed price supply contracts; and
- the privatisation of generators sold at high prices which have increased competitive pressures and seen inefficient, previously mothballed brown coal generators brought back into production.

A history of direct and indirect economic incentives benefiting fossil fuels

Australia's historical dependence on fossil fuels for energy has been increased through massive direct and indirect subsidies to the fossil fuel industry. A 1996 report of the Commonwealth Department of the Environment, Sport and Territories estimated direct subsidies at $2,000 million a year. Indirect subsidies such as tax incentives, startup grants, preferential purchasing agreements for oil, and biased market structures, add an additional $4,000 million to that figure. This compares with the $360 million being provided by the Commonwealth for renewable energy programs.

Historically, energy market structures have also subsidised fossil fuel use, with public ownership of energy utilities attracting low interest finance, long payback periods for investment in infrastructure, and economies of scale arising from mandating supply, including to country areas. The Committee also heard evidence about transmission pricing regimes which also act as a hidden subsidy to large electricity producers, and large public subsidies to generators keep prices to aluminium smelters low.

Such subsidies encourage the use of high emissions fuels, create substantial barriers to entry for cleaner forms of energy, distort market structures, and leave pollution costs to be borne by the environment and consumers.

Energy efficiency

Demand management offers enormous potential for emissions reduction. The Committee heard that Australia could cut its energy emissions by somewhere between

7 and 27 Mt per annum by implementing cost-effective energy efficiency and demand management measures. This could be achieved at a *net profit* of as much as $31 per tonne of carbon. Taking advantage of this enormous potential for low and even negative cost greenhouse abatement requires action across a broad range of areas: increasing minimum energy performance standards to world's best practice; changing building codes, architecture and planning processes; developing and spreading expertise; and creating price and other incentives for consumers.

Renewable energy potential

The Commonwealth Government has recognised the potential of the renewable energy sector, with over $300 million of initiatives in commercialisation, venture capital and solar photovoltaic rebates for consumers, and the introduction of legislation to implement its mandatory 2 per cent renewable electricity target. The New South Wales Government's Green Power program, and the establishment of the Sustainable Energy Development Authority (SEDA), have also been valuable initiatives.

The renewable energy industry argues that there is enormous future market potential, both within Australia and globally, particularly in Asia, and this view has been endorsed by the Prime Minister's Science and Innovation Council. Long term estimates of the global market for sustainable energy run to hundreds of billions of dollars, and the Committee believes that Australia should position itself now to take advantage of this potential.

The Committee sees value in the development of a process by which guidelines and processes for evaluation of the environmental sustainability and acceptability of proposed renewable energy projects can be developed so that debates over the environmental acceptability of some renewable energy projects can be resolved.

Basslink

Basslink is the planned 400MW high voltage cable between Victoria and Tasmania and the Committee heard contradictory evidence about its likely greenhouse impact. Some witnesses argued that it would stimulate a large flow of baseload brown coal-fired power from Victoria into Tasmania, and others arguing it would be outweighed by flows northward of hydroelectric and wind power.

There has been no definitive study of the likely greenhouse impact of Basslink.

The Committee:

- recommends that the Council of Australian Governments (COAG) designate the reduction of harm to the environment as a goal of ongoing energy market reform;
- recommends that the Government also give consideration to more stringent national power generation emissions standards;

- recommends that the National Competition Council (NCC) incorporate benchmarks for the reduction of the greenhouse intensity of power generation into its assessment of governments' progress on national competition policy reforms;
- recommends that the Government implement as a matter of urgency the National Electricity Market (NEM) reform measures under the NGS, particularly those relating to grid access and the removal of transmission distortions;
- recommends that any decision to proceed with Basslink take into account the impact of the NEM reforms agreed to by Australian governments under the NGS;
- recommends an aggressive energy efficiency campaign to tap existing cost-effective emissions reduction potential;
- recommends that Australian governments streamline and coordinate their processes for developing and implementing world's best practice energy efficiency standards for products;
- recommends that the inclusion of energy efficiency and greenhouse considerations into the Building Code of Australia be given priority for implementation; and
- recommends that the Commonwealth Government, in consultation with the industry, develop an aggressive industry development program for the Australian renewable energy industry.

The Transport Sector

In 1998 transport energy accounted for 15.9 per cent of Australia's total emissions (72.6 Mt CO_2-e). This was an 18 per cent (11.1 Mt) increase over the 1990 level of 61.5 Mt. Transport is the third largest emissions sector after stationary energy and agriculture, and is showing the second fastest rate of growth.

89.3 per cent (64.8 Mt) of the 1998 total was from road transportation, with smaller amounts for civil aviation (4.4 Mt) and rail (1.6 Mt). Road transport emissions increased 18.2 per cent between 1990 and 1998 and car emissions by 16.6 per cent during the same period. Australia has the third highest transport emissions per capita in the world, and a very high level of fuel use per capita - 20 per cent higher than the OECD urban average. 92 per cent of urban passenger transport is undertaken by private motor vehicle. Australia also has one of the highest levels of road freight per capita (measured in tonne kilometres per head).

Evidence provided to the Committee suggested the following reasons for Australia's high transport emissions:

- rail infrastructure and services have been allowed to deteriorate. The London-based Economist Intelligence Unit in 1997 rated Australia a lowly 2, on a scale of 1 to 5 for the extensiveness and quality of its rail network, and over the past

25 years the Commonwealth has spent $37.5 billion on roads, more than 20 times the amount spent on rail infrastructure over the same period. Nationally, governments at all levels spend $7,000 million per year on roads compared with $400 million on rail; and

- the tax system is biased towards road and motor vehicle use. Witnesses raised diesel fuel excise cuts, the GST package and fringe benefits tax (FBT) arrangements as major problems. FBT currently rewards the inclusion of vehicles in salary packages and discourages the inclusion of public transport or cycling expenses. It also encourages drivers to increase their mileage.

The Commonwealth does have policies in place which aim to reduce transport emissions. These include a national cycling strategy, and funded initiatives such as the Diesel and Alternative Fuels Grant Scheme, the Alternative Fuels Conversion Program (which provides rebates for the conversion of engines over 3.5 tonnes to alternative fuels), and a program to establish a number of Compressed Natural Gas fuelling stations. However, as a whole, transport is arguably one of the weakest areas of the NGS.

The Government still has not implemented the key recommendations of the 1998 House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform report, *Tracking Australia*, which recommended that the Commonwealth invest $750 million to July 2001, and an additional $2 billion over the 10 years from 2001, to upgrade interstate mainline track.

The Committee:

- recommends that the Commonwealth Government demonstrate vision, leadership and a long term commitment to achieving integrated sustainable transport solutions;

- recommends that the Commonwealth adopts integrated transport planning so that all transport funding proposals include an assessment of environmental impacts and alternative transport solutions. Funding allocation decisions should be based on clear and accepted principles, and be subject to the highest standards of transparency and accountability;

- the Committee recommends that greenhouse abatement and other environmental goals should be incorporated into transport policies, and taxation and planning policies which affect transport, as fundamental and governing priorities;

- recommends that the Commonwealth Government work with state, territory and local governments around Australia to assess needs for new and improved public transport infrastructure and services, to scope and develop new proposals, and develop cooperative long term funding models. Project proposals should also include quantified greenhouse emissions reductions and other health and pollution mitigation benefits;

- recommends that the Commonwealth Government commit to provide substantial funding for new rail infrastructure and improvements to existing infrastructure as part of a cooperative strategy with the states;
- recommends that a national strategy be developed with vehicle manufacturers to increase the availability of fuel efficient alternative fuel vehicles;
- recommends that, as part of overall greenhouse gas emissions reduction activity, Commonwealth agencies be required to set emission efficiency targets for fleets, and that agencies be encouraged to purchase alternative fuel and hybrid electric petrol vehicles as they replace their fleet and as one mechanism to achieve efficiency targets;
- recommends that the Government alter Fringe Benefits Tax legislation to remove the incentive for employers to include motor vehicles for private use in salary packages, to remove financial rewards for travelling more kilometres in a vehicle under a novated lease and to introduce generous deductions for the inclusion of public transport and cycling expenses in salary packages;
- recommends that public transport fares be considered for exemption from (or zero rated for) GST;
- recommends that the Government consider how the proposed Energy Credit Scheme can be used to gradually phase-out diesel fuel rebates and credits. The Committee supports the use of other greenhouse-neutral compensatory measures to ensure that such a phase-out does not lead to greater hardship in rural and remote areas; and
- recommends that the Government, in consultation with the states, develop a communications strategy to educate consumers about the benefits of using public transport, walking and cycling, the benefits of cleaner, quieter, more fuel-efficient vehicles, the whole-of-life environmental impacts of second hand vehicles, and the benefits of better vehicle maintenance and 'greener' driving.

Terrestrial Carbon Sinks

Terrestrial carbon sinks are mostly vegetation (including forests, plantations and soil carbon) which remove carbon dioxide from the atmosphere and store it in their molecular structure.

The role of terrestrial carbon sinks in meeting Australia's Kyoto Protocol target and their inclusion in the Protocol was a key focus of many submissions and evidence presented to the inquiry. Carbon sequestered through land-based sinks has been prominent in debate at both a national and international level and was the subject of a recent IPCC Special Report. Policy uncertainties have resulted in disjointed activities, and an inability to develop a comprehensive national framework to guide the use of sinks as a greenhouse gas abatement measure.

Of key concern in the inquiry was:

- the permanence of the carbon stored in sinks;
- how emissions and sequestration will be measured, monitored and accounted for;
- the scope and extent of the use of sinks as a measure to offset emissions; and
- potential socioeconomic and environmental impacts.

As a greenhouse response measure, investment in carbon sinks can offer a range of benefits, beyond greenhouse abatement, such as enhancing biodiversity conservation; improving water quality and agricultural soils, employment opportunities; and a sustainable source of biofuels. However, if sinks are not appropriately managed, and effective policies and frameworks set in place to guide their use, there is the potential to compromise efforts to reduce emissions at source under the Protocol, or have adverse environmental or socioeconomic effects. In addition, the enhancement of carbon sinks is potentially reversible as a result of human activities, disturbances or environmental changes including climate change.

There is continuing uncertainty about the way in which the provisions for sinks in the Kyoto Protocol will operate, and the rules and modalities of the sinks provisions in the Protocol and their applicability in the flexibility mechanisms are yet to be agreed by Parties. These issues are the key focus of the upcoming 6th Conference of the Parties to the Protocol (CoP 6). Accounting for the carbon stored in sinks is a critical issue. There is a need at both the international and domestic level to devise credible, transparent systems to minimise loopholes and double counting.

There is a need to ensure that all activity is undertaken with the principles of ecological sustainability in mind. Such activities should be for the purpose of reducing emissions, not simply an offset for allowing the increase of emissions elsewhere; and negative impacts such as the delay to more sustainable forms of energy use and adverse socioeconomic and environmental impacts must be avoided. This can be achieved by ensuring that appropriate guidelines are developed as part of the ongoing international negotiations on the flexibility mechanisms and sinks.

The removal of vegetation for agricultural, forestry or other purposes results in the disruption of the natural carbon cycle of plants and soils which otherwise act as a carbon store. In Australia this has resulted in significant emissions, particularly as a result of land clearing. Australia's commitment to reducing greenhouse emissions, and the protection and enhancement of greenhouse sinks, is seriously undermined when our existing carbon stores continue to be depleted primarily as a result of land clearing.

At present emissions from land clearing are not included in the National Greenhouse Gas Inventory (NGGI) national emissions total, leading to a distorted view of Australia's actual emissions. The current rates of land clearing must be curbed. This requires greater leadership by the Commonwealth and a willingness to work more effectively with (and in support of) state and territory governments to ensure that strong national controls on land clearing are implemented.

The Committee:

- recommends that the Commonwealth and states introduce strong national controls on land clearing as a matter of urgency;
- recognises the concerns regarding the inclusion of sink activities in the Kyoto Protocol flexibility mechanisms, but supports their inclusion on the basis that they will ultimately be of greater benefit;
- recognises the protection of biodiversity as a primary aim;
- acknowledge that the credibility of the use of sinks relies on the credible, verifiable, and transparent recording and reporting of changes in carbon stocks and/or changes in greenhouse gas emissions by sources and removals by sinks;
- recommends that sinks inclusion in emissions trading be contingent on independent verification to ensure transparency and credibility and subject to permanence and biodiversity requirements; and
- is strongly of the view that sinks activity in greenhouse abatement policy should complement other activities to reduce emissions at source.

Agriculture and Greenhouse

The role that rural and regional communities can play in reducing Australia's greenhouse gas emissions also requires greater consideration and the engagement of the rural sector. Agricultural activities such as livestock production, rice cultivation, and pasture management are responsible for approximately 20 per cent of Australia's total emissions (excluding land use change and forestry) and are the largest source of methane and nitrous dioxide emissions.

There are options for reducing greenhouse gas emissions in the agricultural sector that could be pursued more vigorously. These include technological options (such as rumen modifier vaccines) which remain some years off, and opportunities for sustainable agricultural management. A priority needs to be enhancing understanding of the agricultural sector about climate change and involving agricultural producers in identifying beneficial action that can be taken.

The Committee:

- recommends that support be given to strategies that boost investment in greenhouse abatement in rural Australia; and
- recommends that regional abatement strategies encourage the retention of native vegetation, investment in revegetation activities and investment in plant that will support such activities such as biomass-based cogeneration plants.

Local Government and Community Input

The Committee views local governments as key stakeholders in Australia's response to global warming. It has been estimated that 50 per cent of household emissions are

directly or indirectly influenced by local government. It is important that local governments increasingly make a contribution to abatement efforts, and are given assistance to make those efforts.

Some Australian councils are already leading the way. Leichhardt Council in Sydney applies mandatory energy efficiency standards in all new homes and home renovations, including the installation of solar hot water heaters. Newcastle City Council achieved energy efficiencies of 20 per cent with commercial rates of return on investment, and is seeking to spread its experience to other councils through the Green Energy Learning Program and the Cities for Climate Protection™ Program. The Australia-New Zealand Chapter of the International Council for Local Government Initiatives has included 84 Australian councils in its greenhouse action program.

Barriers to greenhouse action by local government include a lack of data about energy usage from utilities, inconsistent ownership and regulatory arrangements over energy-intensive infrastructure such as streetlights, poor co-ordination between local, state and Commonwealth governments in urban planning, and a lack of experience about greenhouse issues and actions within local government. Community engagement is key to the successful implementation of many greenhouse gas abatement measures. A major deficiency of the NGS measures and many government programs is that the community is unaware of the NGS or steps they could take to contribute to reducing greenhouse gas emissions.

The Committee:

- applauds the efforts of councils, such as Leichhardt Council and Newcastle City Council, on their initiative to date in greenhouse emissions abatement;
- urges state and Commonwealth governments to assist local government to remove barriers to effective greenhouse action, and to ensure that local government is involved in and consulted about work on energy efficiency and building standards, urban planning and transport; and
- recommends that consideration be given to local councils for funding under Commonwealth programs such as GGAP to recognise both the potential for local delivery and the geographic limits of councils.

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Senator Lyn Allison — Chair

Senator the Hon Nick Bolkus