

Submission to the

**Senate Environment, Communications, Information
Technology and the Arts Reference Committee**

Inquiry into

Australia's Response to Global Warming

Prepared by the Australian Greenhouse Office



AUSTRALIAN
Greenhouse
Office

The lead Commonwealth
agency on greenhouse
matters

on behalf of

The Commonwealth Government

November 1999

Summary

The Commonwealth Government has committed almost \$1 billion to greenhouse response – the largest and most far-reaching package of measures to address climate change ever undertaken by any government in Australia.

This submission outlines the action being taken by the Commonwealth in response to climate change under the following key outputs:

Leading the Agenda

- ❑ considerable achievement in international negotiations under the FCCC and Kyoto Protocol;
- ❑ international partnerships and provision of financial assistance supporting international emission mitigation projects;
- ❑ leadership in implementation of the *National Greenhouse Strategy*; and
- ❑ progress in assessment of options for the establishment of a national emissions trading system.

Taking Early Action

- ❑ strong early voluntary action to reduce greenhouse emissions through a partnership approach with industry (Greenhouse Challenge) and local government (Cities for Climate Protection™); and
- ❑ action to transform the Australian Public Service into a world's best practice energy user.

Promoting Sustainable Energy

- ❑ significant support for the development and uptake of renewable energy;
- ❑ new standards to reduce the greenhouse intensity of power generation and fuels;
- ❑ increasing energy efficiency through new codes and standards for buildings and appliances; and
- ❑ stimulating energy efficient best practice in industry.

Enhancing the Land

- ❑ substantial achievements in carbon sequestration by revegetation through a range of NHT programs;
- ❑ new partnerships and approaches to address emissions from agriculture; and
- ❑ significant progress in establishing a national system to account for carbon.

Staying on Track

- ❑ annual preparation of the National Greenhouse Gas Inventory;
- ❑ increased focus on compiling projections of greenhouse emissions; and
- ❑ leadership in promoting Australian greenhouse science.

Commonwealth Submission to the Senate Inquiry into Australia's Response to Global Warming

Introduction

The Commonwealth Government recognises the critical and pervasive nature of the threat of global warming, and takes seriously its responsibilities under the 1992 United Nations Framework Convention on Climate Change (UN FCCC), the Kyoto Protocol and the *National Greenhouse Strategy*. The opportunity to provide a submission to this Inquiry on Australia's response to this global challenge is welcomed.

Australia, along with other Parties, has a range of commitments under the UN FCCC, which in general are to:

- Adopt national programs for mitigating climate change;
- Develop adaptation strategies;
- Promote the sustainable management and conservation of greenhouse gas sinks;
- Take climate change into account when setting relevant social, economic and environmental policies; and
- Cooperate in technical, scientific and educational matters; and to promote scientific research and the exchange of information.

In addition, the Kyoto Protocol, if ratified and in force, would commit Australia to ensure (through domestic action and the use of the international flexibility mechanisms (International Emissions Trading, Joint Implementation and the Clean Development Mechanism)) that its average annual greenhouse gas emissions do not exceed 108% of 1990 levels during the first quantified emission commitment period, from 2008 to 2012. This target for Australia represents a similar reduction task to other developed countries of around 28% below business as usual. The Government believes Australia's Kyoto Protocol target to be a challenging but achievable one, requiring efforts by all sectors of the Australian economy.

The Government is committed to addressing global warming in a way that effectively promotes Australia's national interests. Those interests lie both in maintaining industry competitiveness and protecting jobs, particularly for rural Australia, while ensuring that Australia plays its part in the world wide effort needed to reduce greenhouse gas emissions.

Australia's national circumstances are different to many other countries in that:

- Australia is more dependent on fossil fuels than any other OECD country;
- Our population continues to grow rapidly;
- Australia is experiencing stronger economic and employment growth than most OECD countries;
- Our cities are decentralised and widely separated, resulting in high transport use per capita;
- Our trade profile means about 20 per cent of our greenhouse gas emissions are embodied in our exports (notably aluminium and agricultural products);
- While most developed countries have relatively stable patterns of land usage, land use patterns in Australia are still undergoing significant change.

The above factors give Australia a unique emissions profile which is closely linked to our position as a major trader in resource and energy intensive commodities. This adds to Australia's challenge as many of our trading partners are developing countries and are not subject to any emissions abatement commitments under the UN FCCC/Kyoto Protocol.

This submission outlines the action being taken by the Commonwealth in response to climate change, notably the extant policy framework and key areas of policy development, and the wide range of Government programs in place or currently being developed. The submission has been prepared by the Australian Greenhouse Office, as the lead Commonwealth agency on greenhouse, on behalf of Environment Australia, Agriculture, Fisheries and Forestry - Australia, the Department of Industry, Science and Resources, the Department of Foreign Affairs and Trade, and the Department of Transport and Regional Services.

While Australia is responsible for around 1.4% of the world's emissions, (this percentage will fall as emissions from developing countries grow in association with economic growth) it has made a commitment to contribute effectively to the global challenge of climate change. The Commonwealth Government has committed almost \$1 billion to greenhouse response – the largest and most far-reaching package of measures to address climate change ever undertaken by any government in Australia. The Commonwealth's broad range of programs and expenditure (on a per capita basis), places Australia among the leading nations addressing climate change.

In particular the funding has been provided to implement key programs:

- Announced by the Prime Minister in his November 1997 statement *Safeguarding the Future: Australia's Response to Climate Change* (copy attached);
- Of Commonwealth responsibility or national importance within the *National Greenhouse Strategy* (copy attached); and
- Announced as part of the 1999 *Measures for a Better Environment* (information attached).

A significant new program announced as part of the *Measures for a Better Environment* is the \$400 million Greenhouse Gas Abatement Program which aims to achieve maximum emissions abatement or sequestration outcomes as well as:

- attain long-lasting results that translate into sustained reduction in emissions during the period 2008-2012 and/or beyond;
- be cost-effective with a least cost impact on economic activity;
- have consistency with ecologically sustainable development;
- where appropriate generate employment, the use of new technologies and innovative processes, support export opportunities, act as a catalyst for further non-government investment, and provide opportunities in rural and regional Australia.

The program will commence in 2000/01 and the Government is consulting with stakeholders in its development.

The establishment of the Australian Greenhouse Office (AGO), the world's first dedicated greenhouse organisation, reveals the priority afforded greenhouse by the Government. As the lead Commonwealth agency on greenhouse matters, it is responsible for implementing the Government's progressive agenda on greenhouse, and promoting a whole-of-government position on greenhouse issues to the broader domestic and international community. Copies of the AGO's *Annual Report 1998-99*, *Corporate Plan 1999-2001* and the pamphlet *Australia's Response to the Greenhouse Effect* are attached. A wide range of information on greenhouse programs is available from the AGO internet site at www.greenhouse.gov.au/

The Commonwealth's response to climate change, however, is broader than those greenhouse programs delivered by the AGO. Other important greenhouse programs and policy are delivered by the Department of Industry, Science and Resources (energy market reform, energy efficiency best practice and benchmarking, International Greenhouse Partnerships Program and Commonwealth Operations), Agriculture, Fisheries and Forestry Australia (forestry sinks), Department of Foreign Affairs and Trade (international climate change negotiations) and the Department of Transport and Regional Services (transport programs).

The Commonwealth places a high priority on ensuring a national approach to greenhouse issues. Australia was one of the first to implement a national greenhouse response with the release of the *National Greenhouse Response Strategy* in 1992. This approach has continued with the release of the *National Greenhouse Strategy* (NGS) in 1998. Many of the key measures in the NGS require coordinated national implementation, involving action by all or most jurisdictions. The Commonwealth has a key role in driving the national agenda through a range of fora including Ministerial Councils, the NGS Implementation Planning Group and other Commonwealth, State and Territory committees and working groups.

Australia's commitment to greenhouse action is comprehensive and long term, and will continue beyond the first commitment period of the Kyoto Protocol (2008 - 2012). Research and development in areas relevant to greenhouse abatement is important in underpinning Australia's long term future greenhouse response, and certainly after 2012.

This submission outlines the actions being taken by the Commonwealth in response to climate change based on the following key outputs:

Leading the Agenda	<i>Developing the strategy for the future and broadening the commitment to greenhouse action;</i>
Taking Early Action	<i>Working with partners across Australia to take immediate action in reducing our national greenhouse emissions;</i>
Promoting Sustainable Energy	<i>Reducing emissions for the energy sector while meeting the needs of the community and stakeholders for ecologically sustainable energy services;</i>
Enhancing the Land	<i>Enhancing Australia's natural resource management by promoting greenhouse actions on the land;</i>
Staying on Track	<i>Evaluating progress towards commitments under the Convention and the Kyoto target, and improving the knowledge base on climate change.</i>

Leading the Agenda

Developing the Strategy for the future and broadening the commitment to greenhouse action

The Commonwealth Government seeks to lead Australia's greenhouse response through:

- influencing the international agenda by engaging in international developments and coordinating the domestic policy basis for international positions;
- its role in the coordination, implementation and evaluation of the *National Greenhouse Strategy*;
- the development of options for a possible domestic emissions trading scheme.

International Agenda

Australia's efforts to reduce greenhouse gas emissions are part of an international negotiating process to combat global warming. This international negotiating process acknowledges that climate change is a global problem requiring global solutions. The adoption of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (FCCC) in December 1997 was a major step in developing a global response.

Australia is working with other countries to elaborate key elements that will be needed to enable the Kyoto Protocol to enter into force. Decisions about ratification will likely be made by Annex B (developed) countries following agreement on these key elements. The key issues under negotiation include rules for the operation of the Kyoto mechanisms (International Emissions Trading, Joint Implementation, and the Clean Development Mechanism), sinks and compliance. The Buenos Aires Plan of Action, agreed at the Fourth Conference of Parties in 1998, sets in train a process for taking decisions on the rules for the Kyoto mechanisms and these other issues by the Sixth Conference of the Parties, which is to be held in The Hague in November 2000.

Australia is seeking to maximise its influence in the negotiations by working closely with its Umbrella Group partners (the U.S., Canada, Japan, New Zealand, Norway, Iceland, Russia and the Ukraine). The Umbrella Group has made a joint submission on the rules for the operation of the Kyoto mechanisms, where it seeks market-based, transparent and uncapped arrangements. The mechanisms are of key importance to the achievement of the environmental objectives of the Convention and the Kyoto Protocol, as they will allow those goals to be met in a cost-effective manner.

We are also working with the Umbrella Group on carbon sinks, which remains a central issue for Australia. They are a critical element in enabling Australia to meet its Kyoto Protocol target. Our view is that sinks are an important means of achieving greenhouse gas abatement. A key issue for Australia next year will be negotiations on sinks at COP 6, which will be informed by the Special Report by the Intergovernmental Panel on Climate Change on Land Use and Land Use Change and Forestry, due for release in May 2000.

An effective compliance system will be important to the successful implementation of the Kyoto Protocol. Few countries will be prepared to incur the costs and undertake the required structural changes to their economies in order to meet their targets unless they can be sure that others will also abide by their commitments. The Protocol's compliance system will also underpin the operation of the Kyoto mechanisms.

Australia's developing country trading partners are not subject to any emissions abatement commitments under the UN FCCC/Kyoto Protocol. Australia exports many of its resource and energy intensive products to these countries. A key consideration for Australia is that without the effective participation of developing countries in measures to reduce global emissions, an incentive could be created for some industries to relocate from developed to developing countries. This is known as "carbon leakage" and has the potential to undermine Australia's competitiveness in some sectors.

Australia is working with developing countries to secure their participation in emissions abatement. While developing countries tend to argue that climate change is the result of emissions by developed countries, the environmental objective of reducing global emissions will not be achieved without a reduction in developing country emissions. Australia believes that ultimately, developing countries should have differentiated emission commitments that recognise their particular economic and social circumstances.

Supporting International Efforts to Address Climate Change

Australia's overseas aid program is funding programs and projects that help to abate greenhouse gas emissions, assist in regional and international efforts to monitor climate change, and facilitate adaptation to climate change. Expenditure on climate change-related aid activities in the 1998-99 financial year was approximately \$29.5 million. The total value of climate change related activities currently undertaken by the Australian aid program is around \$268 million.

The Australian Government will continue to support projects that contribute to reducing greenhouse gas emissions, enhancing carbon sinks, and helping countries adapt to the adverse effects of climate change. These projects will variously involve institutional strengthening, climate and sea level monitoring, and the transfer of practical technologies in areas such as energy efficiency, solar energy, forestry and land management. Greenhouse gas assessments will continue to be part of feasibility studies for all large AusAID projects judged as having major greenhouse gas implications.

The aid program also supports a wide range of projects (see Box 1 below) to improve environmental management in sectors such as energy, forests and land resources. These activities indirectly enhance the ability of developing countries to address climate change issues.

Box 1: International Projects Supported by the Australian Government

- *The Global Environment Facility (GEF) is the financial mechanism of the Framework Convention on Climate Change. Australia has committed approximately \$46 million to the GEF since 1991 as core funding for climate change activities. Australia provided these funds in accordance with its obligation under the Climate Change Convention to provide new and additional financial resources to assist developing countries.*

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- *As a donor, Australia supports the World Bank's program of national strategy studies to help build the capacity of developing countries to benefit from the Kyoto Protocol's Clean Development Mechanism (CDM). The Bank also has a solar initiative to hasten the commercialisation of solar and other renewable energy technologies and significantly expand their applications in developing countries.*
- *Similarly, Australia supported the Asian Development Bank's recently completed study in 12 Asian countries of their 1990 national emission levels of greenhouse gases (GHGs), their projections of GHGs emissions to 2020, and an analysis of the mitigation options in the different economic sectors.*
- *Australia and the World Bank have signed an agreement concerning the National Strategy Study Program (NSS) for the Kyoto Protocol's Clean Development Mechanism (CDM). Australia will provide \$3 million to be used for the execution of selected climate change-related studies in the Asia Pacific region. The NSS Program is a collaborative initiative between the World Bank and bilateral donors, including Australia. The Australian NSS program aims to build capacity of developing countries in the Asia Pacific region to explore the opportunities and potential benefits of participating in the CDM. It also helps them to explore their role in the CDM, identifying potential investment projects and developing national policies regarding the CDM.*

International Greenhouse Partnerships

International Greenhouse Partnerships are aimed at laying the groundwork for Australia and cooperating countries to benefit from mutually beneficial greenhouse gas mitigation projects under the project-based Kyoto mechanisms, viz Clean Development Mechanism (CDM) and Joint Implementation (JI). Cooperating countries will benefit through enhanced investment, technology transfer and human resource development, and Australian investors will be able to secure greenhouse gas mitigation credits from such projects.

The Prime Minister's 1997 package of measures included funding to facilitate commercial projects in developing countries and help meet the additional transaction costs incurred by business in undertaking projects related to Activities Implemented Jointly, CDM and JI.

Australia now has nine approved projects in five countries (Chile, Fiji, Indonesia, Mauritius and the Solomon Islands). Five new projects on fugitive emissions, fuel conversion, energy efficiency and renewables were endorsed recently in Chile, Indonesia, Mauritius and the Solomon Islands.

The Program is also building awareness of the project-based Kyoto mechanisms by staging bilateral workshops in cooperating countries and training and development courses in Australia. Bilateral workshops have been held in conjunction with Indonesia, Mauritius, Viet Nam and 14 Pacific Island countries. Fifteen countries from Asia, South America, South Pacific and Africa attended the first training course at the University of Melbourne. The International Greenhouse Partnerships Office is currently following up on several other projects from the first and second round of applications. Further information is available at: http://www.isr.gov.au/resources/energy_greenhouse/igp/index.html

The National Greenhouse Strategy

The *National Greenhouse Strategy* (NGS), released in November 1998, provides the strategic framework for Australia's greenhouse response. The NGS was developed by the Commonwealth and all State and Territory Governments, with input from the Australian Local Government Association, industry and the community. It maintains a comprehensive approach to tackling greenhouse issues, and details both existing and additional measures aimed at improving our awareness and understanding of greenhouse issues, limiting the growth of emissions and enhancing greenhouse sink capacity, and developing adaptation responses. A copy of the NGS is attached.

In endorsing the Strategy, the Commonwealth, States and Territories demonstrated the commitment of governments to an effective national greenhouse response. Governments agreed that implementation of the Strategy will forge major reductions in Australia's projected emissions growth, consistent with meeting our international commitments.

The Commonwealth, State and Territory Governments have undertaken an extensive implementation planning process, detailing the actions to be taken to implement the Strategy. A key feature of this process is a recognition of Australia's regional diversity, and the capacity for different governments to pursue effective greenhouse response through different policy approaches. Several Ministerial Councils have also undertaken implementation planning for nationally coordinated measures under the NGS. Implementation plans for NGS measures will be published on the internet by the end of 1999.

Emissions Trading

The Australian Greenhouse Office is assessing options for establishing a possible national emissions trading system, which sets the scene for potential major policy advances in greenhouse gas abatement approaches, with a view to advising Government early in 2000. The Government has not made any decision on the introduction or otherwise of a national emissions trading scheme.

The AGO strategy for developing advice to the Government involves consultation with key experts, State and Territory Governments, industry (both sources and sinks) conservation groups, other interested parties and the general public through meetings, seminars and a series of discussion papers (see Box 2 below).

The AGO has established an Experts Group on emissions trading, which brings together a number of public and private sector experts who have made a contribution in the field of emissions trading and related areas. Also, an Emissions Trading Sub Committee of the Council of Australian Governments (CoAG) High Level Group on Greenhouse has been established to consult with State and Territory Governments. Consultation with other interested parties is occurring through peak industry organisations and other fora.

Box 2: Emissions Trading Discussion Papers

The AGO is producing a series of four discussion papers on emissions trading.

- *Discussion paper one, Establishing the Boundaries, considered the comprehensiveness of a national emissions trading system within Australia, focusing on the greenhouse gases and sectors of the economy that could be covered. Establishing the Boundaries was released on 19 March 1999 with approximately 2,500 copies distributed and 53 submissions received. A copy of Establishing the Boundaries is attached.*
- *Discussion paper two, Issuing the Permits, covered issues related to the allocation of permits, including grandfathering, auctioning, and recognition of early abatement action, permit duration, and the transition toward possible emissions trading within Australia. The paper was released on 30 June 1999 with around 2,300 copies distributed and 30 submissions received. A copy of Issuing the Permits is attached.*
- *Discussion paper three, Crediting the Carbon, discussed the design of a national emissions trading system that allows for carbon credits, including carbon sinks. The paper was released on 7 October 1999 with a closing date for submissions of 30 November 1999. A copy of Crediting the Carbon is attached.*
- *Discussion paper four, Designing the Market, will cover issues such as permit design, measurement and monitoring emissions, reporting emissions, compliance to meet Government commitment to international targets, penalties and registry of permits. The paper is due for release in November 1999.*
- *The AGO also commissioned the Centre for International Economics (CIE) to undertake a study on early greenhouse action. The CIE report Early Greenhouse Action was released with Discussion Paper 2 for public comment in June 1999. Over 2,300 copies were distributed. A copy of Early Greenhouse Action is attached*

The discussion papers and the CIE study are being widely circulated for comment to allow the AGO to systematically develop views on the establishment of a national emissions trading system in Australia. The AGO will then submit these views to the Commonwealth Government for its consideration.

The AGO is preparing to commission economic modelling to assess the likely impacts upon industry sectors of the introduction of a national emissions trading system under various scenarios. This will involve short term work relating to interrogation of existing models and longer term development work on modelling.

It should be noted that the AGO is also analysing the work of the 1998 inquiry by the then House of Representatives Standing Committee on Environment, Recreation and the Arts (HORSCERA) into the regulatory arrangements for trading in greenhouse gas emissions.

In May 1999, the Government provided an interim response to the HORSCERA report, indicating that the AGO, as part of its feasibility study, would consider the findings of the report, and would consult with interested parties on the Committee's recommendations and the issues raised in the report. The Government proposes, at the end of the AGO consultation process, to consider both the HORSCERA recommendations and the recommendations from the AGO as to the feasibility and design of a national emissions trading system.

Taking Early Action

Working with partners across Australia to take immediate action in reducing our national greenhouse emissions

The Commonwealth is encouraging early voluntary action to reduce greenhouse emissions through a partnership approach with industry, local government and the household sector as well as leading by example to transform the Australian Public Service into a world's best practice energy user.

Early Action by Industry: Greenhouse Challenge

The Greenhouse Challenge (the Challenge) is a joint initiative between industry and the Commonwealth Government. Through the mechanism of cooperative agreements, the Challenge provides a framework to undertake and report on actions to abate greenhouse gas emissions. Participation in the program is voluntary and now covers most sectors of industry and government organisations.

Industry was a key advocate for the creation of the program to demonstrate that voluntary action could yield significant greenhouse results. The Challenge provides avenues for large, medium and small business to contribute to greenhouse gas abatement.

Program Targets

Initially, the sole performance indicator for the program was emissions savings, with an initial estimate of achieving 15 million tonnes of greenhouse gas abatement annually by 2000.

The Prime Minister's 1997 statement allocated an additional \$27.1 million over five years to facilitate further uptake of the Challenge by industry, particularly small and medium sized enterprises. Targets of 500 participating organisations by 2000 and 1000 by 2005 were set. The Prime Minister's statement anticipated that the Challenge would achieve emissions abatement of 22 Mt CO₂-e (equivalent) in the year 2000.

On the basis of actions undertaken by current participants, the program is expecting a reduction of 23.5 Mt CO₂-e (equivalent) off annual emissions by 2000. As at the beginning of October 1999, the program has 231 full program members, with a further 180 enterprises having made a commitment to join.

Demonstrated Success of Voluntary Approaches

The Challenge has demonstrated that voluntary programs can succeed in contributing to significant emissions abatement. The program has been successful in reducing emissions by offering industry a range of incentives to join such as:

- bottom line improvements through reduced greenhouse gas emissions;
- capacity and knowledge building regarding emissions measuring and reporting;
- a conduit into the Commonwealth greenhouse policy environment.

Evaluation

As foreshadowed in the original Greenhouse Challenge Implementation Plan, the program was evaluated during 1999. The evaluation was managed jointly by industry and government through the Evaluation Steering Group, which was chaired by Professor Stuart Harris. In short, the evaluation's conclusions regarding the program were positive, with recommendations focusing on ways to better target Challenge activities. A copy of *Greenhouse Challenge Evaluation Report* is attached.

Government Operations

The Commonwealth Government has made a strong commitment to ensuring that its own Government procurement and operations maximise energy efficiency. The Department of Industry Science and Resources and the AGO are jointly responsible for implementing the program. The policy to improve energy efficiency in Government operations includes mandatory energy reporting against mandatory energy performance targets, with targets to be established for the Commonwealth vehicle fleet. An annual whole of Government report is tabled in the Parliament in December by the Department of Industry Science and Resources. A copy of *Energy Use in Commonwealth Operations 1997-98* is available at <http://www.isr.gov.au/resources/netenergy/domestic/comm/97-98report.pdf>

Advice is provided to the Commonwealth agencies on building related energy matters and the Program brokers advisory services from the private sector. Information and expertise on improving energy efficiency in Government operations is shared with the States and Territories through a consultancy group.

Local Government and Household Action

The Cities for Climate Protection™ Australia (CCP) Program represents a unique collaboration between the Commonwealth Government and local governments. It is part of a global campaign initiated by the International Council for Local Environment Initiatives, that motivates and empowers local governments to reduce greenhouse gas emissions through a milestone framework which includes an inventory, target and action plan.

Since the establishment of the Program in September 1998, (following the completion of a successful pilot program in 1997-98) there has been an overwhelming response by Australian Councils. There are now over 70 participating local governments covering 34 per cent of Australia's population who have committed themselves to take action on greenhouse issues. This is the fastest uptake of the program in the world.

To date, 43 Councils have completed an inventory of greenhouse gas emissions within their municipalities and a projected forecast of expected future emissions growth. In total, these councils identified corporate and community emissions of over 89Mt CO₂-e for the base year of either 1995 or 1996. Following the establishment of baseline figures, CCP™ councils set an emissions reduction goal, that reflects local circumstances and data. Councils are encouraged to actively engage and consult with their communities in setting the reduction goal.

The Commonwealth has also recognised the potential for emission reductions from the Household sector as addressed by the AGO's Household Greenhouse Action (HGA) program. The HGA program is facilitating partnerships across community, industry and governments via the provision of grants to projects that address barriers to the supply and demand of energy efficient goods and services to households. Information on the program is available at <http://www.greenhouse.gov.au/household/>

Promoting Sustainable Energy

Reducing emissions for the energy sector while meeting the needs of the community and stakeholders for ecologically sustainable energy services

Energy consumption is the primary source of Australia's greenhouse gas emissions and emissions growth. Stationary energy contributed 55% of net emissions, excluding land use change, in 1996. The recently released ABARE report, *Australian Energy: Market Developments and Projections to 2014-15*, projects that energy consumption is set to grow by some 46% over the 1990 to 2010 period.

The Commonwealth is seeking to:

- reduce the greenhouse gas intensity of energy supply, transformation and distribution; and
- to reduce the greenhouse gas intensity of final energy demand.

The Commonwealth has a number of programs in place which are delivering on these objectives.

Energy Market Reform

Energy market reform is an overarching strategy to improve the efficiency and competitiveness of Australian's energy sector. It also has the capacity to achieve lower greenhouse intensity and as such is a key element of Australia's greenhouse response. Accelerated energy market reform, as outlined in the PM's statement of November 1997, can provide an impetus for the uptake of cogeneration, renewable energy and other less greenhouse-intense supply options. Integrated frameworks for gas and electricity can support greater penetration of natural gas into electricity generation and energy end use.

Recent consideration of projections, however, indicates that energy market reform may not lead to earlier predicted emission reductions much before 2006 due to increased demand from lower prices and less than expected fuel switching. A substantial reduction in the greenhouse impact of energy market reform is expected to depend upon increased market penetration by natural gas and more greenhouse benign technologies in the energy

sector. A critical issue for future greenhouse policy is how to strategically promote gas in a competitively neutral manner, consistent with the objectives of national competition policy.

Renewable Energy

Renewable energy is the generation of electricity, transport fuel, process heat, and other end-use forms of energy from primary energy sources that are not depleted by such generation. The Commonwealth Government is strongly committed to enhancing the contribution made by renewable forms of energy to Australia's total energy needs, and a number of programs have been established which aim to:

- Support the development and commercialisation of renewable energy technologies;
- Accelerate the uptake of renewable energy;
- Showcase leading edge renewable energy projects; and
- Stimulate the development of an internationally competitive Australian renewable energy industry.

Commonwealth measures promoting renewable energy announced in the Prime Minister's 1997 package of measures are listed at Box 3.

Box 3: Commonwealth Renewable Energy Measures

□ 2% Mandatory target for the uptake of renewable energy

The Prime Minister announced in his 1997 statement Safeguarding the Future that targets will be set for the inclusion of renewable energy in electricity generation by the year 2010. Electricity retailers and other large electricity buyers will be legally required to source an additional 2 per cent of their electricity from renewable or specified waste-product energy sources by 2010. The Government's renewable energy target seeks to increase the contribution of renewable energy sources in Australia's electricity mix from approximately 10.7 % in 1997 to approximately 12.7% in 2010. Further information is available at www.greenhouse.gov.au/markets/2percent_ren/

□ Renewable Energy Showcase

The \$10 million Renewable Energy Showcase program supports and promotes a few leading edge and strategically important renewable energy projects that have strong commercial potential, are technically proven, demonstrate the potential for large-scale widespread application, offer the prospect of significant abatement of greenhouse gas emissions over the longer term and make a substantial contribution to building the capacity of Australia's renewable energy industry. The program is now closed to new applications. Further information is available at <http://www.greenhouse.gov.au/renewable/renew2.html>

□ Renewable Energy Internet Site

The Renewable Energy Internet Site provides information on renewable energy technologies, examples of their application and available government assistance. The site can be viewed at <http://renewable.greenhouse.gov.au>

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Box 3 continued...

□ **Renewable Energy Commercialisation Program**

The Renewable Energy Commercialisation Program is a five year, \$30 million competitive grants program that was established to foster the Australian renewable energy industry by providing funds for projects leading to the commercialisation of innovative renewable energy equipment, technologies, systems and processes. RECP grants are normally in the range of \$100,000 - \$1 million. Further information is available at <http://www.greenhouse.gov.au/renewable/recp/>

□ **Renewable Energy Equity Fund (REEF)**

REEF provides venture capital for small innovative renewable energy companies. The Government will provide almost \$20 million for REEF. A private sector fund manager will arrange for matching funds to be provided on a 2:1 basis. The fund manager will make investments in accordance with guidelines approved by the Industry Research and Development Board. Further information on REEF is available at <http://www.greenhouse.gov.au/renewable/renew4.html>

□ **Action Agenda for the Emerging and Renewable Energy Industry**

The Department of Industry, Science and Resources is developing an Action Agenda for the Emerging and Renewable Energy Industry. The Action Agenda is aimed at developing a strategic framework for the growth of a sustainable and internationally competitive emerging and renewable energy industry. The Agenda will identify a range of actions required to assist industry to overcome barriers to development and fulfil its potential.

□ **Ethanol Pilot Plant**

The AGO is continuing negotiations with NSW and private sector interests in relation to the construction of an ethanol pilot plant to demonstrate new Australian and United States technologies for the production of ethanol from lignocelulosic feedstocks. It is anticipated that the ethanol pilot plant will realise substantial net greenhouse gas reduction, urban air quality and economic benefits greater than all existing fuel ethanol production technologies.

As part of the *Measures for a Better Environment*, announced by the Prime Minister in May 1999 under the revised GST package, the Government is providing a major boost to renewable energy as a key element of the strategy for reducing Australia's greenhouse gas emissions. Total funding of up to \$321m is available over four years, commencing 1 July 2000. Renewable energy initiatives under the *Measures for a Better Environment* program are listed at Box 4.

Box 4: New Renewable Energy Initiatives under Measures for a Better Environment

□ **Supporting the use of renewable energy for remote power generation**

Funding of up to \$264m over four years will be made available to the states/territories in the form of Special Purpose Payments to subsidise cash rebates up to 50% of the capital value of renewable remote area power supply (RAPs) systems, where it can be demonstrated that the renewable RAPs system will replace an existing diesel system, or for new systems.

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Box 4 continued...

□ ***Supporting the utilisation of photovoltaic systems on residential buildings and community-use buildings***

Cash rebates will be available to householders and owners of community use buildings, such as schools, who install grid-connected photovoltaic systems. \$31m will be available over the four years of the program. This program will help build the Australian photovoltaic industry, and will encourage the wider application of photovoltaics outside rural areas, where Australia is a world leader in the application of solar energy, into our towns and cities.

□ ***Supporting the development and commercialisation of renewable energy***

Support will be provided for the further development and commercialisation of renewable energy in Australia. The extra funding will build on the successful Renewable Energy Commercialisation Program (RECP), almost doubling its expenditure. Funding of \$26m will be available over four years for a range of activities to facilitate the development and wider use of quality, affordable Australian renewable energy products and services. Further information on these programs is available at: <http://www.greenhouse.gov.au/renewable/initiatives.html>

Reducing Greenhouse Gas Intensity

Efficiency Standards for Power Generation

Specific objectives of this measure are to achieve movement towards best practice in the efficiency of fossil-fuelled electricity generation and deliver reductions in the greenhouse gas intensity of energy supply.

Improving the efficiency of the fossil-fuel combustion process will lead to reductions in the greenhouse intensity of the Australian energy sector. It will have important flow-on effects for the wider Australian business community, in particular with large end-users buying lower greenhouse intensive fossil fuel based power. This measure has a role to play in meeting Australia's Kyoto target by 2012. Further information is available at http://www.greenhouse.gov.au/markets/gen_eff/

Reducing the Greenhouse Gas Intensity of Fuels

Compressed Natural Gas Infrastructure Program

The Compressed Natural Gas (CNG) Infrastructure Program encourages the use of CNG as an alternative transport fuel. Vehicles running on CNG produce far less pollution than gasoline and diesel-fuelled vehicles, reducing greenhouse emissions by up to 50 per cent. CNG is also a competitively priced alternative to conventional fuels, and is an ideal fuel for vehicle fleets, particularly light commercial and heavy vehicle fleets. The Commonwealth has committed \$7.6 million over four years through the AGO to establish publicly accessible CNG refuelling stations.

Alternative Fuel Conversion Program

Announced as part of the Government's A New Tax System (ANTS) in May 1999, this program is scheduled to commence in July 2000. The Commonwealth has committed \$75 million over four years to this program. All vehicles weighing 3.5 gross vehicle mass (GVM) or more are potentially eligible for either up to 50 per cent grant to purchasers for the difference in the purchase price between original equipment manufacture (OEM) alternative fuel vehicles and conventionally fuelled vehicles or up to 50 per cent grant towards the cost of converting vehicles to CNG or LPG. Further information is available at www.greenhouse.gov.au/transport/alternative_fuel.html

Diesel and Alternative Fuel Grant Scheme

The intention of the scheme is to maintain the current price relativities between diesel and alternative transport fuels by allowing those transport modes that are eligible for the diesel fuel credit to also be eligible for alternative fuel grants. The retention of the existing price differential between diesel and alternative fuels will encourage wider use of alternative fuels and reduce greenhouse gas emissions and improve air quality. Further information is available at www.greenhouse.gov.au/transport/alternative_fuel.html

Further information is available at <http://www.greenhouse.gov.au/transport/cng.html>

Increasing Energy Efficiency

Improving energy efficiency is one of the most cost-effective ways of reducing greenhouse gas emissions both in Australia and around the world. Energy used by equipment and appliances and in buildings is a major source of greenhouse gas emissions. Inefficient use of energy in these areas is also costly. Commonwealth programs for improving energy efficiency are summarised at Box 5. Government support can provide an important stimulus to developing close-to-commercial energy efficiency technologies. It also can provide economic benefits through industry development and exploitation of export market potential.

Box 5: Increasing Energy Efficiency

□ *Environmental Strategy for the Motor Vehicle Industry*

The Environmental Strategy for the Motor Vehicle Industry aims to significantly enhance the environmental performance of the automotive industry through measures such as mandatory fuel consumption labelling, the fuel consumption guide and the development of a national fuel consumption target. Further information is available at http://www.greenhouse.gov.au/transport/env_strategy.html

□ *National Appliance and Equipment Energy Efficiency Program*

Through this program, the Commonwealth, State and Territory Governments throughout Australia and the New Zealand Government are working cooperatively to develop and introduce measures that improve the energy efficiency of appliances and equipment used by households and business. A copy of the National Appliance & Equipment Energy Efficiency Program is attached.

Continues...

Box 5 Continued...

□ Minimum Energy Performance Standards (MEPS)

MEPS are important consumer protection features as they withdraw from sale the least energy efficient household appliances and industrial equipment. The removal from sale of inefficient refrigerators and storage water heaters is one of the key measures designed to help meet greenhouse reduction targets in the residential sector. Manufacturers have been involved in setting MEPS through the Australian standards process. The MEPS levels for these products commenced operation throughout Australia on 1 October 1999. Governments and industry have agreed to consider imposing MEPS on a range of additional commercial and industrial equipment from 2000. Further information is available at: <http://www.greenhouse.gov.au/energyefficiency/>

□ Building Energy Efficiency Strategy

Following wide consultation with the building industry, the Ministerial Council on Greenhouse reached a landmark agreement on 24 March 1999 on a comprehensive strategy aimed at making our homes and commercial buildings more energy efficient. The two pronged strategy balances the introduction of mandatory minimum energy performance requirements through the Building Code of Australia with encouraging and supporting voluntary best practise initiatives. A copy of the benchmarking studies of both the residential and commercial building sectors are available at: <http://www.greenhouse.gov.au/energyefficiency/building/index.html>

□ Energy Efficiency Best Practice Program

The aim of the Program is to stimulate energy-efficient good practice in industry leading over time to best practice. Within particular industry sectors the Program will:

- Identify current energy use performance and the potential for improved energy efficiency;*
- Establish energy performance benchmarks;*
- Motivate economic improvements in energy efficiency and provide information and other support to achieve that end; and*
- Monitor and report on sectoral progress towards improved energy efficiency.*

Industry partnership agreements have been signed and sector studies commissioned in the aluminium, dairy processing, bread baking and vehicle fleet management industries. These sector studies are to be completed in early 2000. They will characterise current energy use performance in each sector, and benchmark the sectors against local and international (where appropriate) best practice.

Each study will also develop a sector-specific strategy for generating continuous energy efficiency improvements throughout the sector. The Commonwealth has committed \$10.3 million over five years (1998-2003) to support the development and implementation of the Program.

Further information is available at <http://www.isr.gov.au/resources/netenergy/index.html>

Enhancing the Land

Enhancing Australia's natural resource management by promoting greenhouse actions on the land

Commonwealth strategies to promote greenhouse action on the land include:

- Encouraging storage of carbon and supporting sustainable management of land resources by developing and implementing policies to protect and expand the vegetation cover on land;
- Assisting national efforts to reduce emissions from agricultural activities;
- Providing credible and verifiable estimates of Australia's emissions and sinks resulting from land use, land use change and forestry activities by developing a world class carbon accounting system.

Carbon Sequestration through Revegetation

The Commonwealth is strongly committed to substantially enhancing the extent of vegetation cover in Australia. Key Commonwealth initiatives to increase sequestration through revegetation include National Heritage Trust programs, the draft *National Framework for the Management and Monitoring of Australia's Native Vegetation* and *Plantations for Australia: the 2020 Vision*, which aims to treble Australia's plantation estate by 2020. A significant increase in the area of plantations being established has already been achieved, with current establishment rates of approximately 65 000 ha per year. Information on key programs is included at Box 6.

Box 6: Commonwealth Revegetation Programs

□ ***Plantations for Australia: the 2020 Vision***

Plantations for Australia: the 2020 Vision is a partnership between the Federal, State and Territory Governments and the plantation growing and processing industries to treble the plantation estate by 2020. The Vision was launched in Canberra in October 1997. Further information is available at <http://www.affa.gov.au/agfor/forests/2020/2020.html>

□ ***National Landcare Program***

Under the Natural Heritage Trust, the National Landcare Program encourages on-ground action that will result in integrated and sustainable natural resource management at the farm, catchment and regional level. Vegetation management, including revegetation, is a feature of this approach. Effort is focussed on reducing the spreading impact of salinity and erosion while improving agricultural productivity. This has the added benefit of reducing greenhouse gas emissions. Outcomes from the National Landcare Program are now substantial for example, project outcomes reported as at 31 January 1999 indicate that voluntary agreements with landholders to protect vegetation now cover 87,000 hectares, with 2.5 million tubestock trees provided and 13,642 kilometres of fencing installed. Information on Landcare is available at www.landcare.gov.au/

Continues...

Box 6 continued...

Farm Forestry Program

The aim of the Farm Forestry Program is to encourage the incorporation of commercial tree growing and management on cleared agricultural land into farming system for the purpose of wood and non-wood production, increasing agricultural productivity and sustainable natural resource management. Further information is available at

<http://www.affa.gov.au/agfor/forests/section1.html>

□ **Bush For Greenhouse**

Bush for Greenhouse (BFG) is an initiative of the Prime Minister's 1997 greenhouse package with an allocation of \$5.5 million over five years. BFG aims to increase Australia's sinks capacity by increasing corporate investment in revegetation for environmental purposes. BFG is a novel initiative, which can play a significant role in Australia's greenhouse response and deliver other environmental benefits. A factsheet on BFG is attached and further information is available at www.greenhouse.gov.au/pubs/factsheets/fs_bush.html

□ **Bushcare**

Bushcare is the vegetation management program under the Natural Heritage Trust. Bushcare has the historic and ambitious aim of reversing the long-term decline in the quality and extent of Australia's native vegetation communities. Working with community groups, land managers, industries and government agencies at all levels, Bushcare will invest more than \$350 million on three main fronts:

- 1. to take responsibility to conserve, enhance and sustainably manage remnant native vegetation;*
- 2. to greatly increase and improve revegetation activities; and*
- 3. to encourage the integration of native vegetation into conventional farming systems.*

Further information on Bushcare is available at www.nht.gov.au/programs/bushcare.html

Emissions from Agriculture

Emissions from the agriculture sector are declining and are currently below 1990 levels. This is largely due to the historically low numbers of livestock that have resulted from falling commodity prices.

The Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and its Standing Committee on Agriculture and Resource Management (SCARM) have developed a Work Program on Greenhouse to address agriculture related greenhouse issues nationally.

The SCARM Work Program was developed by a Commonwealth/State Working group to implement the NGS module relating to agriculture and land use and to ensure that the agricultural sector is playing its part in reducing greenhouse gas emissions and enhancing carbon sinks. The Work Program will implement several pilot projects and case studies in various states to demonstrate the benefits of action and identify key incentives for uptake of practices by farmers. A copy of the SCARM Work Program is attached.

In addition, funding was announced in the Prime Minister's 1997 statement for the development and commercialisation of a CSIRO developed vaccine to reduce the production of methane in the rumen of livestock. If successful this work could provide a significant abatement opportunity for the livestock industry. Additional information is available at http://www.ah.csiro.au/newsline/press_rel/1994/antiburp.htm

Accounting for Carbon

Australia's greenhouse gas performance can only be measured through careful monitoring of sources and sinks. Reduction in uncertainty of current emissions estimations, particularly the Land Use Change and Forestry sector, is essential as it is likely to form the basis for assessing emissions trends, abatement performance and compliance to commitments under the Kyoto Protocol.

The National Carbon Accounting System (NCAS), announced by the Commonwealth in 1997 with funding of \$12.5 million, aims to provide a complete accounting and forecasting capability for human-induced sources and sinks of greenhouse gas emissions from Australian land-based systems. The CRC for Greenhouse Accounting, supported by the AGO will assist in developing the fundamental science that underpins NCAS.

Information on the National Carbon Accounting System is available at <http://www.greenhouse.gov.au/ncas/> and a copy of the *National Carbon Accounting System Strategic Plan 1999-2001* and *Expert Workshop Report* are attached. Information on the CRC for Greenhouse Accounting is available at <http://www.dist.gov.au/crc/centres/environ/tca.html>

The need for reliable data and information is extremely important in establishing a true picture of the current status of vegetation and land clearing in Australia. The CSIRO Earth Observation Centre and Bureau of Rural Sciences have played a key role in providing this information to date. These studies will provide the foundation for further work in this area under the NCAS.

Another recent initiative which will further enhance our knowledge about the current status of vegetation, which is being partly funded by Agriculture, Fisheries and Forestry Australia (AFFA), is the National Vegetation Information System. This System is being developed through the National Land and Water Resources Audit. Information on the National Land and Water Resources Audit is available at <http://www.nlwra.gov.au/>

Staying on Track

Evaluating progress towards commitments under the Convention and the Kyoto target, and improving the knowledge base on climate change

The Commonwealth affords a high priority to monitoring progress on commitments under the UN FCCC and has a strong commitment to continuing the significant contribution Australia makes to research into climate change science. Involvement in international scientific efforts brings international expertise to bear on the problems important to Australia, and also ensures the Australian perspective, particularly our unique circumstances, are brought to the international science community.

To evaluate progress on commitments under the Framework Convention on Climate Change, the Commonwealth:

- Reports trends in the level and profile of Australia's greenhouse gas emissions and the effects of implementing domestic greenhouse actions; and
- Provides robust projections of future levels of greenhouse gas emissions to support sound decisions on greenhouse mitigation actions.

To improve the knowledge base on climate change, the Commonwealth:

- provides funding and support for climate change science and impacts assessment; and
- leads the development of a national framework for adaptation to climate change that addresses likely impacts.

National Greenhouse Gas Inventory

The National Greenhouse Gas Inventory is the official record of Australia's greenhouse gas emissions submitted annually under the UN FCCC. It provides estimates of human induced greenhouse gas emissions from sources and removals by sinks. These sources and sinks are categorised into six sectors (Energy, Industrial Processes, Solvent and Other Product Use, Agriculture, Land-Use Change and Forestry, and Waste), and are assessed retrospectively. The National Inventory forms a baseline from which we are able to monitor and review response action and develop projections of greenhouse gas emissions. At an international level, the Inventory indicates Australia's situation in terms of overall international greenhouse gas emission levels.

The Intergovernmental Panel on Climate Change (IPCC) methodology designed for international application provides the basis for the preparation of the National Inventory. Australia has made and will continue to make, a significant contribution to the IPCC in developing methodologies to assist countries in preparing standardised inventories of greenhouse gases. Australia has invested significant resources in developing more advanced methodologies, which build upon, and are fully consistent with the IPCC approach. Considerable effort has been put into obtaining better input data and building confidence in our Inventory through the development of an improved understanding of the biosphere – in particular, the contribution of land clearing emissions. Through Australia's work on the National Carbon Accounting System, and the CRC for Greenhouse Accounting, Australia is one of the leading contributors to research in the field of estimating greenhouse gas emissions from land clearing.

Inventories for the years 1988 - 1997 have been published. Copies of the *1997 National Greenhouse Gas Inventory* and the *National Greenhouse Gas Inventory Analysis of Trends 1990 to 1997 and National Greenhouse Response Strategy Indicators 1990 to 1997* are attached. Further information is available at <http://www.greenhouse.gov.au/inventory/>

Projections of Greenhouse Emissions

Greenhouse gas emissions projections will play a critical role in determining Australia's progress in meeting the objectives of the UN FCCC and the Kyoto Protocol, as well as in ongoing monitoring, review and further development of Australia's response measures. The most comprehensive picture of Australia's future emissions are those published in 1997 as part of Australia's Second National Communication under the UN FCCC (copy attached). Also attached to this submission is the UN FCCC Secretariat's *Report on the In-depth Review of the Second National Communication of Australia*.

Preliminary work to account for changing circumstances since 1997 suggests that the overall picture continues to accord with the 1997 projections, despite component changes. Work to develop a more comprehensive revision of emissions projections is now under way. As part of this effort, the projected emissions savings delivered by all announced measures will be analysed, including those in the 1998 *National Greenhouse Strategy* and the environment component of the Government's taxation package.

A number of Commonwealth agencies have undertaken work relevant to emissions projections and estimation of the likely emissions saved from the implementation of measures. Key examples are the work of ABARE (see reference on page 13) and the work of the Bureau of Transport Economics (BTE), for example *Transport and Greenhouse: Costs and Options for Reducing Emissions*. Copies of the BTE publications *Urban Transport - Looking Ahead* and *Analysis of the Impact of the Proposed Taxation Changes on Transport Fuel Use and the Alternative Fuel Market* are attached. Additional BTE publications recommended for the Committee's information but not attached to this submission are listed at Appendix 2.

Science

Commonwealth investment in greenhouse science since 1988 has achieved world-class, internationally recognised standards and findings. The science underpins international and domestic greenhouse policy decisions. Commonwealth agencies such as the CSIRO and the Bureau of Meteorology and a range of other agencies such as the National Tidal Facility, various CRC's and universities undertake a broad range of greenhouse research which is relevant to climate change.

Australian scientists participate in and lead international research and assessments of climate change undertaken for example by the Intergovernmental Panel on Climate Change. A copy of the Bureau of Meteorology's *Climate Activities in Australia 1999* is attached. See Box 7 below for examples of Australian greenhouse science research achievements. Additional detail on Australia's greenhouse science may be found in the CSIRO's submission to this Inquiry.

Box 7: Examples of Australian Greenhouse Science Research Achievements

- ❑ *CSIRO has developed the Mark 3 climate model, a global scale climate model of international standing, rated among the top four models in the world. Mark 3 has a much finer resolution than previous models and better representation of climate processes associated with vegetation and the land surface (in particular snow and soil), the oceans and clouds.*
- ❑ *It has been confirmed that the Southern Ocean is one of the largest regions of carbon dioxide uptake on Earth.*
- ❑ *Research has highlighted how intricately linked climate change is with other natural processes which have high national priority*

To help prepare Australia for a changing climate, the Government has committed, in the 1999-2000 budget, an additional \$14 million over four years for the *Greenhouse Science Program*. The program contributes to improving global, national and regional understanding of climate change, its potential impacts on Australia and the region and options for adaptation and mitigation through basic and applied research and communication of those findings.

The Greenhouse Science Advisory Committee, which provides strategic research advice on research directions and priorities, has prepared an interim *Advancing Greenhouse Science Strategy and Business Plan 2000-2005* which will direct continuing focus on greenhouse science and research outcomes to meet national priorities in Australia. A copy of the interim strategy is attached and given its interim status it is requested that the document not be made public. It is expected that the strategy will be finalised and publicly available by 30 December 1999.

The Commonwealth's Coordination Committee on Science and Technology (CCST) is currently compiling information on greenhouse programs and expenditure relevant to science, technology and research and development. Further information is available at <http://www.science.gov.au/ccst/index.html>

Two papers presented to the Prime Minister's Science, Engineering and Innovation Council, *Australia's Greenhouse Science - Achievements and Future Directions* and *From Defence to Attack: Australia's Response to the Greenhouse Effect* are attached.

Impact of Global Warming on Coral Reefs

While the possible effects of climate change on Australia's coral reefs are cause for concern, more immediate anthropogenic factors such as fishing, terrestrial runoff, tourism and shipping have been identified as requiring immediate management attention. These issues are currently being given priority by relevant management agencies. However substantial research and monitoring effort is being devoted to climate change related issues, in an attempt to understand current and predicted impacts on coral reefs. A paper prepared by the Great Barrier Reef Marine Park Authority on the impact of global warming on coral reefs is attached.

Conclusion

Australia has made substantial progress on climate change responses since the release in 1997 of the Prime Minister's \$180 million package of greenhouse measures. The allocation of money under the *Measures for a Better Environment* initiative in the new tax package increases Australia's commitment on greenhouse response to almost \$1 billion. This represents the largest and most far-reaching package of measures to address climate change ever undertaken by any government in Australia and places us at the forefront of countries taking serious domestic measures to meet their Kyoto Protocol commitments.

It is however, too early to assess the impact of the Commonwealth's greenhouse response as many of the programs funded under the *Measures for a Better Environment* initiative will not commence until July 2000. Early projections estimates indicate that while Australia's emission abatement initiatives are on track, achieving our Kyoto Protocol target remains a challenge. It is important that in any further development of greenhouse initiatives, the Government be fully informed by how far Australia's current greenhouse response has taken us towards meeting our Kyoto Commitment.

Australia's greenhouse response policies continue to evolve with ongoing international negotiations to finalise arrangements for sinks, the Kyoto mechanisms and the compliance regime as well as national consultations on a range of measures such as a national emissions trading regime.

Appendix 1: Documents Attached to Commonwealth Submission

1. Statement By The Prime Minister of Australia, The Hon John Howard MP, *Safeguarding The Future: Australia's Response To Climate Change*, 20 November 1997
2. Commonwealth of Australia 1998, *The National Greenhouse Strategy*
3. Press Release from the Prime Minister 1999, *Changes to the Goods and Services Tax (GST)*
4. Australian Greenhouse Office 1999, *Annual Report 1998-99*, AGO Canberra
5. Australian Greenhouse Office 1999, *Corporate Plan 1999 - 2001*, AGO Canberra
6. Australian Greenhouse Office 1999, *Australia's Response to the Greenhouse Effect*, AGO Canberra
7. Australian Greenhouse Office 1999, *National Emissions Trading: Establishing the Boundaries: Discussion Paper 1*, AGO Canberra
8. Australian Greenhouse Office 1999, *National Emissions Trading: Issuing the Permits: Discussion Paper 2*, AGO Canberra
9. Australian Greenhouse Office 1999, *National Emissions Trading: Creating the Carbon: Discussion Paper 3*, AGO Canberra
10. Centre for International Economics 1999, *Early Greenhouse Action*
11. Australian Greenhouse Office 1999, *Greenhouse Challenge Evaluation Report*
12. National Appliance and Equipment Energy Efficiency Committee 1999, *National Appliance And Equipment Energy Efficiency Program*.
13. Australian Greenhouse Office 1999, *Bush for Greenhouse Factsheet*.
14. The Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) Standing Committee on Agriculture and Resource Management (SCARM) Work Program.
15. Australian Greenhouse Office 1999, *National Carbon Accounting System Strategic Plan 1999-2001*.
16. Australian Greenhouse Office 1999, *National Carbon Accounting System Expert Workshop Report 23 -25 June 1998*.
17. Australian Greenhouse Office 1999, *National Greenhouse Gas Inventory 1997*, AGO Canberra.
18. Australian Greenhouse Office 1999, *National Greenhouse Gas Inventory Analysis of Trends 1990 to 1997 and National Greenhouse Response Strategy Indicators 1990 to 1997*, AGO Canberra.

19. Commonwealth of Australia 1997, *Australia's Second National Report Under the United Nations Framework Convention on Climate Change*.
20. UN FCCC Secretariat 1999, *Report on the in-depth review of the second national communication of Australia*.
21. BTE 1999, *Urban Transport - Looking Ahead*, Information Sheet 14, BTE, Canberra.
22. BTE 1999, *Analysis of the Impact of the Proposed Taxation Changes on Transport Fuel Use and the Alternative Fuel Market*, BTE, Canberra.
23. Bureau of Meteorology 1999, *Climate Activities in Australia 1999*.
24. Greenhouse Science Advisory Committee, *Interim Advancing Greenhouse Science Strategy And Business Plan 2000-2005*, (12 November 1999 draft. Document expected to be finalised by 30 December 1999)
25. Prime Minister's Science, Engineering and Innovation Council 1998, *Australian Greenhouse Science - Achievements and Future Directions*.
26. Prime Minister's Science, Engineering and Innovation Council 1999, *From Defence to Attack: Australia's Response to the Greenhouse Effect*
27. Great Barrier Reef Marine Park Authority contribution to the Department of Environment & Heritage submission to the Senate Inquiry into Australia's Response to Global Warming.

Appendix 2: Documents Recommended for the Committee's Information (not attached)

1. BTCE 1994, *Alternative Fuels in Australian Transport, Report 39*. AGPS, Canberra.
2. BTCE 1995, *Greenhouse Gas Emissions from Australian Transport: Long Term Projections, Report 88*, AGPS Canberra.
3. BTCE 1996, *Transport and Greenhouse: Costs and Options for Reducing Emissions, Report 94*, AGPS, Canberra.
4. Commonwealth of Australia / Apelbaum Consulting 1997, *Australian Transport Task: Energy Consumed and Greenhouse Gas Emissions*, AGPS, Canberra.