



OUTCOME 1—ENVIRONMENT CLIMATE CHANGE



Climate change

The Department of the Environment and Heritage, through its Australian Greenhouse Office, leads the development and implementation of the government's major climate change strategies. The Australian Greenhouse Office comprises the Industry, Communities and Energy Division, and the International, Land and Analysis Division in the department.

The department works closely with other departments, including the Department of Foreign Affairs and Trade, and the Department of Industry, Tourism and Resources, to progress this work.

Main responsibilities for this output

- International engagement
- Emissions management
- Climate change science

International, Land and Analysis Division

Industry, Communities and Energy Division

Objectives

International engagement

- Engage with other countries to help build an effective global response to climate change

Emissions management

- Work with industry, business and the community across Australia to reduce greenhouse gas emissions and improve energy efficiency
- Limit Australia's greenhouse gas emissions to 108 per cent of 1990 levels by 2008–2012

Climate change science

- Extend Australia's world-class scientific expertise in climate change, and build the capacity of regions, industries and community to adapt to climate change
- Deliver robust projections of Australia's progress in meeting its greenhouse gas emissions target

Results 2005–06

- The department played a key role in international efforts to address climate change including in United Nations climate change negotiations. The head of the Australian Greenhouse Office was selected to co-lead discussions on future directions of international climate change response.
- The department was active in establishing the new Asia–Pacific Partnership on Clean Development and Climate. The Australian Government hosted in January 2006, in Sydney, the inaugural ministerial meeting of the partnership. These collaborative efforts will help to develop and deploy cleaner and more efficient technologies to reduce greenhouse gas emissions.
- Australia is on track to meet its Kyoto target of limiting greenhouse gas emissions to 108 per cent of 1990 emissions by 2008–2012. The latest emissions trends show that Australia’s emissions have increased by only 2.3 per cent between 1990 and 2004 despite strong growth in gross domestic product (GDP) and energy consumption. Over this period, Australia has reduced its greenhouse gas emissions intensity (or emissions per dollar of GDP) by 35 per cent and also reduced its emissions per capita by more than 11 per cent. A reduction in land clearing has been an integral factor in emissions abatement.
- Progress was made in implementing major programmes to reduce Australia’s greenhouse gas emissions, including investing \$500 million to develop the next generation of large-scale greenhouse gas abatement technologies, \$100 million in grants to develop Australia’s renewable energy technologies, and \$75 million for the Solar Cities initiative. The first \$23 million of funding for 10 renewable energy projects was announced in 2006. This work is jointly managed with the Department of Industry, Tourism and Resources.
- The Council of Australian Governments initiated in February 2006 development of a national framework on adaptation to the impacts of climate change. The department is leading the work, with a product due to be delivered for consideration by the council at the end of 2006.
- The department played a leading role in developing options to streamline and strengthen greenhouse emissions and energy reporting, culminating in a decision by the Council of Australian Governments to develop national legislation for cost-effective mandatory reporting by large emitters and energy users.





Australia's climate change strategy

The concentration of heat-trapping gases in the atmosphere is rising, changing the earth's climate. Over the past century the world has warmed by an average 0.6 degrees Celsius, with the most rapid increase occurring over the last 30 years. Much of this change is linked to human activity.

The Intergovernmental Panel on Climate Change, a body established by the World Meteorological Organization and the United Nations Environment Programme, has predicted that without intervention average global surface temperatures could increase by 1.4 to 5.8 degrees Celsius by the end of this century. Temperature changes of this magnitude are likely to have major effects on the environment, human health and economies.

Stabilising the concentration of carbon dioxide (and the other greenhouse gases) in the atmosphere to prevent the worst of these impacts will require a strong and effective global response. All nations will need to commit to reducing their greenhouse gas emissions.

In 2004 the Australian Government announced a new climate change strategy to:

- enhance international engagement to work towards an effective global response to climate change
- focus domestic action to meet Australia's internationally agreed greenhouse emissions target in the short term, and in the longer term deliver a lower emissions signature while maintaining a strong economy
- prepare Australia for the unavoidable consequences of climate change.

The strategy incorporates business and community partnerships, strategic investment, government regulation and market measures. It includes measures announced in the May 2004 federal Budget and the June 2004 energy white paper, *Securing Australia's Energy Future*, and brings the total Australian Government investment in climate change response to almost \$2 billion.

International engagement on climate change

During 2005–06 Australia continued to work towards the development of an international climate change response that is environmentally effective, economically efficient and includes all major emitters. The need for a response 'beyond Kyoto' is being increasingly recognised worldwide. Australia's international climate change strategy includes both multilateral and bilateral activities.

United Nations climate change negotiations

Australia is a party to the United Nations Framework Convention on Climate Change, which lays the basis for global action 'to protect the climate system for present and future generations'.



Australia played an important role at the United Nations Climate Change Conference in Montreal in December 2005, where 189 countries unanimously agreed on the Montreal Climate Action Plan. The action plan is a means to create an effective international response in the post-Kyoto period.

In recognition of Australia's expertise and constructive approach, the head of the Australian Greenhouse Office, Mr Howard Bamsey, was chosen to co-chair talks on future international cooperation on climate change. These talks—which commenced at the United Nations Climate Change Convention meeting in Bonn in May 2006—will address issues such as how to realise the full potential of technology to address climate change, adapting to the unavoidable impacts of climate change, and the link between sustainable development and climate change. These themes are central to the work of the Asia-Pacific Partnership on Clean Development and Climate, and the Group of Eight (G8) Dialogue on Climate Change, Clean Energy and Sustainable Development in which Australia is also playing an active and constructive role.

Asia-Pacific Partnership on Clean Development and Climate

Australia is a founding member of the Asia-Pacific Partnership on Clean Development and Climate, a regional initiative (with the United States, China, Japan, India and the Republic of Korea) to develop, deploy and transfer technologies to address climate change (see website at www.asiapacificpartnership.org). The department played a leading role in the establishment of the partnership, which was launched on 28 July 2005 by the Foreign Minister, with ministers and senior officials from partner countries at the ASEAN (Association of Southeast Asian Nations) Regional Forum in Vientiane.



Ministers Campbell and Macfarlane join environment and industry ministers from China, India, Japan, Republic of Korea, and the United States at the first ministerial meeting of the new partnership.

The government hosted the inaugural ministerial meeting of the partnership in Sydney from 11–13 January 2006. At the meeting, the Prime Minister announced an additional investment of \$100 million over five years to support Asia-Pacific partnership projects and activities, with 25 per cent of funding earmarked for renewable energy.

Ministers and business representatives from the six partner countries agreed to

establish eight task forces to focus on key industry sectors including cleaner fossil energy, renewable energy and distributed generation, power generation and



transmission, steel, aluminium, cement, coal mining, and buildings and appliances. The department led the Australian Government involvement in the buildings and appliances taskforce and the renewable energy and distributed generation taskforce, which it co-chairs with the Republic of Korea. The task forces met in Berkeley, California from 18–21 April 2006 to commence development of initial action plans. The task forces aim to agree to their action plans during the third quarter of 2006. Ministers agreed to meet again in 2007 to review progress under the partnership.

G8 Dialogue on Climate Change, Clean Energy and Sustainable Development

The Minister for the Environment and Heritage joined ministers from 20 other countries in the first ministerial meeting of the Group of Eight (G8) Dialogue on Climate Change, Clean Energy and Sustainable Development held in November 2005. The aim of the dialogue is to ‘address the strategic challenge of transforming our energy systems to create a more secure and sustainable future’.

The meeting agreed to work together on deployment of clean technologies, incentives for large-scale private sector investment in low carbon technologies, a new model for cooperation between developed and developing countries, and reinforcing action on adapting to the impacts of climate change.

The next meeting will take place in Mexico in October 2006. In preparation for this meeting, senior officials from all participating countries met in Mexico City from 7–9 June to identify key issues for discussion. The department played a leading role in this preparatory meeting, including chairing one of the theme topics.

Other multilateral partnerships

Australia participates in four partnerships that focus on technology: the Renewable Energy and Energy Efficiency Partnership, the Methane to Markets Partnership, the International Partnership on the Hydrogen Economy and the Carbon Sequestration Leadership Forum.

As a result of funding by the Australian Government of \$381 000, the Renewable Energy and Energy Efficiency Partnership formally established its South East Asia and the Pacific Regional Secretariat on 2 May 2006. Australia has also been active in the Methane to Markets Partnership, including co-hosting a regional workshop to identify and assist projects that capture and reuse dangerous waste methane gas from coal mines in China.

In addition, the department, assisted by leading Australian experts, contributed to the completion in September 2005 of a Special Report of the Intergovernmental Panel on Climate Change about the state of knowledge on capture of carbon dioxide from fossil fuel combustion and geological storage of this carbon dioxide.



Bilateral partnerships

Australia continued to work with its five bilateral climate change partners—China, the United States, New Zealand, Japan and the European Union—on practical cooperative projects responding to global climate change. More than 50 projects are now under way through these partnerships. The partnerships provide a positive framework for high-level engagement on policy issues.

China: The Australia–China Climate Change Partnership continued to strengthen and expand, with further practical actions agreed to address climate change. In January 2006 the success of this partnership was formally recognised by the Australian Minister for the Environment and Heritage and the Vice-Chairman of China’s National Development and Reform Commission with endorsement of the Australia–China Climate Change Cooperation Progress and Achievements 2003–2005 report. Senior Australian and Chinese officials also agreed at this time to future project priorities for the partnership including renewable energy, coal mine methane and energy efficiency. Several new cooperative projects were commenced including a project led by CSIRO (the Commonwealth Scientific and Industrial Research Organisation) to develop and apply innovative new technology to capture and use coal mine methane in China.

United States: As part of the Australia–United States Climate Action Partnership, Australia is working with Pacific neighbours on climate change science, research and monitoring; is expanding cooperative activity to measure and reduce emissions from the agriculture and forestry sectors; and is collaborating through the Carbon Sequestration Leadership Forum, the International Partnership on the Hydrogen Economy and the Methane to Markets Partnership.

New Zealand: Australia is funding two new projects in the Pacific region, in partnership with New Zealand and the United States, to assist local and regional climate change observation and modelling. These projects will improve understanding of the climate of the southern hemisphere, and provide the basis for further studies on impacts and possible adaptation strategies in the South Pacific and Indian oceans.

Japan: Australia and Japan co-hosted the Asia–Pacific Seminar on Climate Change held in Yokohama, Japan from 11–15 September 2005. Experts from 28 countries and representatives from 10 United Nations agencies and other international agencies participated. The seminar included updates on efforts to address climate change in the Asia–Pacific region, capacity building, adaptation, science and technology, and lessons learned for future action.

European Union: In July 2005 the department signed a memorandum of understanding on end use energy efficiency programmes in the built environment with the European Commission’s Joint Research Centre. This agreement will promote energy efficiency in Australia through technical exchanges including



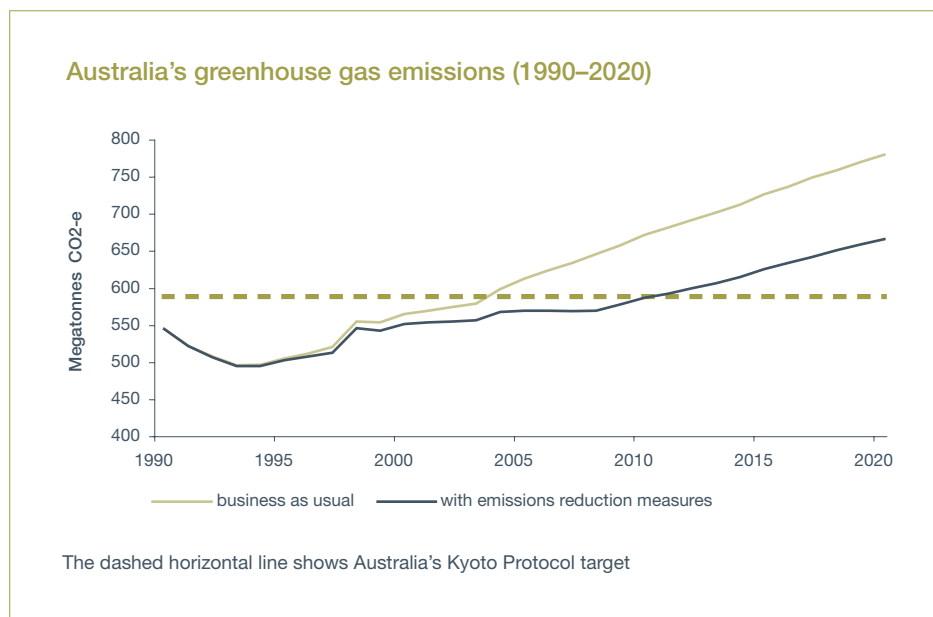
developing methodologies to assess the impact of energy efficiency policies on buildings, mapping the potential to reduce the power consumption of electronic appliances when on standby, and benchmarking the performance of residential air conditioners.

South Africa: On 11 May 2006 Australia announced a new bilateral climate change partnership with South Africa. The partnership will focus on collaboration on climate change adaptation, particularly in the areas of biodiversity and broad acre agriculture. The partners will also exchange experience and lessons learned in implementing climate change policies and programmes. Planning is under way and the first projects are expected to start in August 2006.

Greenhouse gas emissions management

The department continued work to reduce Australia's greenhouse gas emissions. The main focus of these efforts is to build partnerships with industry, develop energy technologies that have low emissions, and invest in local and regional actions that reduce overall emissions.

Current measures undertaken across all levels of government are projected to reduce Australia's greenhouse gas emissions by 85 million tonnes of carbon dioxide equivalent by 2010—more than equivalent to eliminating all emissions from the transport sector. These measures have Australia on track to meet its Kyoto Protocol target. Without these measures, emissions growth would have reached 123 per cent of the 1990 level by 2010 (see chart below).





Kyoto Protocol target

The Kyoto Protocol is an international treaty under the United Nations Framework Convention on Climate Change designed to limit global greenhouse gas emissions. The protocol only sets emissions targets for developed countries.

The Australian Government has decided not to ratify the Kyoto Protocol because it does not provide a comprehensive or environmentally effective long-term response to climate change. In particular, there is no clear pathway for action by developing countries. Without commitments by all major emitters, the protocol will be largely ineffective in reducing the growth of global greenhouse gas emissions.

Even though it has decided not to ratify the protocol, the Australian Government is delivering on its commitment to reduce Australia's greenhouse gas emissions to the levels agreed during the 1997 Kyoto negotiations (108 per cent of the level of 1990 emissions by 2008–2012).

Building industry partnerships

The **Greenhouse Challenge Plus** programme helps industry integrate greenhouse issues into business decisions, reduce greenhouse gas emissions and increase energy efficiency. Greenhouse Challenge Plus has more than 740 participants, representing key industry sectors including agriculture, electricity supply, oil and gas, aluminium, cement, mining and manufacturing. These industries account for almost 50 per cent of Australia's industrial greenhouse gas emissions.

Case study: Australian rice growers reducing greenhouse emissions

Australian rice growers are at the forefront of efforts to reduce greenhouse gas emissions in the agriculture sector. About 240 rice businesses have started to take practical actions to reduce greenhouse gas emissions in seven key areas—flood irrigation, nitrogen management, soil management, stubble management, greenhouse sinks, energy efficiency, and waste management. By taking action in these areas, Australian rice growers will be minimising their greenhouse gas emissions.

The Greenhouse Challenge Plus programme was revamped during the year and now includes Greenhouse Friendly, the Generator Efficiency Standards initiative and independent reporting and verification arrangements. The Greenhouse Friendly guidelines were revised and new administrative arrangements were put in place. The programme now includes certified products from the non-energy



sector and a larger variety of approved abatement projects generating an increased level of abatement. The new Greenhouse Challenge Plus programme has \$31.3 million in funding over 2004–2008.

Member companies participate in the programme voluntarily. However, from July 2006 companies that receive more than \$3 million per year of business Fuel Tax Credits will be required to join the programme in order to continue receiving these credits.



Industry delegates attend the inaugural Greenhouse Challenge Plus conference held in Canberra.

The department led Australian Government work with the states and territories to develop a nationally consistent framework for greenhouse and energy reporting by business to government. Streamlined reporting arrangements will reduce the burden placed on businesses participating in greenhouse and energy programmes and improve the quality of the data reported

(see also National Pollutant Inventory). This work culminated in a decision by the Council of Australian Governments (COAG) to develop an approach based on national purpose-built legislation to provide for cost-effective mandatory reporting by large emitters and energy users. This approach will be further considered by COAG later in 2006.

Building industry partnerships—ongoing programmes

The **Greenhouse Gas Abatement Programme** provides funding for mainly large-scale projects that use low emissions technologies and practices. Twelve projects are on track to deliver emissions reductions from 2008–2012. The estimated reduction in greenhouse gas for this period is 23.4 megatonnes of carbon dioxide equivalent (at the time of project approvals). This does not include a new round of projects under negotiation.

The department is working with major transport fleet operators to assess the environmental and economic case for using natural gas and liquefied petroleum gas (LPG) in heavy vehicle fleet operations under the **Alternative Fuels Conversion Programme**. This programme has shown that alternative fuels make economic and environmental sense for some transport tasks, but do not guarantee improved environmental outcomes. The department will continue to work with transport operators, engine manufacturers and fuel producers to explore practical options to improve the efficiency of transport and fuel usage.



Action on energy efficiency

The department continued to support the implementation of the National Framework for Energy Efficiency, which was adopted by the Ministerial Council on Energy in 2004. The framework aims to improve the energy efficiency of residential and commercial buildings, appliances and equipment, as well as energy use in the industrial and commercial sectors. It also covers training and accreditation, the finance sector, and increasing consumer awareness.

In 2005–06 minimum energy performance standards were introduced or made more stringent for electric water heaters, three-phase electric motors, refrigerators and freezers and single-phase air conditioners. The standards now cover 13 product groups.

The Australian Building Codes Board adopted energy performance standards for commercial buildings and increased the standards for residential buildings during 2005–06. This means that from May 2006 the Building Code of Australia will contain minimum energy performance requirements for all new building types.

Renewable and low emissions energy—new programmes

The **Solar Cities** programme will provide \$75 million over nine years (2004–2013) to demonstrate the costs and benefits of solar power, energy efficiency, cost-reflective pricing and smart metering technologies on a large scale. Eleven consortia from across Australia have been short-listed for assessment. Detailed business cases are now being assessed with announcements of successful Solar Cities sites expected later in the year.

New programmes for low emission technologies announced in the 2004 energy white paper *Securing Australia's Energy Future* were implemented. The Australian Government's \$500 million **Low Emissions Technology Demonstration Fund** will operate from 2005–2020 to support the demonstration of new low emission technologies with significant long-term greenhouse abatement potential. The fund, which is managed jointly by the department and the Department of Industry, Tourism and Resources, aims to leverage at least \$1 billion in contributions from the corporate sector. The policy framework for the fund was publicly released on 10 October 2005.

Thirty applications were received from electricity generators, oil and gas producers, iron and steel producers, the oil and gas services sector, and the transport sector for low emissions technologies covering brown and black coal, natural gas, transport and renewable energy. The department established a panel of experts to assess the merits of each application. This process is managed by AusIndustry.

The \$26.8 million **Low Emissions Technology and Abatement** programme commenced with an agreed policy framework and a range of initial projects to



support a geosequestration trial, and several grants and consultancies to support the renewable energy industry and action by local communities.

The department completed planning the **Wind Energy Forecasting Capability** initiative, which will help increase the value of wind energy in electricity markets by more accurately predicting wind energy generation. The department signed a funding agreement with the National Electricity Market Management Company to implement the wind energy forecasting system. An international tender process to select a system provider and research to support system development are also well under way.

The department participates in the selection of projects for funding under the **Renewable Energy Development Initiative**, which is administered by AusIndustry, and supports innovative renewable energy technologies. The initiative will provide \$100 million in funding to industry over seven years (2004–2011). So far 10 grants totalling \$23.3 million have been approved. More grants will be approved in mid-2006.

The department received 25 expressions of interest outlining 32 potential projects for funding under the \$20.5 million **Advanced Electricity Storage Technologies Programme**. The projects will develop and demonstrate advanced technologies for storing electricity generated through intermittent renewable sources, such as wind and solar. Applications are being assessed and grants will be approved later in the year.

Renewable energy—ongoing programmes

A further \$11.2 million was committed under the **Renewable Remote Power Generation Programme** for 466 grants to increase the use of renewable energy generation in remote parts of Australia and to reduce the amount of diesel used to generate electricity in areas not connected to the main electricity grid. These grants brought the total number of projects funded to 3 726 and the total committed funding to \$132 million, which includes 12 major projects totalling \$22.8 million and 21 support projects totalling \$6.8 million. Projects cover solar, wind and small hydro and hydrogen technologies.

The \$55.6 million **Renewable Energy Commercialisation Programme** is fully committed. Of the 53 projects funded under the programme, 26 have been completed. One promising new technology to come out of the programme is the integrated wood processing plant at Narrogin, Western Australia. Recently commissioned, the plant processes mallee trees to produce renewable energy, activated carbon and eucalyptus oil. The project also provides other environmental benefits including sequestering carbon in the mallee roots and lowering the water table to reduce salinity.



Aerial view of the integrated wood processing demonstration plant at Narrogin, Western Australia. Photo: Verve Energy

The **Renewable Energy Equity Fund** continued to provide venture capital to small, innovative renewable energy companies to help commercialise their technologies. The government invested an additional \$2 million during 2005–06, leveraging an additional \$1 million in private sector investment. These investments involve five companies working in the areas of battery technology, biofuels and biomass energy.

The **Photovoltaic Rebate Programme** provides cash rebates for consumers who install grid-connected or stand-alone photovoltaic systems. In 2005–06 the programme provided 946 rebates, representing more than \$3.8 million invested by the government in photovoltaic infrastructure. This brings the total number of photovoltaic systems installed over the life of the programme to 7 150.

The **Mandatory Renewable Energy Target** scheme sets up a national renewable energy market based on a system of tradeable certificates. The Office of the Renewable Energy Regulator administers the scheme, although policy responsibility remains with the department.

Following the 2003 review of the Mandatory Renewable Energy Target, the government confirmed its commitment to the current renewable energy target of 9 500 gigawatt hours by 2010 in the energy white paper *Securing Australia's Energy Future*. The government also agreed to a number of legislative and



regulatory amendments to improve the administrative efficiency and operational effectiveness of the *Renewable Energy (Electricity) Act 2000*. An amendment Bill to enact necessary legislative changes to the agreed improvement was passed by parliament on 22 June 2006.

Local and regional action

The Australian Government helps local governments to reduce their greenhouse gas emissions through the **Local Greenhouse Action** programme. This programme includes **Cities for Climate Protection™ Australia**, under which Australia has the largest and most advanced programme of greenhouse reduction activities in the world, involving 214 local governments and representing 82 per cent of the Australian population.

Case study: Newcastle's greenhouse cuts recognised

Newcastle City Council, a founding member of the Cities for Climate Protection Australia programme, won two prestigious awards at the National Awards for Local Government recognising more than 10 years of action to reduce greenhouse gas emissions.

The Greenhouse Action in Newcastle Plan forms part of council's commitment to Cities for Climate Protection and was developed to address the growing need for local government and the community to manage their impact on the environment, particularly climate change.

Newcastle City Council has initiated many pioneering projects, including Australia's first biodiesel fleet, an award-winning cleaner production programme (aimed at the business community), community REFIT (energy and water saving kits for households), and a green energy project (energy and water saving throughout council's facilities).

The latest results show that councils reduced their emissions by more than 1.5 million tonnes of carbon dioxide equivalents in 2004–05, up from one million tonnes in 2003–04, and 767 000 tonnes in 2002–03. Since 1999 local governments have reported cumulative abatement of over five million tonnes and invested more than \$100 million in local greenhouse measures. The 2005–06 figures will be available in November 2006.

A total of \$400 000 was paid in 2005–06 for grants supporting activities to reduce greenhouse gas emissions. Councils worked with local households, businesses, and



schools to undertake energy audits and retrofits, train tradespeople about energy efficient appliances, and trial new and innovative technologies for sewage treatment.

The department is also helping to fund various projects to reduce greenhouse gas emissions from passenger transport, particularly in urban centres in participating states and territories. For example, the **National Travel Behaviour Change Project** aims to facilitate a voluntary change in behaviour towards more sustainable modes of travel such as walking, cycling, public transport and ride-sharing. The project will see 186 000 households reduce distances travelled in Australia by over three billion car kilometres. One million tonnes of greenhouse gas emissions will be saved, which is equivalent to reducing emissions from over 250 000 cars in one year.

Greenhouse Action to Enhance Sustainability in Regional Australia

addresses knowledge gaps about climate change in regional Australia. Thirty-six research projects are currently being funded to address emissions management in agriculture, forest sink management, and adaptation to climate change in the land management sector. These projects are providing important information for the development of policies on greenhouse gas emissions reduction and climate change adaptation in regional Australia. The department spent \$3.1 million on these projects in 2005–06, with partner organisations spending more than twice this amount.

A key initiative in 2005–06 was the establishment of the first field-based research programme to investigate the interactive effects of elevated carbon dioxide in air on agricultural production. Four states, industry, CSIRO, and universities are involved and have already contributed over \$10 million to this national effort.

Understanding climate change

The Australian Government's response to climate change depends on having high quality scientific knowledge of the contributing influences and mechanisms. For example research is revealing more about the influence ocean circulation has on regional and global climate and on transporting heat and absorbing carbon. The government's response also depends on the capacity to accurately measure greenhouse gas emissions at a national and sectoral level, and the ability to identify and respond to emerging issues.

Australian Climate Change Science Programme

The \$30.7 million **Australian Climate Change Science Programme** is supporting research over four years (2004–2008) into the nature, causes, timing and implications of climate change for Australia. The programme helps to maintain Australia's world-class climate modelling capacity. Partly as a result of the programme's investments, Australia is recognised internationally for the quality of its climate change science.



Key areas of research include improving climate change projection based on probabilities; detecting climate change in Australia, for example, from shifts in mean maximum air or sea surface temperature, or increased frequency and intensity of extreme events such as drought and tropical cyclones; and attributing changes in climate to specific factors such as greenhouse gas emissions, changes in land use, or to natural variability.

The CSIRO, the Bureau of Meteorology and Australian universities will collaborate to develop the Australian Community Climate and Earth System Simulator with support from the Australian Climate Change Science Programme. This simulator is a major step forward in climate modelling in Australia. It will integrate and improve fragmented modelling products into a national system that will simulate climate change in the Australian region, rather than rely on models designed for the northern hemisphere, where the drivers for climate differ from the southern hemisphere.

National Climate Change Adaptation Programme

Some degree of climate change is inevitable due to the level of greenhouse gases already in the atmosphere. The **National Climate Change Adaptation Programme**, announced in the May 2004 Budget, will help Australians manage the consequences of climate change. The \$14.2 million programme will operate over four years (2004–2008).

In February 2006 the Council of Australian Governments announced its intention to develop a national adaptation framework as part of its plan for collaborative action on climate change. Work to develop this framework was a major focus of the National Climate Change Adaptation Programme in the latter part of 2005–06.

Other key areas of work during 2005–06 included:

- continuation of a four-year, \$2 million partnership with the Great Barrier Reef Marine Park Authority to develop a climate change action plan for the reef
- launch of the South-east Australian Climate Project to examine climate change, and particularly its impact on water resources, in the Murray–Darling Basin and south-east Australia. The project was set up under an agreement with the Murray–Darling Basin Commission, Land and Water Australia, the Victorian Department of Sustainability and the Environment, CSIRO and the Bureau of Meteorology
- release of a guide to using the Australian risk management standard to address climate change impacts
- assessment of the impact of climate change on human settlements.

National Greenhouse Gas Inventory

In 2005–06 a new set of Australia's National Greenhouse Accounts was released. The accounts were prepared in accordance with international guidelines under



the guidance of a national committee made up of federal, state and territory government representatives. The accounts comprise:

- the *National Greenhouse Gas Inventory 2004*, which is estimated on a Kyoto reporting basis and is relevant for measuring progress towards the 108 per cent target
- the *State and Territory Greenhouse Gas Inventories 2004*, which are also estimated on a Kyoto reporting basis
- the *National Inventory by Economic Sector 2004*, which introduces estimates of emissions by economic sector (e.g. residential)
- the *National Inventory Report 2004*, which is Australia's official submission to the United Nations Framework Convention on Climate Change and is prepared according to the reporting provisions applicable to the convention.

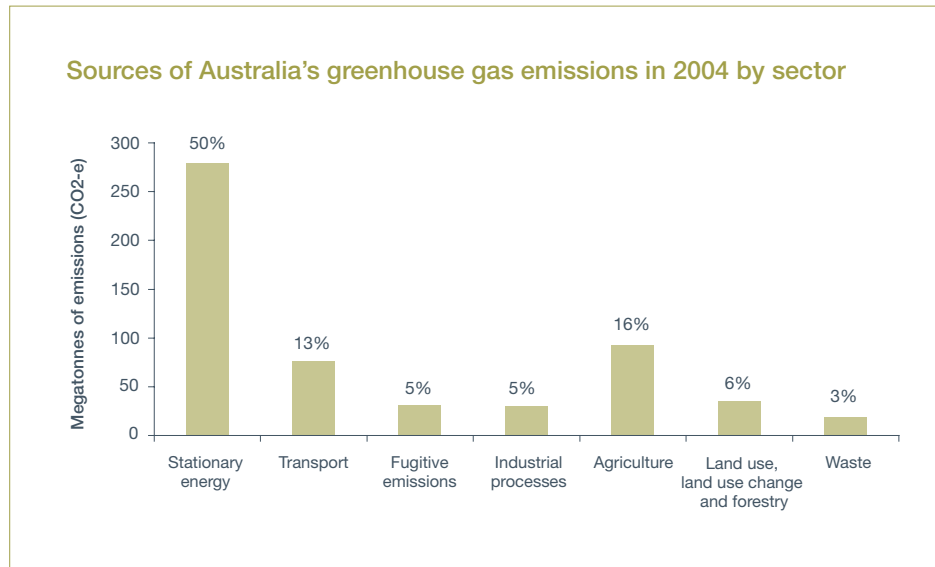
The *National Greenhouse Gas Inventory 2004* was released in May 2006. The inventory shows that national greenhouse gas emissions in 2004 were only 2.3 per cent higher than the 1990 levels. This small increase in emissions is consistent with the updated projections released in December 2005. The methods used to estimate emissions and the emission estimates are available through the Australian Greenhouse Emissions Information System at www.greenhouse.gov.au/inventory.

The *National Inventory Report* is subject to annual international expert review. The report on the review of the 2003 inventory which was published in March 2006 recognised the completeness and quality of Australia's inventory. It welcomed the introduction of the Australian Greenhouse Emissions Information System as a substantial advance in inventory practice and noted the technical quality of the National Carbon Accounting System for monitoring of land systems.

The department, assisted by several leading inventory experts around Australia, made a major contribution to the new edition of the Intergovernmental Panel on Climate Change guidelines on international inventory practices. These guidelines were approved by the panel in April 2006. A senior member of the department participates in the Intergovernmental Panel on Climate Change Bureau which steers the inventory programme.

Greenhouse gas projections

The department prepares projections of Australia's future greenhouse gas emissions. The projections help the government to determine the extent to which its policies and programmes have Australia on track to meet its international emissions target. Updated projections, which follow accounting rules developed under the Kyoto Protocol, were released in November 2005 in a report called *Tracking to the Kyoto Target 2005*. More information is available at www.greenhouse.gov.au/projections.



National Carbon Accounting System

Australia's capability to account for greenhouse gas emissions from our land systems is provided through the world-leading National Carbon Accounting System, which uses computer-based land systems modelling and observations to provide a national map of emissions at a sub-hectare scale.

This year many of the fundamental datasets, such as climate and remotely sensed vegetation cover change, were updated to current time. Research and development activities, largely jointly conducted with various state and territory agencies, CSIRO, universities and private sector interests, also helped to improve the system and expand its capability.

A National Carbon Accounting Toolbox was released in March 2005 to enable landholders to examine the history of their properties through a time-series archive of remotely sensed images, and to model the greenhouse gas implications of agricultural and forestry activities. To date, almost 7 000 copies of the toolbox have been requested.

Australia's Fourth National Communication on Climate Change

Parties to the United Nations Convention on Climate Change are required to report their progress to the convention's secretariat every three to four years through what is referred to as a national communication. The secretariat then carries out an in-depth review of each national communication. The review of Australia's Third National Communication was released in August 2005.

Australia's Fourth National Communication was prepared in 2005 and released by the Minister for the Environment and Heritage in November 2005. The document provides detailed information about the implementation of all aspects of Australia's climate change strategy and can be found at www.greenhouse.gov.au/international/publications/fourth-comm.html.

The secretariat is scheduled to commence its review of Australia's Fourth National Communication in late 2006.





Results for performance indicators

Performance indicator	2005–06 result
Effectiveness in reducing greenhouse gas emissions	
Percentage of total emissions in Australia by sector: (i) stationary energy, (ii) transport, (iii) fugitive emissions, (iv) industrial processes, (v) agriculture, (vi) land use change and forestry, and (vii) waste	2004 (latest available figures, published May 2006): (i) stationary energy 49.6% (ii) transport 13.5% (iii) fugitive emissions 5.5% (iv) industrial processes 5.3% (v) agriculture 16.5% (vi) land use change and forestry 6.3% (vii) waste 3.4%
Actual and projected greenhouse emissions in Australia (megatonnes of carbon dioxide equivalent (Mt CO ₂ -e)) from 1990 base compared with business as usual	Australia's net greenhouse gas emissions across all sectors totalled 564.7 Mt CO ₂ -e in 2004 under the accounting provisions applying to Australia's 108% emissions target. This represents a 2.3% increase over 1990 levels Australia's greenhouse gas emissions are projected to reach 108% of 1990 levels by 2010 or 585 Mt CO ₂ -e, or 2 Mt CO ₂ -e below the Kyoto target In the absence of greenhouse measures, emissions would have reached 123% of 1990 levels by 2010
International engagement—Influencing International Climate Change Policy (administered item)	
Extent of influence in key international, regional and bilateral climate change processes on issues for which the department has lead responsibility	Played a key role in the development of the Asia-Pacific Partnership on Clean Development and Climate, hosting of the inaugural ministerial meeting of the partnership, and established 8 industry-government task forces to develop practical projects under the key work areas of the partnership, including renewables, clean fossil energy, and buildings and appliances Worked effectively through the United Nations Framework Convention on Climate Change to achieve key outcomes, including agreement to a dialogue on long-term cooperative action on climate change, and appointment of the head of Australian Greenhouse Office as co-chair of the dialogue Played a key role in several other international forums on post-2012 action on climate change Further developed both bilateral and plurilateral climate change partnerships
Number of initiatives delivered through key international, regional and bilateral processes	More than 60, including the establishment of the Asia-Pacific Partnership on Clean Development and Climate; agreement to a new bilateral partnership with South Africa; and 58 practical bilateral climate change activities with the United States, China, Japan, the European Union and New Zealand



Performance indicator	2005–06 result
Emissions management	
Effectiveness of support for greenhouse response within sectors	Series of greenhouse gas emissions management measures continues to provide high level of engagement with sectors, for example more than 740 participants in Greenhouse Challenge Plus, representing electricity supply, oil and gas, aluminium, cement, mining and manufacturing sectors, with additional members in 2005–06 leading to a significant increase in the coverage of greenhouse gas emissions reported under the programme; significant response to the Greenhouse Gas Abatement Programme from 6 sectors covering mining, power generation, industrial processing, forestry, government and community sectors to reduce emissions from industry; extensive engagement with key stakeholders in agriculture, forestry and natural resource management sectors through Greenhouse Action to Enhance Sustainability in Regional Australia activities; and significant support from local councils and the community for Cities for Climate Protection, with membership growing to 216 local councils in 2006, representing 82% of Australia's population
Reported abatement activity including emissions reductions and energy savings	Reported in <i>Tracking to the Kyoto Target 2005</i> , released 30 November 2005 The combined effect of greenhouse gas abatement measures is expected to cut annual emissions by 85 megatonnes of carbon dioxide equivalent by 2010. As a result of these measures, Australia is on track to meet its target under the Kyoto Protocol
Extent of engagement of key stakeholders	Series of greenhouse gas emissions management measures continues to provide high level of engagement with sectors (see examples provided for 'effectiveness of support for greenhouse response within sectors')
Extent of support for long-term low emission technology uptake	The Low Emissions Technology Demonstration Fund attracted expressions of interest from 30 long-term low emissions technology projects with private investment projected at over \$6.5 billion State governments offered \$383 million to support the fund
Estimated cost (Government funds) of greenhouse abatement (\$ per tonne)	Based on 2005 projections of abatement from 2008 to 2012, and actual and projected Australian Government funding for programmes, the cost of abatement to the Australian Government in this period averages \$4.00 per tonne



Performance indicator	2005–06 result
Emissions management (continued)	
Reporting systems are appropriately targeted	<p>National Greenhouse Gas Inventory reviewed independently for United Nations Framework Convention on Climate Change and found to comply with requirements</p> <p>Joint Ministerial Council on Energy and Environment Protection and Heritage Council, in consultation with stakeholder groups, fast-tracked the development of options for streamlined greenhouse gas emissions and energy reporting by business and forwarded recommendations to the Council of Australian Government's (COAG) within the timeframe requested. COAG agreed in June 2006 to develop an approach based on national purpose-built legislation to provide for cost-effective mandatory reporting by large emitters and energy users</p> <p>Under Greenhouse Challenge Plus, around 740 participants report annually to the government and also make a public statement about their progress towards reducing greenhouse gas emissions. An online reporting tool, OSCAR (Online System for Challenge Plus Activity Reporting) has been developed. In 2005–06 members commenced direct online emissions reporting to government</p> <p>The International Council for Local Environmental Initiatives reports annually to the department on progress of the Cities for Climate Protection Australia programme, including greenhouse gas abatement achieved</p> <p>Reporting systems for Renewable Remote Power Generation programmes have been established under head partnership agreements between the Australian Government and participating states and territories</p>
Risks to programme delivery identified and managed	Comprehensive risk management plans are in place for each programme
Investment dollars (or contributory funding) leveraged by projects and programmes from other parties	Government expenditure on greenhouse gas emissions management programmes rose from \$58.5 million in 2004–05 to \$64.4 million in 2005–06. While programme guidelines typically specify that other parties provide contributory funding at a ratio of at least 1:1 for every dollar received, higher rates of investment are usually leveraged. Major measures announced in the energy white paper have attracted significant interest, for example, the Low Emissions Technology Demonstration Fund attracted 30 long-term low emissions technology projects with private investment projected at over \$6.5 billion, while state governments offered \$383 million to support the fund; 11 Solar Cities proposals were short-listed by ministers, attracting up to \$284.3 million of cash and in-kind investment from consortia



Performance indicator	2005–06 result
Understanding climate change	
Investment dollars (or in-kind contribution) leveraged from other parties for climate change science priorities	Over \$6.3 million leveraged from other parties in 2005–06
Extent to which climate change policy is integrated in national policies and programmes and interjurisdictional processes	<p>Continued implementation of energy white paper initiatives which integrate climate change policy into national energy policy</p> <p>Adoption and implementation of COAG Plan for Collaborative Action on Climate Change to coordinate national climate change policy</p> <p>Interjurisdictional development of a national framework for greenhouse and energy reporting to improve information available to governments for climate change policy and programme development</p> <p>Climate change included in the Environment Protection and Heritage Council's Strategic Plan 2006–2008</p>
Trends in community responses to key policy issues	Tracking research into community awareness and perceptions of climate change, completed during the year, found significantly increased community awareness of climate change policy issues
Climate change publications that meet targeted stakeholder needs	<p>Prepared more than 30 publications (reports, guidelines etc) to meet the needs of industry, government and non-government stakeholders and the public and received strong positive response from stakeholders</p> <p>A range of regular newsletters, fact sheets and similar materials was published, providing up-to-date information about climate change activities to stakeholder groups</p> <p>A climate change communications strategy was developed with implementation to commence in 2006–07</p>
Comprehensiveness and timeliness of monitoring and public reporting on the implementation of programmes	<p>Milestones in programme development and implementation have been announced publicly and in a timely fashion</p> <p>An in-depth review by the United Nations Framework Convention on Climate Change of Australia's Third National Communication on Climate Change strongly endorsed the approach used</p> <p>Australia's Fourth National Communication on Climate Change provides a comprehensive overview of Australian and state and territory government responses to climate change</p>
Development of consistent measurement of abatement across programmes	Ongoing programme of continuous improvement in place as part of projections process, to measure abatement across sectors and programmes and in generating overall abatement estimates



Performance indicator	2005–06 result
Understanding climate change (continued)	
Number of reports and submissions made in accordance with national and international commitments and level of user interest	<p>Published the National Greenhouse Account reports, methodology papers and 23 related products</p> <p>Published updated projections in the sub-sectors of transport, waste, agriculture and land use, land use change and forestry. An update of Australia's projected emissions was released on 30 November 2005 in the report <i>Tracking to the Kyoto Target 2005</i>, showing Australia is still on track to meet its Kyoto targets</p> <p>Prepared Australia's Fourth National Communication on Climate Change; 12 submissions on issues are being considered by the United Nations Framework Convention on Climate Change</p>
Sub-output 1.1.1 – International engagement	
Percentage of payments that are consistent with the terms and conditions of funding (Target: 100%) ^(a)	100%
Sub-output 1.1.2 – Emissions management	
Percentage of payments that are consistent with the terms and conditions of funding (Target: 100%) ^(a)	100%
Sub-output 1.1.3 – Understanding climate change	
Percentage of payments that are consistent with the terms and conditions of funding (Target: 100%) ^(a)	100%

^(a) Applies to provision of grants programmes funded entirely from the Department of the Environment and Heritage appropriations for the output (i.e. not those marked administered items).

Resources

Departmental outputs	Budget prices \$'000	Actual expenses \$'000
Sub-output: 1.1.1 International engagement	14 473	13 904
Sub-output: 1.1.2 Emissions management	34 074	33 775
Sub-output: 1.1.3 Understanding climate change	16 482	16 350
Total (Output 1.1: Climate change)	65 029	64 029
Administered items		
Influencing International Climate Change Policy	1 450	1 390
Solar Cities	550	550
Action on Energy Efficiency	800	800
Local Greenhouse Action	400	404
Low Emissions Technology and Abatement	2 235	1 950
Greenhouse Gas Abatement Programme	13 339	13 318
Alternative Fuels Conversion Programme	862	223
Renewable Remote Power Generation Programme	28 758	28 746
Renewable Energy Commercialisation Programme	1 954	1 694
Renewable Energy Equity Fund—writedown of receivable	0	2 840
Photovoltaic Rebate Programme	5 357	4 622
Renewable Energy Equity Fund	1 338	1 338
Greenhouse Action to Enhance Sustainability in Regional Australia	3 400	3 400
Climate Change Science Programme	6 000	6 000
Total (Administered)	66 443	67 275



Outcome 1 – Environment
Climate change

