NEW SOUTH WALES
GREENHOUSE OFFICE

NSW Greenhouse Plan

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Premier's foreword

The evidence is mounting – the Arctic ice shelf is melting. So is the snow cap on Mount Kilimanjaro. So are the world's glaciers.

The CSIRO tells us that global warming may lead to NSW experiencing an increase in the frequency and severity of drought, bushfires and storms.

The CSIRO also tells us that over the next three decades we may see warming of up to two degrees Celsius – the threshold of dangerous climate change.

That means we have to reduce greenhouse gas emissions by no less than 60 percent by the middle of the century.

That's an enormous task requiring global action, hence the NSW Government's unremitting support of the Kyoto Protocol.

The Protocol aims to halt the rise in global emissions and perhaps cut them by a few percent. Kyoto is a good start – a good platform from which to begin making deep cuts.

NSW is already at the forefront of efforts to reduce greenhouse gas emissions, not just in Australia but globally.

We introduced the world's first mandatory emissions trading scheme, the NSW Greenhouse Gas Abatement Scheme. We brought in tough water and energy efficiency targets for new homes. We initiated the now-national Australian Building Greenhouse Rating Scheme which rates the energy performance of commercial buildings from one to five stars.

In June this year NSW became the first jurisdiction in Australia to map out a new agenda of big cuts over the next 20 to 45 years, reductions that will take a lot of planning and discipline to achieve:

- a 60 percent cut in greenhouse emissions by 2050; and
- cutting greenhouse emissions to year 2000 levels by 2025.

This Greenhouse Plan sets out how NSW will begin meeting these targets by raising community awareness, introducing climate change adaptation measures and setting our State on the path to sustainable development.

This Plan would not have been possible without extensive public and stakeholder consultation, and I warmly thank those who so thoughtfully contributed to its development.

Success will not come easily. It will demand new habits and new attitudes. New technologies. Change for every home and workplace.

The success of the Montreal Protocol on CFCs proved we have the intelligence to change and adapt to a major environmental threat while protecting economic growth.

Global warming is a far greater threat, so let's respond with the seriousness this worldwide challenge demands.

I sincerely commend the NSW Greenhouse Plan.

Morris Iemma MP

Premier and Treasurer

The Premier's Greenhouse Advisory Panel

The Advisory Panel provides advice on broad policy and program directions to ensure that government policy is well informed by scientific, industry and broader community views.

Mr Martijn Wilder (Chair) – Martijn is a lawyer responsible for Baker & McKenzie's global climate change and emissions trading practice and is regarded as a leader in the climate change law field. Martijn is also the Adjunct Lecturer in International Environmental Law at the University of NSW, and a legal adviser to the Australian Government on its National Oceans Policy.

Ms Janet Dore – Janet has been General Manager of Newcastle City Council for the past five years. The City of Newcastle is recognised nationally and internationally as leading community greenhouse action. Examples of projects undertaken with the Council's Greenhouse Action Partners include the creation of the world's first greenhouse gas speedometer - ClimateCam, Australia's first biodiesel powered vehicle fleet, 60% energy reductions in Council buildings and the first Energy Town Meeting.

Mr Kevin Hennessy – Kevin has been a key member of CSIRO's Climate Impact Group since 1989 and CSIRO's Climate Impact and Adaptation Working Group since 1999. His expertise lies in analysis of observed climatic trends, analysis of future greenhouse simulations, development of Australian climate change projections, assessment of potential impacts and responding to 'greenhouse sceptics'. He has been involved with the Intergovernmental Panel on Climate Change in the development of both the Second and Third Assessment Reports.

Mr Adam Spencer – Adam began his career in radio by winning the Triple J raw comedy championship in 1996 and eventually took over the coveted breakfast time slot in 1999. A consummate learner, Adam holds a first class honours degree in Pure Mathematics and has an immense interest in science. These passions lead Adam to hosting the ABC program Quantum and FAQ from 1998 to 2001.

Mr David Marsh – David and his family manage a mixed farm enterprise at Boorowa in the State's Central West. David has been closely involved in regional Natural Resource Management issues since 1989. He was a member of the Native Vegetation Advisory Council of NSW for five years until 2003 and a founding member of the Boorowa Landcare Group. He is currently serving on the board of the Lachlan Catchment Management Authority. David was the 2004 Central West Conservation Farmer of the Year and holds a Masters of Sustainable Agriculture.

Ms Sam Mostyn – Sam has an extensive background in law, management and politics. She is currently the Group Executive, Culture & Reputation at Insurance Australia Group where she has responsibility for managing the Human Resource, Organisational Effectiveness, Corporate Affairs, Government Relations & Policy, Corporate Sustainability and Community Engagement functions. During 2003 IAG was recognised as a leader in sustainable business planning and received Ethical Investor magazine's award for Sustainable Company of the Year.

The NSW Greenhouse Office

The NSW Greenhouse Office is a specialist policy unit within the NSW Cabinet Office. It is responsible for the co-ordination and development of Government policy to combat climate change and reduce greenhouse gas emissions from all sectors of the NSW economy.

The Greenhouse Office brings together expertise from across the public and private sectors to limit greenhouse gas emissions and help position NSW for the future. The Office provides whole-of-government strategic advice directly to the Premier, ensuring greenhouse and climate change matters receive the high level attention they deserve.

Introduction to the NSW Greenhouse Plan

Climate change is a long-term, global issue with no easy solution. An effective response will require action by all levels of Government, individuals, industry, business and community groups. The NSW Greenhouse Plan sets out action for the NSW Government for the next three years and beyond – to reduce the emissions of its own activities and to work with other stakeholders to reduce the emissions from their activities.

The main objectives of this Plan are to:

- Increase awareness among those expected to be most affected by the impacts of climate change.
- Begin to develop adaptation strategies to those climate change impacts we cannot avoid.
- Put NSW on track to meeting its targets of limiting 2025 emissions to 2000 levels; and reducing emissions by 60% by 2050.

Action on greenhouse involves everyone –

- we need your commitment to becoming climate change conscious
- we need you to make changes to help reduce emissions.

Keeping the plan up to date

To ensure the NSW Greenhouse Plan remains relevant and effective, additional policies will be developed and added as commitments are delivered and new opportunities emerge.

The NSW Greenhouse Plan will be reviewed and updated regularly. The Government will actively seek the views of key stakeholders and the wider community when preparing updates and developing additional actions. The NSW Greenhouse Advisory Panel will also be involved in keeping the plan updated.

New commitments added to the Plan will be available on the Greenhouse Office website at **www.greenhouseinfo.nsw.gov.au**

Scene Setting

The global context

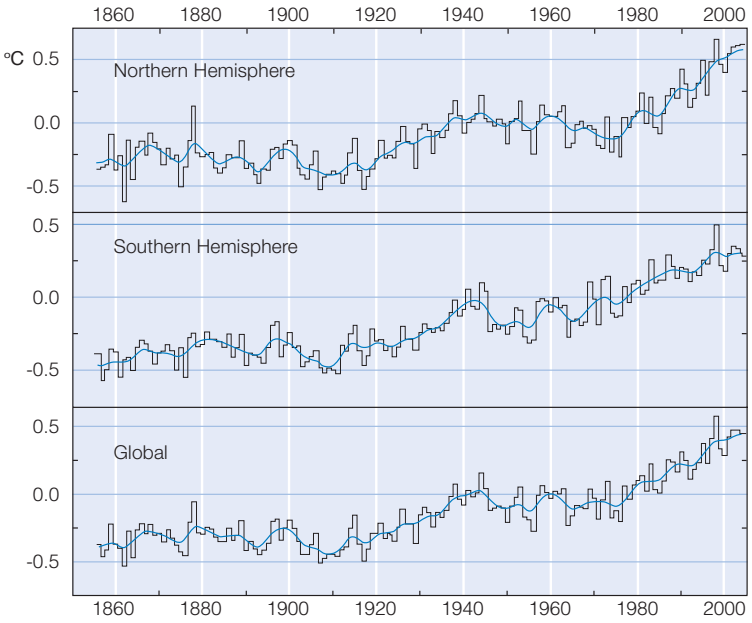
The earth's climate is controlled by energy from the sun that is absorbed by the earth's atmosphere. A blanket of naturally occurring greenhouse gases (including water vapour, carbon dioxide, methane, tropospheric ozone and nitrous oxide) trap heat in the atmosphere and create what is commonly referred to as the 'greenhouse effect'. Without it, the earth's average temperatures would be around 34°C colder.

Our climate is changing

Since the Industrial Revolution the atmospheric concentration of carbon dioxide has increased by 35% and it is now the highest it has been for the past 420,000 years. Concentrations of other greenhouse gases are also on the rise – methane by 151%, nitrous oxide by 17% and tropospheric ozone by 36%.

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and the United Nations Environment Program to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation. The IPCC has concluded that there is an increasing body of evidence that human activities which increase greenhouse gas concentrations are 'enhancing' the natural greenhouse effect and resulting in a changing climate.[1]

Average temperatures have risen by around 0.6°C over the past century, and the 1990s was the warmest decade since records began in 1856. Temperatures have risen in the lowest 8 km of the atmosphere, the upper ocean has warmed, there have been increases in heatwaves, heavy rainfall and sea levels, while glaciers, ice-sheets and frosts have decreased. These global changes are already affecting the natural environment with altered growing seasons and declines of some plant and animal populations.



This chart depicts changes in temperature since 1856 compared to the 30 year average from 1961 to 1990.

It shows considerable global warming over the last 150 years.

The 5 warmest years on record have occurred since 1998. The 10 warmest years on record have occurred since 1990. The 15 warmest years on record have occurred since 1987

Figure 1: Global average temperature anomalies compared to the 1961 – 1990 average.
Source: University of East Anglia Climate Research Unit
http://www.cru.uea.ac.uk/cru/data/temperature

So we can better understand the interactions between the climate, the oceans and greenhouse gas emissions, super computers are being used to model global climate systems and give projections of future climate change. Climate model simulations are driven by various scenarios of greenhouse gas and aerosol emissions. Different climate models and emission scenarios produce different estimates of global average warming and regional climate change, providing a range of estimates.

Climate change projections for the world

By the year 2100, global average temperatures are expected to rise between 1.4 to 5.8°C and sea-levels are expected to rise between 9 to 88cm, relative to 1990. Across the world, increases in heatwaves, heavy rainfall and cyclone intensity are anticipated, while glaciers, ice-sheets and frosts are expected to continue to decrease.

For small increases in greenhouse gas concentrations and low levels of global warming (less than 1°C), there are projected to be some positive and some negative impacts. For large increases in concentrations and high levels of global warming (2-4°C), natural and human systems are more likely to move beyond coping thresholds.

Climate change projections for Australia

In Australia, our climate is likely to become warmer and drier. Annual average temperatures are projected to increase by 0.4 - 2.0°C by the year 2030 and by 1 - 6°C by 2070, relative to 1990. Inland areas are likely to warm faster than the global average. We can expect more variation in rainfall patterns. Where average rainfall increases, there are likely to be more extremely wet years, and where average rainfall decreases we anticipate more droughts. Less snowfall and greater fire risk are also likely.

Australia's drought of 2002-03 had higher temperatures and greater rates of evaporation than previous droughts and climate change is expected to further increase the severity of droughts in the future. Economic losses from natural disasters such as droughts, floods and hailstorms have increased in Australia over the past 30 years and are likely to increase even further.

Climate change projections for NSW

Projections of climate change in NSW were undertaken for the NSW Government by the CSIRO and Bureau of Meteorology[2]. They concluded that without action to limit emissions NSW can expect:

- a warming of between 0.2 to 2.1ºC over the next three decades (with the greatest rise in spring and summer) and a warming of 0.7 to 6.4ºC by 2070.
- a general tendency for decreasing annual-average rainfall, particularly in spring and particularly in south-western NSW.

Figure 2 below shows projected changes of average temperature and rainfall for the years 2030 and 2070 (relative to 1990) for two different scenarios of global emissions. The coloured bars show the ranges of change expected with corresponding colours on each map. The scenarios represent the IPCC's business as usual scenario which excludes actions to reduce greenhouse gas emissions, while the 450 parts per million (ppm) scenarios show the effect of global action to stabilise atmospheric concentrations of CO_2 at 450 ppm. If CO_2 concentrations are stabilised at 450 ppm by the year 2090, the upper limit of warming or rainfall change is reduced by about a quarter by 2030 and almost halved by 2070.

While much of NSW shows a tendency for drier conditions, heavy rain storms may become more intense and more frequent and other extreme weather events are likely to become more frequent. Under the worst-case scenario, with high levels of global warming there may be a 70% increase in drought frequency by 2030 with twice as many days above 35°C by 2030 and six times as many by 2070.

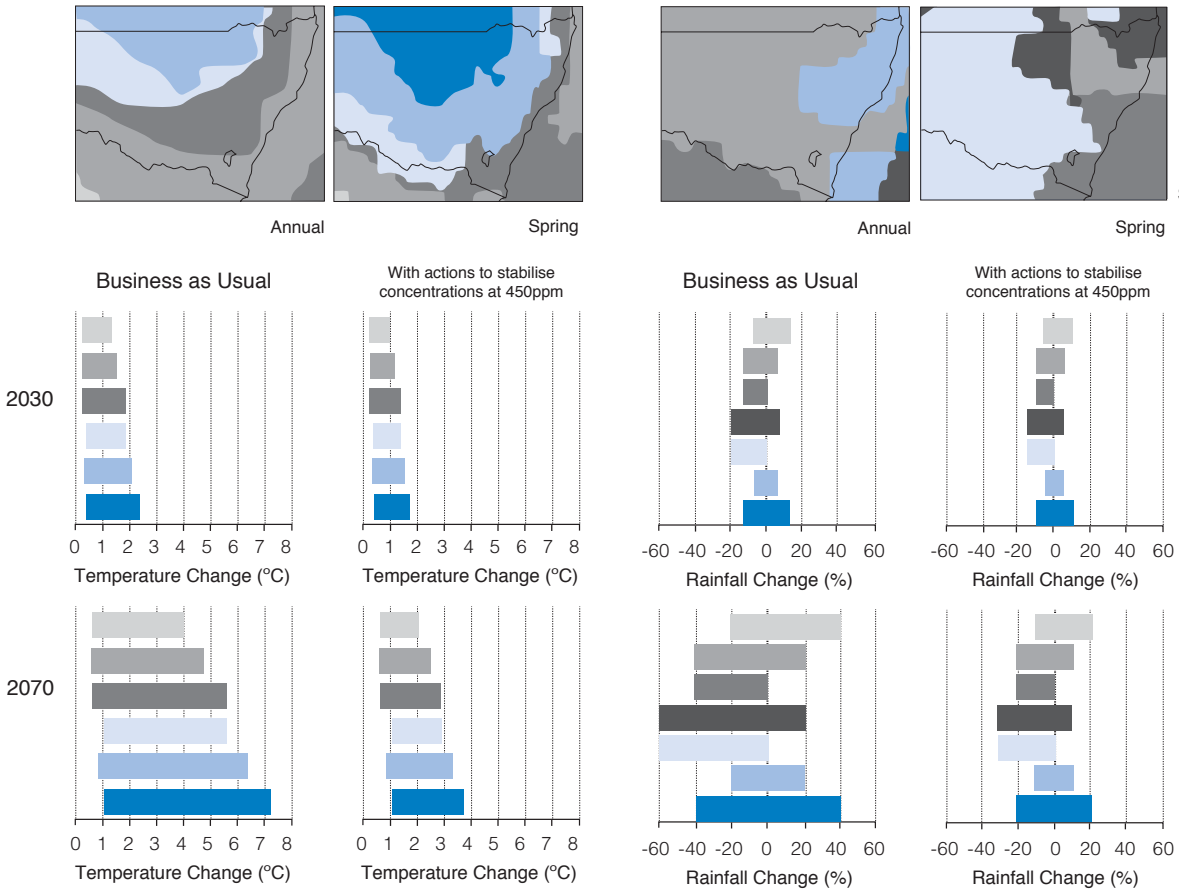


Figure 2: CSIRO projections for NSW temperature and rainfall for the years 2030 and 2070. The coloured bars show ranges of tempertature and rainfall change for the corresponding coloured areas in the maps. The "Business as Usual" projections are based on the Intergovernmental Panel on Climate Change Special Report on Emission Scenarios.

For western towns like Cobar the number of days over 40°C could more than double (from 6 to 15) by 2030.

In parts of NSW, some agricultural and forestry activities may benefit from small temperature and carbon dioxide increases, because of the improvements in plant growth that may result. However most changes in average and extreme climate are expected to have negative impacts on natural ecosystems, water resources, primary industries, human health and settlements.[3]

Hotter, drier conditions will put crops under greater heat and water stress. Rivers are likely to decline, making irrigation less reliable and shrinking natural wetlands. Rising temperatures will reduce the available habitat for alpine species like the Mountain Pygmy Possum. Some CSIRO projections show the snow fields largely disappearing by 2050, with serious implications for tourism.

Major storms may be more common over much of NSW, damaging buildings, bridges and power lines. In the coastal zone, these storms may combine with a rise in the sea level to worsen coastal erosion, damaging beaches and valuable properties. Bushfires are likely to become more frequent and intense, increasing the risk to homes near bushland. Human health also faces risks. Warmer temperatures increase the risk of infectious diseases, food poisoning and mosquito-borne diseases.

The imperative to minimise these impacts is now widely recognised. There are three important policy responses:

(1) raise awareness of these issues within the community,

(2) slow global warming by reducing greenhouse gas emissions, and

(3) adapt to unavoidable climate change.

The international and national response

International negotiations on a global framework for emission reductions have been underway since the United Nations Framework Convention on Climate Change (UNFCCC) was first signed in 1992 and came into force in 1994[4]. It provides an overall framework for the international efforts to tackle climate change. The Australian Government ratified the Convention in 1992. One of the primary objectives of the Framework Convention is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent 'dangerous' human interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, ensure that food production is not threatened and enable economic development to proceed in a sustainable manner.

The Kyoto Protocol to the Convention entered into force on 16 February 2005, and sets legally binding targets for industrialised countries to reduce emissions over the period 2008-2012. Although the Australian Government has indicated its intention to meet Australia's negotiated emission target, Australia has joined the United States, Croatia and Monaco in choosing not to ratify the Protocol. Ratifying countries are implementing policies to meet their emission reduction targets, including the European Union which introduced an emissions trading scheme in 2005.

The NSW Government believes that – although not perfect by any means – the Protocol is a critical first step towards effective global cooperation and has therefore called upon the Commonwealth to ratify. This would ensure that Australia has a seat at the negotiating table for the next stages of global action and that Australian companies have access to new and growing markets through emissions trading. It would also allow us to work with developing countries to accelerate technology transfer in countries where emissions

are expected to significantly increase as their economies develop.

The latest national forecasts show that Australia is on track to meeting the Kyoto target, largely due to a significant reduction in rates of land clearing since the 1990 base year. Emissions from sectors such as energy and transport have increased considerably and these trends are projected to continue. At the same time, there is limited scope for further reductions in land clearing emissions.

Long-term goals

Global discussions are now focusing on the challenge of emission reductions after the Kyoto Protocol ends in 2012. It is increasingly recognised that over the long-term substantial cuts in emissions will be required. This is often referred to as the prospect of a 'carbon constrained' future, in which the global emissions of greenhouse gases are likely to be limited.

There is growing support amongst climate scientists and experts for a precautionary goal to constrain global average temperature increases to a maximum of 2°C. This includes the average temperature increase of 0.6°C which has already occurred since industrialisation.

A 2°C rise in Australia would be likely to have a number of negative environmental impacts such as the regular bleaching of near-shore coral reefs and a reduction in the total area in which some plants and animals naturally occur, particularly in the Southern Alps. Above a 2°C rise, the risk of more severe impacts becomes unacceptably high, including a 12-25% reduction in river flow in the Murray Darling Basin.

Industrialised nations have been responsible for most of the past emissions and have relatively

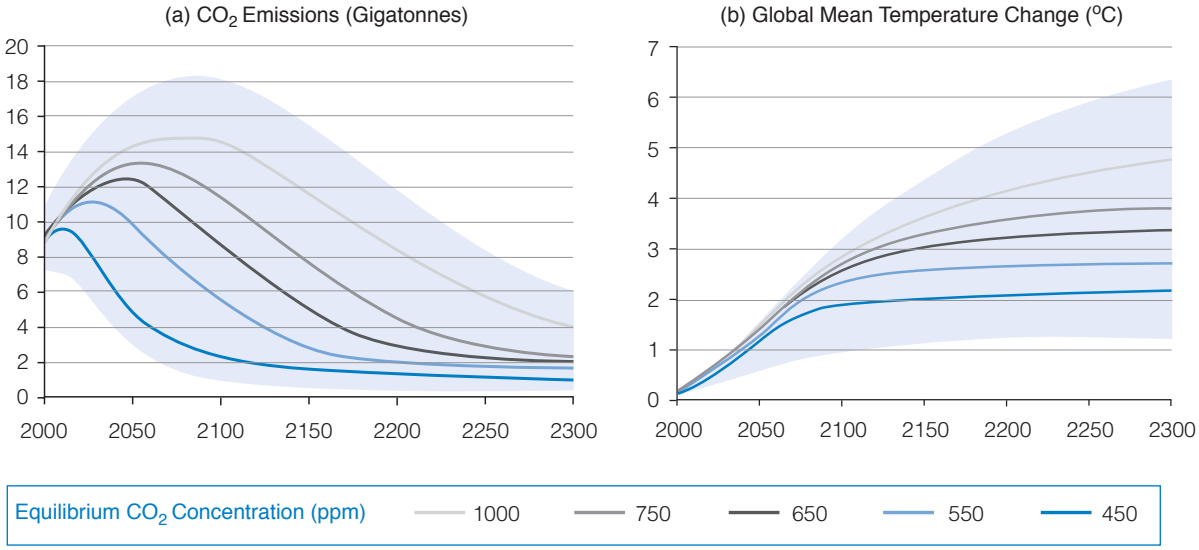


Figure 3: (a) CO2 emission reduction paths that would lead to eventual stabilization of the concentration of CO2 in the atmosphere at 450, 550, 650, 750 and 1000 parts per million (ppm).

(b) Corresponding global warming. The shaded area shows the range of uncertainty in estimating CO2 emissions corresponding to each concentration scenario. These figures are adapted from IPCC publications (WRE scenarios) and appear in more detail in the CSIRO's climate projections for NSW.[5]

high per capita emissions. It is therefore likely that industrialised countries will need to lead the reduction in emissions – a principle enshrined in the Framework Convention. The Commonwealth Government has acknowledged that global emission cuts in the order of 60% are likely to be required by the end of the century to avoid dangerous interference with the climate.

Cost-effective emission cuts of this magnitude will require the early introduction of price signals to help divert investment toward less emission-intensive technologies. To this end, several countries have already adopted long-term emission reduction targets to assist industry risk management, provide investor confidence, promote technological innovation and guide climate change policy. Most prominently, the UK aims to reduce carbon dioxide emissions from energy by 60% by 2050.

NSW emissions

Overview of NSW emissions

NSW has 34% of Australia's population of 20.2 million and is responsible for just over a quarter of Australia's emissions. This reflects the lower emission-intensity of NSW industry compared to other Australian states. NSW per capita emissions, however, are 23 tonnes per person each year and this is still high compared to other countries. The UK, Germany and Japan all emit just over 10 tonnes per person and the average for industrialised nations is about 13 tonnes.

Australia's relatively high per capita emissions are due to our relative abundance of cheap fossil fuels, high dependence on coal-fired power generation, the energy intensity of our exports (such as aluminium, steel and coal), long distances between cities and our rising standard of living. However, there are many opportunities to improve the efficiency with which we use energy and reduce its greenhouse intensity.

The NSW greenhouse gas inventory is summarised in Figure 4. Stationary energy is responsible for almost half of NSW emissions, with other key sources including transport (15%) and agriculture (14%).

Stationary energy emissions include fossil fuel combustion in electricity and heat production, and manufacturing and construction industries.

Transport emissions include those from road (cars, buses and trucks), rail, shipping and aviation for both passengers and freight.

Fugitive emissions are those emissions released during the extraction and production of coal, oil and gas.

Industrial process emissions are by-products of processes such as metal and chemicals production and minerals processing.

Agricultural emissions are from livestock (digestion), manure management, soils and burning of savanna and residues.

Land use change and forestry sector emissions are mainly from land clearing.

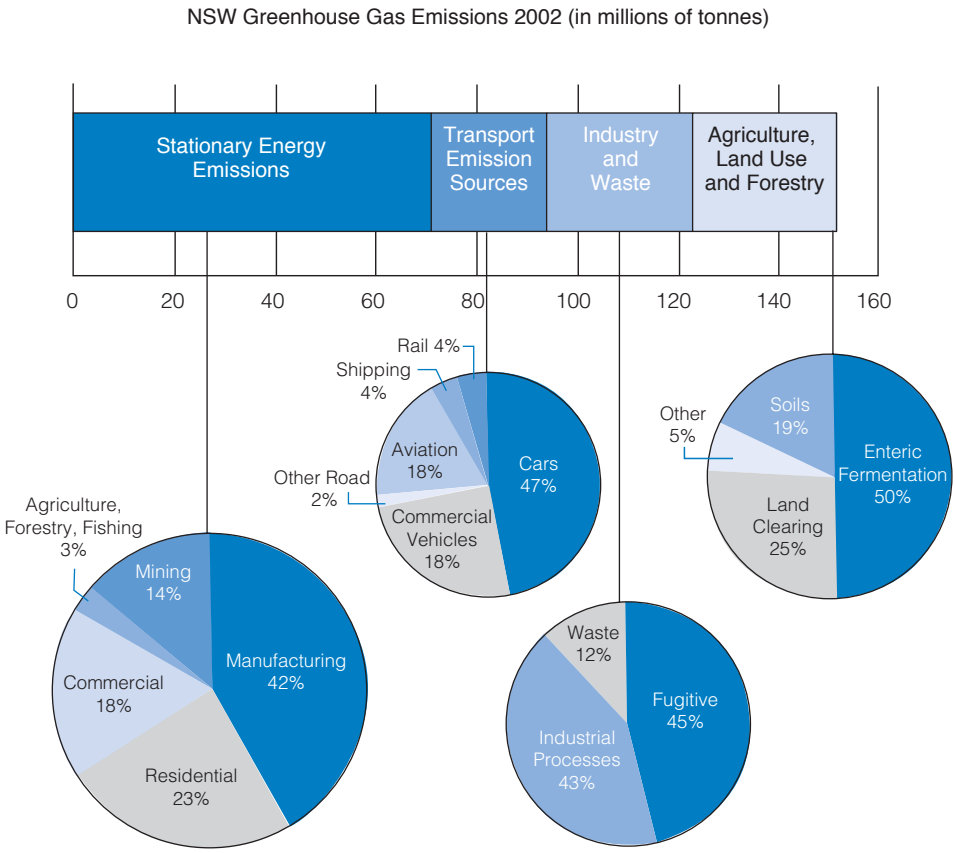


Figure 4: NSW Greenhouse gas emissions sources by sector[6]
Note: Breakdown of stationary energy emissions is based on 1999 national figures, as a breakdown for NSW is not available

Emission trends

In 1990, NSW emissions were 156 million tonnes (Mt) of greenhouse gases (expressed as carbon dioxide equivalent). Emissions declined almost 5% to 147 Mt in 1995, largely as a result of falling emissions from land clearing. However, as underlying growth in energy and transport sectors continued, total emissions increased to 151 Mt in 2002 or 3% below 1990 levels.

Historically emissions growth has followed the trend of economic progress. However, the rate of emissions growth is now slowing compared to the rate of economic growth. Since 1990 NSW emissions relative to economic output have fallen by about 33%.

Indicative 'business-as-usual' projections of future emissions in NSW to 2020, based on current trends and with existing policy measures, are shown in Figure 5. These projections are based on an analysis that draws from the National Greenhouse Gas Inventory and Commonwealth projections. Beyond 2020 projections become highly speculative. These projections, however, demonstrate the significant challenge ahead – with energy emissions expected to continue to grow strongly while land clearing reductions and tree planting make only a minor contribution.

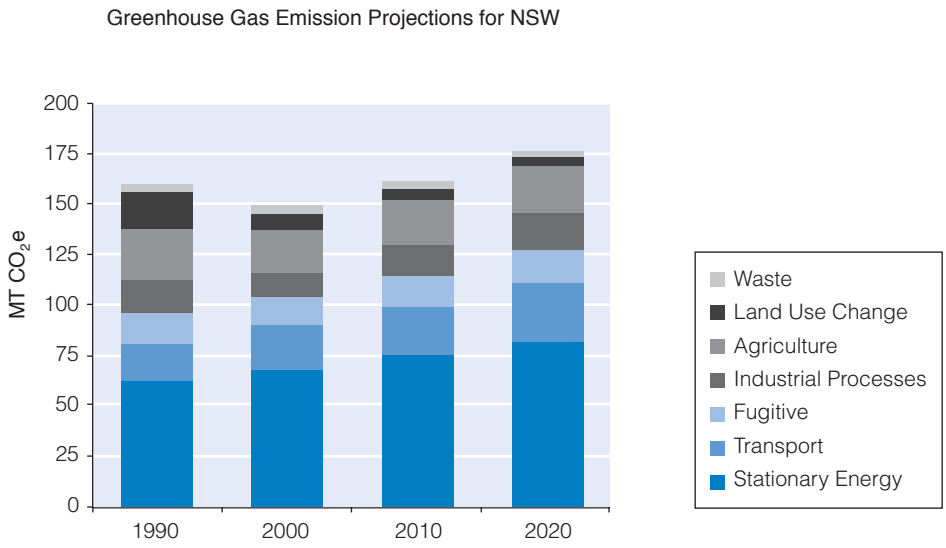


Figure 5: Indicative greenhouse gas emissions projections for NSW under business as usual

Prioritising sectors for action

A concerted effort is required now to slow and reverse the projected growth in emissions. The NSW Government will therefore pursue a strategic and comprehensive approach to emission reduction.

Table 1 sets out the most significant sectors in NSW according to their contribution to overall emissions and their projected growth in emissions from 2000 to 2010. Those with a high contribution and high growth (ie. electricity and heat production) are considered priority sectors, as are those with medium contribution and high growth (ie. venting and flaring of methane from coal mining and industrial processes), or high contribution and medium growth (ie. road transport).

		Contribution to NSW emissions		
		Low (less than 3%)	Medium (3-10%)	High (more than 10%)
Growth*	High (more than 20%)		Fugitive (venting and flaring) emissions from coal Industrial processes	Electricity and heat production**
	Medium (10-20%)	Fugitive emissions (natural gas and oil) Non-road transport Other agricultural	Land use change and forestry Manufacturing and construction energy Refining and fuel manufacturing Other combustion	Road transport
	Low (0-10%)		Agricultural soils Burning of savannas Waste	Livestock emissions

* Projected emissions growth 'with emission reduction policies and measures'

** Energy and heat production is projected to have medium 'with emission reduction policies and measures' growth, but both its historic growth and business-as-usual-growth is high.

Table 1: Prioritising sectors on the basis of contribution and growth rate

Greenhouse gas emissions are produced from a wide range of sources and can be reduced by either modifying the way in which we live and do business (and many energy efficiency measures require nothing more than a motivated conscious decision) or by employing technological solutions.

Both the smarter use of energy and the development and uptake of innovative technology will be required if significant cuts in emissions are to be achieved cost effectively.

Technologies and opportunities for low cost emission reductions

There are significant emission reduction opportunities available at low cost. An emission abatement cost-curve was developed for NSW in order to indicate abatement potential in NSW over the next 10 years and to identify least-cost emission abatement options.[7]

Key conclusions of the work include that:

- there are a wide array of measures that could produce significant emission abatement over the intermediate horizon to 2014 and beyond
- the abatement opportunities identified in the cost curve equate to over 50 $MtCO_2e$ per year (about one third of current estimated NSW emissions)
- a few abatement measures appear to have particularly large potential and low or negative costs (ie over time they save more money than they cost) and so warrant further policy and analytic consideration.

Technology type	Potential $MtCO_2e$ pa	Cost $/ tCO_2e
Energy efficiency		
Commercial energy efficiency	4.6	-$25
Industrial energy efficiency	3.4	-$16
New/renovated home efficiency	2.9	-$20
Existing home energy efficiency	0.80	-$58
Automobile energy efficiency	1.5	$0
Automobile usage reduction	0.7	-$18
Renewable electricity generation		
Wind	2.4	$20
Small hydroelectric	0.2	$11
Photovoltaics	0.3	$273
Solar thermal	0.5	$43
Solid Waste and wet biomass	3.3	$8
Dry biomass	1.7	$38
Biofuels - biodiesel and ethanol	0.1	$265

Technology type	Potential $MtCO_2e$ pa	Cost $/ tCO_2e
Lower emission fossil-fuel electricity generation		
Large industrial cogeneration	1.6	-$2
Mid size cogeneration	1.8	$16
Combined cycle gas (base load)	2.2	$25
Mine waste methane electricity generation	4.9	$6
Upgrade existing coal plant	1.2	-$12
Geosequestration at coal generator	4	$40
Industrial process	0.6	-$3
Land use change and management		
Reduction in land clearing	6.8	$0
Soil carbon sequestration	0.5	$0
Forest sequestration*	3.1	$0
Forest sequestration	4	$5
Forest sequestration	5.4	$15
Forest sequestration	7.3	$30

*The potential $MtCo_2e$ pa reduced through forest sequestration varies depending on the cost of carbon. The higher the cost of carbon, the more plantations are economically viable.

Table 2: Summary of a selection of NSW abatement opportunities to 2014

The development of the cost-curve necessarily requires a wide range of assumptions and as such is indicative only. Further, the abatement curve is not exhaustive as it would be impossible to include all possible abatement technologies on a single diagram. Rather, the examples selected were chosen to represent some of the most significant abatement opportunities. Also, some opportunities are not included as they are already addressed by existing policy measures (eg. per fluorocarbons in the aluminium sector).

It is also important to note that each circle on the cost curve (Figure 6) represents a technological option, not a particular policy measure. Policies might target more than one option (eg emissions trading might lead to the take-up of a range of options) or options can be encouraged through a range of policies (eg improvements in home energy efficiency can be targeted through minimum performance standards for energy efficient appliances and through BASIX).

The cost curve shows costs at a point in time, but it should be noted that costs change over time as technologies develop. For example, the cost of generating electricity from wind or photovoltaics has come down considerably over time. This is a snapshot in time which will be revised as technologies and markets continue to develop.

In order to achieve both short and long-term emission abatement, it will be necessary to harness opportunities right along the cost curve. Although large scale short-term abatement might focus on least cost opportunities, it may be strategic to invest in some higher cost options that may deliver either substantial and/or low cost abatement in the longer term.

The abatement identified in the above curve will assist in turning around the current growth in NSW emissions. These emission reduction measures might also be pursued in sectors where there are significant additional benefits such as for air quality, soil quality, health benefits or regional employment.

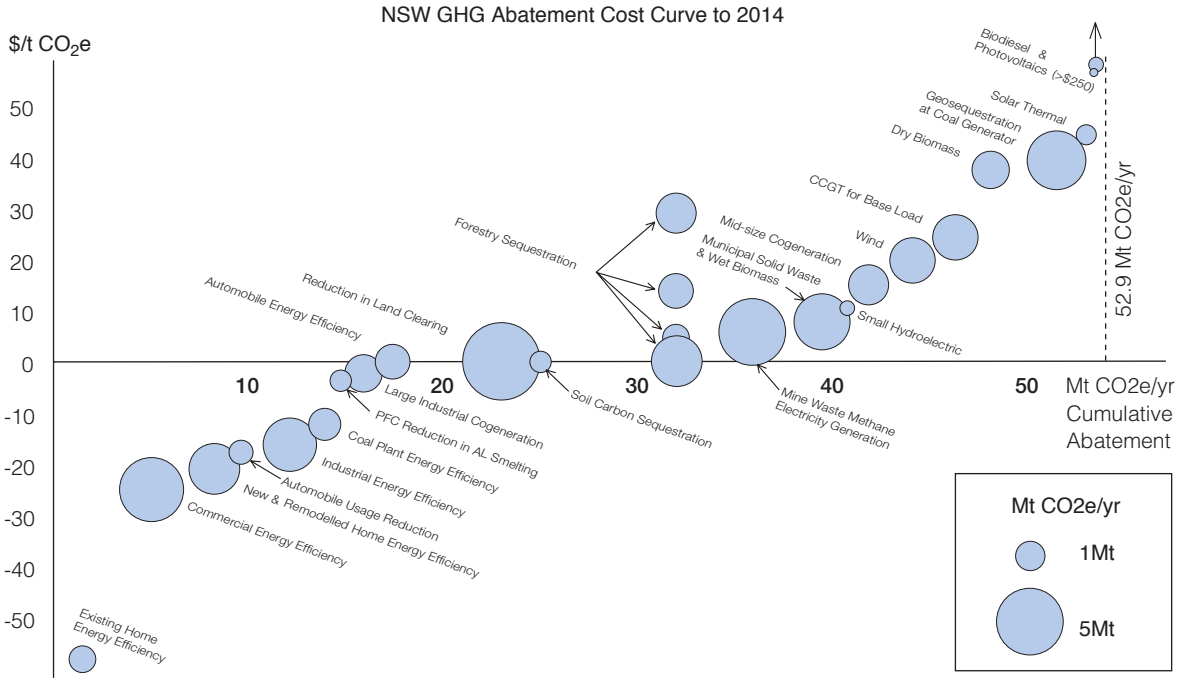


Figure 6: NSW GHG Abatement Cost Curve to 2014

NSW action to date

The NSW Government has implemented a number of actions in raising awareness, assessing regional climate change and impacts, and reducing greenhouse gas emissions. Awareness has been raised through environmental education such as the "Live Energy Smart", "Green Power" and "It's a Living Thing" campaigns. The government has engaged CSIRO over the past 14 years to provide regional climate change projections, the latest assessment being released in 2004 in joint reports by CSIRO and the Bureau of Meteorology.

NSW has led climate change policy in Australia, and on 11 June 2005 became the first jurisdiction to commit to ambitious long term reduction targets:

- a 60% cut in greenhouse emissions by 2050; and
- return to year 2000 greenhouse emission levels in NSW by 2025.

In addition, NSW has implemented a number of world leading initiatives. Some of these include:

The NSW Greenhouse Gas Abatement Scheme – The Greenhouse Gas Abatement Scheme establishes a local market for emissions reductions and greenhouse credits. Under the scheme, mandatory annual targets based on NSW per capita greenhouse emissions must be met by electricity retailers. Retailers can meet their targets directly or by buying 'credits' that are created through (a) low-emission electricity generation (eg natural gas, solar, wind); (b) activities that reduce demand and consumption of electricity; (c) carbon sequestration (the capture of carbon from the atmosphere in forests) and (d) activities by large users of electricity that improve the fuel efficiency of production or otherwise reduce on-site emissions. The scheme has already achieved around 16 million tonnes of greenhouse savings since it started in 2003 and will accrue around 120 million tonnes by 2012.

The Building Sustainability Index (BASIX) – Since July 2004, all new single dwelling residential developments in NSW are required to achieve a 40% reduction in water consumption, and a 25% reduction in greenhouse gas emissions, compared to the average NSW home. This will increase to a 40% reduction target for greenhouse emissions from July 2006. BASIX will apply to multi-unit residential developments from 1 October 2005, and to alterations and additions to homes from 1 July 2006. It is estimated that BASIX will save 287 billion litres of water and 9.5 million tonnes of greenhouse emissions over 10 years.

Carbon legislation – The NSW Government introduced the world's first carbon rights legislation in 1998. This legislation recognises carbon sequestration (absorption and storage) by forests in law, and allows the ownership, sale, and management of these carbon rights as a kind of forestry right. Investors can now trade separately in the rights to land, trees and carbon in a given area.

Energy Savings Fund – The Government has established the Water and Energy Savings Funds to provide incentives, particularly for businesses, to introduce measures to make sure they use water and energy more wisely. Some large businesses will be required to undertake energy savings plans. The Fund will provide funding to assist with implementation of these plans. $200 million over 5 years will be available, in the form of a contestable pool of funds for applicants. The fund will be paid for by contributions by electricity distributors.

Forests NSW carbon plantation contracts – Forests NSW plants and manages the forests on behalf of private investors. The three investors are the Tokyo Electric Power Company, Swiss based firm ST Microelectronics and Australian Forestry Management (part of the Rothschild Australia Group). The carbon benefits are all retained by the investors, however there are associated soil, salinity and biodiversity benefits to NSW.

Green Power – This program, first established in NSW, accredits renewable energy products offered by electricity suppliers to households and businesses across Australia. Consumers can choose to pay a premium on their electricity bills, which ensures that increased electricity is sourced from renewable projects. The NSW Government estimates that the program has stimulated around $191 million in investment and 20 million tonnes of greenhouse gas reduction nationally.

Australian Building Greenhouse Rating scheme – The NSW-initiated voluntary rating scheme is a 'world first initiative' to help building owners and tenants across Australia benchmark and improve their greenhouse performance. 29% of NSW commercial office space has been rated and buildings have now been rated in every capital city in Australia.

NSW is also implementing a range of programs with broader environmental sustainability goals that will also ensure improved greenhouse performance across the NSW economy. Such initiatives include:

Metro Strategy – The NSW Metropolitan Strategy will identify directions and provide strategies to respond to the growth and change in the Greater Metropolitan Region of Sydney over the next 30 years. It will outline action that the Government will take through its plans, budget decisions and future choices. Ongoing improvements to public transport and greenhouse-friendly urban design are important goals of the Plan.

Public transport reforms – through the Bus Reforms program the NSW Government is undertaking an overhaul of the metropolitan bus network which aims to create an integrated city-wide bus network with more frequent and reliable services. The NSW Government is also implementing the $1 billion Rail Clearways Program, which is untangling the rail lines to improve the capacity and reliability of Sydney's suburban rail network.

Clean Car Benchmarks – to allow car buyers to consider the environmental impact of the car they buy, the NSW Government has developed the Clean Car Benchmarks. The Benchmarks rate all new vehicles based on their greenhouse gas and noxious emissions.

Native Vegetation Reforms – The Native Vegetation Act 2003 prohibits broadscale clearing in NSW (historically a significant contributor to greenhouse emissions) unless it maintains or improves environmental outcomes. Investment programs run by the new Catchment Management Authorities will reward farmers who manage native vegetation for environmental benefits, including retaining, managing and replanting native vegetation.

A strategic approach to combating climate change in NSW

While it is the role of the Australian Government to engage in the international sphere and represent the national interest, State Governments also have a long-term interest in equitable, least-cost emission reduction strategies and climate change adaptation plans. The NSW Government is committed not only to playing its part in meeting the challenge of climate change, but also to encouraging other jurisdictions to participate.

Although national forecasts have Australia on track to meet its negotiated Kyoto target, deep emission cuts will require significant changes to our economy over the longer term. In order to ensure a smooth transition to a carbon constrained future, we need to start action sooner rather than later.

The Premier's Greenhouse Advisory panel, in its submission on the NSW Energy Directions Green Paper, recommended that emissions need to be cut by 60% by 2050 to avoid dangerous climate impacts.

On this basis, NSW is committing to reduce emissions by 60% by 2050, and to return emissions to 2000 levels by 2025. NSW is also advocating **a national aspirational target of a 60% reduction** in carbon dioxide equivalent emissions by 2050. These targets will provide a clear signal of intent and a focus and context

for the measures in the Plan. They will help provide investor certainty and position NSW for a carbon constrained future. These targets may be reviewed as climate science improves and the outcomes of international policy negotiations are known.

A number of policy initiatives are already in place to reduce greenhouse gas emissions in NSW, and this Greenhouse Plan has been developed to build on these and drive further action within the national context.

However, while the policies and actions in this Plan will put NSW on a path toward emission reductions in the order of 60% by 2050, further measures are likely to be required in the future. Much will depend on the development of new technology and the international policy response.

There are many emerging technologies that are under development and showing significant promise for delivering large scale emission reductions. With a price signal for carbon and a target signalling the policy context, we can anticipate significant technological innovation over a 45 year horizon.

As the international framework for a global response develops over time, the NSW Government recognises the need to take into consideration the impacts on particular NSW sectors, particularly those that are trade exposed and compete in global markets. NSW will consider appropriate mechanisms to account for these sectors in the development of a national emissions trading scheme and in future greenhouse initiatives.

The Government is also leading by example – using its significant purchasing power to drive the uptake of new technologies and setting targets for improvements in efficiency of Government use of water, energy and transport.

The Plan

While sustaining a prosperous economy, the Plan seeks to:

- raise awareness of climate issues within the broader community, gain community support for action and build partnerships across the economy
- achieve a better understanding of climate change and its impacts on NSW and start the preparation of strategies for adaptation
- limit the growth of greenhouse emissions and enhance the establishment of offsets such as trees
- place NSW on a long-term pathway to reduce emissions to levels required to avoid dangerous climate change
- facilitate industry take-up of new business opportunities in growing international markets for low-emission goods and services
- work with other governments (both nationally and internationally) towards a coordinated global solution.

NSW acknowledges that:

- climate change is a long-term and complex issue with no easy solution
- it is a global problem which requires a global solution
- uncertainties in the policy environment are not conducive to long-term capital investment
- an effective response will require action by Government, individuals, industry, business and community groups.

However, NSW believes that:

- action to forestall large-scale, irreversible damage from climate change is warranted given the current scientific knowledge about the risks of climate change
- the costs of doing nothing are greater than the costs of acting now
- significant emission reductions can and should be achieved at minimal cost, especially by improving energy use efficiency
- there are significant general environmental, health and social benefits arising from many greenhouse-related actions, such as salinity mitigation, decreased air pollution, regional employment growth and industry development.

NSW greenhouse policies will therefore:

- be based on sound analysis and good science
- be consistent and coordinated with other State economic, social and environmental objectives
- where possible, be part of a nationally co-ordinated approach
- use a mix of approaches, including market-based measures, information and awareness raising and, where appropriate, regulation
- be equitable so that the emissions reduction task is shared by all sectors and regions
- be comprehensive in coverage of all greenhouse gases, contributing sectors and across short-, medium- and long-term timeframes
- balance efforts between short–term, least-cost emission reduction and long-term technological development
- be cost-effective and maintain NSW's economic competitiveness
- maximise opportunities for business
- be targeted to achieve additional social or environmental benefits wherever possible
- foster partnerships to provide opportunities to co-operative approaches
- flexibly respond to developments in climate science and national and international policy
- take account of NSW trade exposed sectors.

Harnessing the power of markets to reduce emissions

Although NSW has led greenhouse action in Australia, there is clearly a significant challenge ahead. The NSW Government is committed to ensuring that, as NSW continues to lead on greenhouse action, an optimal balance is achieved between short and long-term economic, social and environmental outcomes for the people of NSW.

Currently the costs of the impacts of climate change are borne by society and this 'environmental externality' should be factored into the decision making of those that emit greenhouse gases. This market failure can be addressed through the use of market-based mechanisms – such as emissions trading – to provide price signals that better reflect the full costs and benefits of individual actions.

Emissions trading can provide a flexible means by which emission reduction targets can be met at least cost to the economy. A well designed scheme can encourage changes in behaviour, increase the uptake of low-emission technologies and drive innovation and investment in long-term greenhouse emission reductions. Its potential has been recognised in the Kyoto Protocol, under which participating countries are able to buy or sell part of their assigned emission allocation. The European Union has commenced an emissions trading scheme to meet its collective emission reduction target.

Under emissions trading a cap is set on the total amount of greenhouse gases that can be emitted into the atmosphere, through the issue of a set number of tradable allowances or permits.

Emitters of greenhouse gases are then required to acquit allowances or credits to offset their emissions. Those with a surplus of credits can sell them to others that need more. This new market will effectively place a price on greenhouse emissions and provide an incentive to find new and smarter ways of reducing emissions. Across the economy the least cost emission reduction options will be implemented first.

In the absence of national leadership on greenhouse policy, State and Territory Governments have established a working group to develop a multi-jurisdictional emissions trading scheme. On 31 March 2005, Premiers and Chief Ministers released a joint communiqué, which outlines ten key design propositions to form the basis for further investigation and analysis in developing a national emissions trading scheme. The propositions relate to issues such as setting

a cap, sectoral coverage, methods for allocating permits and assessing impacts on a range of businesses and consumers.Although the details of a scheme are yet to be finalised, it is likely to focus initially on the stationary energy sector as one of the fastest growing and largest contributors to emissions. The scheme could be expanded to cover other sectors over time. An Australian scheme could also be linked to emerging international systems, opening our economy to new and growing foreign markets and positioning Australia for a carbon-constrained future.

In considering options for such a scheme, NSW supports comprehensive analysis to identify the likely impacts of a scheme (both positive and negative), including the impacts on regions, households, trade-exposed sectors, companies that have taken early action to reduce emissions and new market entrants.

Emissions trading on its own, however, is unlikely to achieve the magnitude of emission reductions necessary as other market failures will limit its potential effectiveness. Some of the barriers to the effectiveness of emissions trading include:

- imperfect information that prevents efficient market operation
- cultural or institutional barriers
- high transaction costs that deter some potential players from participation.

Addressing these barriers and others will require policies that complement emissions trading and might cover data collection, provision of information, education, labelling, financial incentives, subsidies and/or regulation (such as in the case of planning assessments and decisions).

Policy options available to address market failures

Market failure	Policy Option
Lack of market or price signal for the environmental impacts of greenhouse gas emissions.	Market based approaches (such as emissions trading) to create an incentive to implement low-cost emission reduction solutions. Regulation such as mandatory minimum performance requirements.
Lack of information about the sources and extent of emissions.	Data collection and monitoring to assist in the design of policy responses.
Lack of information available to individuals about: • climate change impacts • links between individual action and impact • impacts of competing goods and services • options to reduce individual impact.	Education and awareness raising - improving understanding can result in significant behavioural changes. Investment in research to assess potential risks and vulnerability with and without adaptation. Labelling schemes – voluntary and mandatory programs can help consumers make choices based on the performance of competing goods and services.
Limited research and development investment in technological innovation.	Financial support for research and development.
New products often have high costs and low sales volume.	The Government can lead by example and use its market power to drive new technologies.
Lack of options for motivated individuals to take action.	Voluntary programs such as Green Power which allows consumers to choose to buy electricity produced from renewable sources.
Cultural barriers, including cultural preferences, lack of trust in new technologies.	Endorsement or accreditation programs (eg Government accreditation of Green Power products). Awareness raising campaigns to influence social acceptability of options.
Institutional barriers (eg building managers have little incentive to implement energy efficiency measures because energy costs can be passed on to tenants).	Voluntary programs to identify and promote efficiency (eg the Australian Building Greenhouse Rating scheme which provides star ratings for efficient building manager to promote their actions).

NSW action

Measures for inclusion in the NSW Greenhouse Plan are divided into three sections:

1. Awareness raising
2. Adaptation to climate change impacts
3. Reducing greenhouse gas emissions

An overview of the approach to address these challenges is described below. Further details about individual measures, including the approximate level of emission reduction, funding requirements and responsible agency, are provided in Part C – Actions to be taken under the Greenhouse Plan.

1 Awareness raising

Effectively reducing emissions and planning for climate change requires everyone's effort.

The way we live and do business has developed over time. Until recently, this has occurred without an appreciation of how our actions are impacting on the climate. Fortunately there are many simple and cost effective ways for each of us to reduce emissions and plan for climate change. Raising community awareness about the challenge of climate change and the simple ways in which we can all help is an important first step.

The NSW Government will raise the community's awareness about the causes and risks of climate change and about ways in which individuals can reduce their emissions and plan for the future.

Key measures for raising awareness in the NSW Greenhouse Plan include:

- Publicly recognising the long-term emission reduction challenge by committing to:
  - return to year 2000 greenhouse emission levels in NSW by 2025.
  - achieve a 60% cut in greenhouse emissions in NSW by 2050; and
  - advocate a national target of a 60% reduction in emissions by 2050.

- Implementing an awareness raising campaign to communicate the challenge and ways to reduce emissions and adapt to inevitable change.
- Holding a series of Best Practice Roundtables to showcase innovative approaches to emission reduction and adaptation.

If successful:

- Community understanding of the causes and risks of climate change will improve.
- Awareness about simple and cost effective actions will increase.
- More individuals, organisations and companies will understand the greenhouse impact of their everyday actions.
- Acceptance of the need for and support of Government action will increase.

Further actions are set out in the Plan on page 31.

2 Adapting to climate change

Adaptation to the impacts of further inevitable climate change will be necessary.

Climate change projections for NSW warn that the community should prepare for higher temperatures, less rainfall, more frequent and more severe droughts and more extreme storms. These changes are likely to have significant impacts on agriculture, water supply, infrastructure, biodiversity and human health.

The NSW Government aims to minimise the impacts of climate change through adaptation measures.

Key measures for adapting to climate change in the NSW Greenhouse Plan include:

- Establishing an impacts and adaptation research program, researching likely bushfire, water availability, flooding, biodiversity, weeds and pests, human health, coastal impacts, and impacts on agriculture and infrastructure, amongst other things.
- Incorporating climate change into current environmental monitoring systems.
- Developing a capacity building program to support adaptation within state and local government, interested industry organisations and the non-government sector.

If successful:

- Tools and guidelines for adaptation will be integrated into the planning system.
- There will be a large network of individuals and organisations preparing for climate change.
- The agriculture sector will be using tools and guidelines for adaptation.
- Social, economic and environmental costs of current climate variability and extremes, as well as future climate change, will be reduced.

Further actions are set out in the Plan on page 33.

3 Reducing greenhouse gas emissions

3.1 Government leading by example

Government can reduce its own impact and help drive markets for new technologies

Each year NSW public sector agencies spend $16 billion on the purchase of capital works, equipment and services, use 38,100 million litres of water, drive 26,000 vehicles and spend around $416 million on energy. The energy use alone is responsible for 3.3 million tonnes of greenhouse gas emissions.

The NSW Government aims to reduce its own emissions and lead by example.

Key measures for the NSW Government in the NSW Greenhouse Plan include:

- Strengthening the Government Energy Management Policy.
- Streamlining the Government's reporting on energy, fleets, waste, water and greenhouse with a publicly accessible electronic database.

If successful:

- Greenhouse impacts will be integrated into Government decision making
- Public service expenditure on electricity, water and vehicle fleets will decrease
- Improved Government practice will initiate behavioural and management changes in the wider community and have flow-on effects such as increasing the supply of efficient vehicles in the used car market
- Government purchasing power will increase markets for new products with lower greenhouse emissions.

Further actions are set out in the Plan on page 36.

3.2 A strategic response

Reducing emissions requires a comprehensive and cost-effective range of measures.

Greenhouse gas emissions come from almost all sectors of the economy. A range of measures will ensure that all sectors can contribute and to ensure that no opportunities for low cost emission reduction are missed. Measures in the areas of research and development, awareness raising, community empowerment, capacity building, voluntary programs, market mechanisms and regulation will be pursued.

The NSW Government will adopt a comprehensive and cost-effective approach to long-term emission reductions, taking into account other NSW environmental, social and economic objectives.

Key measures for the NSW Government in the NSW Greenhouse Plan include:

- A commitment to work with States and Territories to develop a national emissions trading scheme
- Providing Climate Action Grants to foster innovation and capacity building, including support for innovative research and technologies in areas such as waste, industrial processes, transport, forestry, and land use. $2.5 million will be available each year.
- The undertaking of a major study to identify promising long-term solutions, including new technology, to help achieve future emission reductions.

If successful:

- The commercialisation of climate change solutions will occur.
- An increasing number of investors will consider the impact of future emissions constraints.

Further actions are set out in the Plan on page 40.

3.3 A clean green energy future

Encouraging low emission energy supply and decreased demand can have a big impact.

Greenhouse gas emissions related to energy use grew by 25% between 1990 and 2002, and account for around 47% of NSW emissions. Energy is the largest and one of the fastest growing emission-generating sectors and by 2010 national energy-related emissions are projected to be 41% higher than 1990 levels.

In NSW approximately 91% of our electricity supply comes from coal-fired generation, about 6% from hydro-electric generation, and the remainder predominantly from gas-fired generation. The sectors using the most energy are manufacturing (42%), residential (23%), commercial (18%) and mining (14%).

The NSW Government aims to curb growth in energy emissions and reduce energy intensity, while ensuring reliable, affordable and secure access to energy for all.

The Government has already released an Energy Directions Green Paper to foster discussion on how the Government should respond to increasing demand for electricity, in the context of managing greenhouse gas emissions and the long lead times necessary for planning, financing and constructing new power generation. Following consideration of submissions on the Green Paper, a White Paper that outlines expectations for future electricity generation projects will be finalised.

The Government has established an Energy Savings Fund, which will provide financial support, primarily on a contestable basis, for energy savings measures and to stimulate investment in innovative energy savings measures.

Further measures in the NSW Greenhouse Plan include:

- Leading the development of a national emissions trading system
- Extending the NSW Greenhouse Gas Abatement Scheme to 2020, and then extending it on a 15 year rolling basis if agreement on a national approach is delayed.
- Setting minimum standards for new commercial buildings, and improving the performance of existing buildings.

If successful:

- The emissions intensity of electricity will decrease
- Per capita energy use will decline
- Reduced energy demand will provide financial savings to customers.

Further actions are set out in the Plan on page 43.

3.4 Better transport solutions

Public transport and active travel (walking, cycling) provide low emission alternatives to car travel.

Transport contributes 15% of total NSW emissions and grew by 20% between 1990 and 2002. Nationally, transport emissions are projected to increase 42% from 1990 levels by 2010 and 61% by 2020. Road transport accounts for around 75% of NSW's total transport emissions.

We are driving more cars, more often. Over the last 30 years the total number of Australian cars has grown three times faster than population. In the last decade, in Sydney the number of kilometres travelled per vehicle has risen more than twice as fast as the population.

There has been little improvement in the last decade in the average fuel efficiency of vehicles and gains that have been achieved are being offset by the increasing demand for more and larger cars.

The NSW Government aims to curb the growth in transport emissions while maximising transport choice.

Key transport measures in the NSW Greenhouse Plan include:

- Improving rail services though The Rail Clearways Program and bus services through bus reform, including the Passenger Transport Amendment (Bus Reform) Act 2004.
- The introduction of a voluntary green vehicle registration program allowing people to choose to pay more and have their emissions offset by planting trees.
- An environmental rating scheme for heavy vehicles to recognise better environmental performance and new leading edge technologies used in trucks and buses.

If successful, there will be:

- Less emissions for distance travelled.
- Increased use of public transport.
- Increase in the proportion of cleaner vehicles on the road, resulting in reduced air pollution.
- Increased uptake of active transport, such as walking and cycling, resulting in health benefits.
- Reduced emissions intensity of freight transport.

Further actions are set out in the Plan on page 47.

3.5 Waste, industrial processes and fugitive emissions

There is significant potential to reduce non-energy related emissions from industry.

Emissions from the decay of municipal waste, industrial processes (such as the production of metals and cement) and fugitive emissions from fossil fuel production together contributed around 20% of NSW emissions in 2002. Since 1990 emissions from industrial processes and fugitive sources declined significantly. However, waste emissions have grown strongly and all three sectors are projected to grow in the decade ahead. There is significant potential to find cost-effective low greenhouse alternatives.

The NSW Government aims to reduce non-energy greenhouse emissions from industry.

Key measures in the NSW Greenhouse Plan include:

- Developing guidelines for the consideration of greenhouse gas emissions in Environmental Impact Assessments.
- Providing credit under the NSW Greenhouse Gas Abatement Scheme for emissions abatement due to avoided waste disposal.
- Developing a Waste Infrastructure Planning Strategy and guidelines on the recovery of energy from waste.

If successful:

- Resource and energy recovery will increase and disposal to landfill will decrease.
- Methane from mines, industry and landfills will be used as an energy resource.
- Gases or processes with low global warming potential will replace potent industrial (synthetic) gases in refrigeration and other uses.

Further actions are set out in the Plan on page 51.

3.6 Natural resources and land management

There are significant opportunities for emission reduction and carbon sequestration in the natural resource and Agriculture sectors.

Agriculture emissions contributed 14% of NSW total emissions in 2002. Strong growth in emissions from soils was offset by a large decline in emissions from livestock. This is likely to be a temporary effect of reduced stock numbers due to drought. Emissions from land clearing declined a significant 60% between 1990 and 2002, contributing 5% of total emissions in 2002.

There are significant opportunities to increase the amount of carbon sequestered in vegetation and the soil. The Australian Bureau of Agriculture and Resource Economics estimates that it would be economic to grow trees to 'lock up' more than 440 million tonnes (Mt) of carbon in plantations if the market price for carbon dioxide was $30 per tonne, 278 Mt at $15 per tonne, and 106 Mt at $5 per tonne. The current market price is over $10 per tonne and likely to increase over time.

The NSW Government aims to reduce emissions and increase carbon sequestration in these sectors.

Key natural resource and land management measures in the NSW Greenhouse Plan include:

- Improving estimates of carbon sequestered through improved soil and vegetation management.
- Piloting a system which allows a Catchment Management Authority to bring together revegetation projects to seek to realise their carbon value.

If successful:

- Livestock emissions will decline per animal.
- Accreditation of carbon sequestration projects and their coverage will increase.
- Soil carbon conservation practices will increase.
- Total carbon sequestration by vegetation, and in particular by native vegetation, should increase.

Further actions are set out in the Plan on page 54.

Implementation, monitoring and review of the NSW Greenhouse Plan

Implementation of the Greenhouse Plan will be overseen by a group of CEOs of relevant Government agencies, chaired by the Director General of The Cabinet Office. Membership includes the Department of Energy, Utilities and Sustainability, the Department of Environment and Conservation, the Department of Planning, the Department of Natural Resources, the Department of State and Regional Development, the Department of Primary Industries, and NSW Treasury. Secretariat support is provided by the NSW Greenhouse Office.

Responsible agencies will report progress on each of their actions to the CEO Steering Group every six months. Annual reports on progress in implementing the strategy will be publicly released in June 2006 and June 2007.

The NSW Government wants to ensure that the Plan remains relevant and effective. Additional policies and commitments will be developed and added to the Greenhouse Plan as commitments are delivered and new opportunities emerge. The Premier's Greenhouse Advisory Panel will be involved in review and updating of the Plan.

The NSW Greenhouse Plan will be reviewed and updated regularly. The Government will actively seek the views of key stakeholders and the wider community when preparing updates and developing additional actions.

New commitments added to the Plan will be available on the Greenhouse Office website at **www.greenhouseinfo.nsw.gov.au/**

NSW Greenhouse Plan List of Actions

The NSW Greenhouse Plan sets out action to:

1. Raise community awareness about the climate change challenge
2. Facilitate adaptation to climate change impacts
3. Reduce or abate greenhouse gas emissions, through:
    - 3.1 Government leading by example
    - 3.2 A strategic response
    - 3.3 A clean green energy future
    - 3.4 Better transport solutions
    - 3.5 Waste, industrial processes and fugitive emissions
    - 3.6 Natural resources and land management

Notes on the following tables

- Low, medium and high abatement is defined as annual emission reductions of less than 1Mt, 1-5 Mt and more than 5 Mt of CO_2e respectively.
- "Ongoing" means that emission reductions will continue to reduce emissions below business as usual indefinitely.
- Existing funding has not been estimated for those measures where it is difficult to isolate the greenhouse component of a broader program.

1. Raising community awareness

Effectively reducing emissions and planning for climate change requires a contribution from everyone.

The NSW Government will raise the community's awareness about the causes and impacts of climate change and about ways in which individuals can reduce their emissions and plan for the future. To do this, the NSW Government will:

- Implement targeted education campaigns
- Provide easily accessible information on the best science on climate change impacts and solutions
- Publicly recognise and champion the need for long-term emission reductions.

Our commitments

Raising community awareness	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund (05/06-08/09)	Responsible agency
1.1 Publicly recognising the long-term emission reduction challenge by committing to: • return to year 2000 greenhouse emissions levels in NSW by 2025. • achieve a 60% cut in greenhouse emissions in NSW by 2050; and • advocate a national target of a 60% reduction in emissions by 2050. A clear statement of the future emission reduction task provides clear notice to industry and investors of the need to divert investment to less carbon intensive infrastructure and promote innovation in emission reduction technology. It also assists industry risk management, and promotes investor confidence.	Education + awareness	NA	-	-	TCO
1.2 Implement an awareness raising campaign to communicate the challenge of climate change, and ways to reduce emissions and adapt to inevitable change The issues surrounding climate change are complex, wide-ranging and at times controversial. It is imperative to communicate with all sectors of the community to inform them of the impacts that affect them and to motivate individual actions that assist in mitigation and adaptation to climate change. A range of communication and consultation strategies will be used to more effectively engage communities. Specific groups will have information targeted for their needs.	Education + awareness	NA	-	7.5	TCO

1.3 Establish a climate change website as a gateway to the latest research A NSW climate change website will be developed specifically for the people of NSW as a central source on the latest science and research. This website would include climate change information resources for use in a range of programs for households, farmers, local government, catchment management authorities and industry. It will also provide links to other authoritative sources and avoid duplication with existing sites.	Education + awareness	NA	-	-	TCO
1.4 Introduce standard labelling of greenhouse performance on electricity bills and point of sale disclosure of home energy efficiency ratings Consumers will be better informed through: • A standard label on electricity bills to allow comparison of the greenhouse performance of competing retailers, including information on fuel mix and emissions • disclosure of home energy efficiency ratings to prospective home buyers.	Education + awareness	Medium-Ongoing Increasing over time	0.45	-	DEUS
1.5 Establish Green Wheels – a driver information and action program The program will aim to inform and engage NSW drivers on things they can do to reduce emissions. It will include information kits and a Voluntary Green Registration Scheme to encourage drivers to offset their car's greenhouse gas emissions.	Education + awareness and Abatement (Voluntary)	Low-Ongoing Increasing over time	-	0.5	RTA
1.6 Develop easy access guides for people travelling to and from Government agencies Easy access guides will provide customised travel information for people travelling to and from a particular site or venue using low energy forms of transport - walking, cycling, or public transport. The objective is to make the choice to travel by these modes easier.	Education + awareness	NA	-	-	TCO / STA
1.7 Inform farmers about how they can improve the greenhouse gas balance on their properties Three measures will provide farmers with options and ideas: • Development of a simple 'ready reckoner' to estimate total emissions • Catchment Management Authorities will be provided with information to include in land management education programs. • Department of Primary Industries extension staff will be trained on how to assist farmers to adapt to climate change. This will be implemented in conjunction with initiative 2.4.	Education + awareness	Low – medium	-	See 2.5	DPI / DNR
1.8 Establish annual Premier's Greenhouse Awards The Premier's Greenhouse Awards will recognise leading proponents of greenhouse reduction in NSW across a range of sectors.	Education + awareness	NA	-	-	TCO

2. Adapting to climate change

Adaptation to the impacts of further inevitable climate change will be necessary.

The NSW Government aims reduce the impacts of climate change and capture potential benefits through adaptation. To do this, the NSW Government will:

- Improve our understanding of impacts
- Initiate adaptation programs and develop adaptation strategies.

Our commitments

Adapting to climate change	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
Improve our understanding of impacts					
2.1 Establish a research program, including impacts on bushfires, coastal impacts, water availability, flooding, biodiversity, weeds and pests and human health Improved knowledge of the impacts of climate change will be developed through research in: bushfire risk; coastal erosion hazard and storm surge; estuarine inundation; water availability and flooding in the Greater Metropolitan Region; water availability in the Murray-Darling Basin; flooding on the NSW North Coast; biodiversity; weeds and pests in natural and agricultural systems; and human health risks from climate change. Priorities for research will be identified on the basis of their potential to negatively impact on the economy, society and the environment. Stakeholders will be included in the development and operation of research projects to help to build regional expertise, relevance and acceptance of the findings. Involvement mechanisms include participation in steering committees or reference groups.	Research and development	NA	0.5	$2.0	TCO
2.2 Incorporate climate change into current environmental monitoring systems The Government currently monitors a range of indicators such as sea level, river flows, water quality and the distribution of plants and animals. These records can provide information about the extent of climate change and its effects. The Government will enhance this collection network to improve its value in detecting climate change.	Data collection + monitoring	NA	-	-	DNR/ DEC

Initiate adaptation processes					
2.3 Develop a capacity building program for adaptation within state and local government, interested industry organisations and the NGO sector An internal team of experts will work with state and local government agencies and industry organisations to improve understanding of the impact of climate change on the organisation's area of responsibility or business. Areas of risk will be identified and quantified and possible adaptation strategies will be assessed.	Capacity building	NA	-	$1.0	TCO
2.4 Strengthen the climatology in agriculture program and develop tools and guidelines for use by farmers and catchment management authorities Further resources are required to promote preparedness for both the current climate and climate change. An expanded climatology team will use a train-the-trainer approach to improve the skills and knowledge of DPI front-line extension staff, Catchment Management Authority staff, private sector agricultural industry advisers and farming organisations. The CSIRO will be commissioned to provide climate and climate change profiles for key locations in each catchment area. Catchment Management Authorities will be able to use the profiles to assist their development of catchment action plans and water sharing plans. This initiative will be implemented in conjunction with 1.7.	Capacity building	NA	-	$1.0	DPI / DNR
2.5 Develop tools and guidelines for use in land use planning and development assessment (including consideration in the Building Code of Australia) Guidelines and other decision support tools will be provided to local government and other consent authorities to assist in incorporating climate change consideration into land use plans and the development assessment process.	Capacity building	NA	-	-	DoP
2.6 Research likely coastal impacts and investigate the feasibility of a coastal adaptation program Research on the likely impact of climate change on coastal erosion and inundation will identify assets at risk and facilitate the consideration of a range of management options. One option could be the establishment of a nationally coordinated coastal adaptation program to be pursued through NSW participation in the National Disaster Mitigation Program.	Capacity building	NA	-	-	DNR
2.7 Develop a NSW implementation plan for the National Biodiversity and Climate Change Action Plan The NSW Government has endorsed the National Biodiversity and Climate Change Action Plan 2004-2007 and is currently in the process of preparing an implementation plan.	Capacity building	NA	-	-	DEC

3. Reducing greenhouse gas emissions

Emission reduction measures are arranged under the themes:

3.1 Government leading by example

3.2 Emissions trading and strategic reform

3.3 A clean green energy future

3.4 Better transport solutions

3.5 Waste, industrial processes and fugitive emissions

3.6 Natural resources and land management

3.1 Government leading by example

Government can reduce its own impact and help drive markets for new technologies.

Each year NSW public sector agencies spend $16 billion on the purchase of equipment and services, use 38,100 million litres of water, drive around 24,000 vehicles and spend around $400 million on energy. The energy use alone is responsible for 3.3 million tonnes of greenhouse gas emissions.

The NSW Government aims to reduce its own emissions and lead by example.

To do this, the Government is:

- Considering greenhouse in all relevant decision making
- Being more efficient in its use of energy and water
- Driving and travelling less and using more efficient vehicles
- Producing less waste
- Using government purchasing power to promote good practice
- Developing and implementing new actions to further reduce our impact.

Our achievements so far

NSW has already implemented the following actions to reduce greenhouse gas emissions from its own activities.

Reducing emissions - Government leading by example	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.1.1 Established the NSW Greenhouse Office The Greenhouse Office has been established within the Premier's portfolio to co-ordinate a whole of government response to greenhouse emission reduction and adaptation to the impacts of climate change.	Capacity building	NA	4.8	TCO
3.1.2 Introduced Light Emitting Diode (LED) traffic lights in NSW The introduction of LED lights is reducing greenhouse emissions by up to 70% compared to old lighting systems. All new traffic lights being installed use this emission-saving technology. One third of existing lights will be replaced by LED systems over the next three years.	Abatement (Mandatory)	Low – Ongoing	18.8 (loan)	RTA
3.1.3 Introduced retrofitting of Department of Housing properties Water savings devices, including 'AAA' shower roses and dual-flush cisterns not only reduce water consumption but also reduce electricity demand for water heating and pumping. Sydney Water and the Department of Housing is investing $3m to retrofit Department properties with water saving devices.	Abatement (Mandatory)	Low – Ongoing	-	DOH / Sydney Water
3.1.4 Set a target of reduced fleet emissions of 20% by 2008 through purchase of cleaner greener vehicles and removal of V8s from the government contract Over 1% of the NSW Government car fleet will comprise hybrid technology vehicles. In addition, using the NSW Clean Car Benchmarks (which measure greenhouse gas and noxious pollutant emissions) the fleet will be improved from its current average score of 9.5 out of 20 to 12 out of 20 by 2007/08 by the purchase of cleaner cars. Targets will be reviewed in 2007. In addition, V8 vehicles will no longer be available on government contract (emergency vehicles excluded).	Abatement (Mandatory)	Low – Ongoing	-	Commerce
3.1.5 Commenced trial of Biodiesel on Government Ferries Biodiesel is a renewable fuel with lower life cycle CO_2 emissions than conventional diesel. The Sydney Ferries trial of biodiesel will help develop the market for biodiesel and reduce our dependency on fossil fuels, while reducing greenhouse emissions from the Government transport fleet.	Research and development	NA	-	Sydney Ferries

3.1.6 Supported the development of a national High Energy Efficiency Procurement Policy The Government is committed to working with other jurisdictions through the Ministerial Council on Energy (MCE) to introduce a High Energy Efficiency Procurement Policy for Australian Governments by mid 2005. Under this policy, governments will only purchase and/or lease electrical equipment that appears on the national High Energy Efficiency Database.	Abatement (Mandatory)	Low – Ongoing Increasing over time	-	DEUS
3.1.7 Implemented the Government Energy Management Policy The Government Energy Management Policy was first introduced in 1998 to achieve the twin goals of better financial performance and improved environmental outcomes. Reduced energy consumption through less wastage and greater energy efficiency, and greater use of "green" energy technologies are seen as integral to the achievement of the policy's goals. Under the policy, agencies set targets aligned with the Government's overall targets.	Abatement (Mandatory)	Low – Ongoing + increasing over time	-	DEUS
3.1.8 Applied principles of energy efficient design to Government buildings The NSW Government Architect's Office undertakes projects that demonstrate the Government's commitment to Environmentally Sustainable Design. The Office assist with the design of a wide range of Government building projects such as the design of schools and TAFEs. Basic energy efficiencies are incorporated, such as building orientation, shading, window design and heat recovery air conditioning systems. The Office also has a specialist Energy Efficiency Unit that directly assists other Government agencies in meeting greenhouse policy and energy saving initiatives.	Abatement (Voluntary)	Low (ongoing)	-	Commerce

Our commitments

The following initiatives will extend the NSW Government's emissions-reducing activity.

Reducing emissions - Government leading by example	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
Consider greenhouse in all relevant decision making					
3.1.9 Introduce streamlined reporting on water, waste, energy, greenhouse and fleets. Government agency reporting on resource use and sustainability will be streamlined by introducing a uniform, user-friendly electronic database that is accessible by the public. Agencies will report on: • Energy and water use under the Government Energy Management Policy • Commercial office environmental performance • Cleaner Government Fleet operation • Waste generation • Greenhouse gas emissions.	Education + awareness	NA	0.3	-	DEUS
3.1.10 Require all Cabinet Minutes to detail environmental impact of action – including greenhouse, air quality, water, biodiversity and salinity Requiring routine discussion of environmental impacts in submissions to Cabinet will inform Cabinet deliberation and improve decisions.	Capacity building	NA	Variable	-	All agencies
Be more efficient in our use of energy					
3.1.11 Strengthen the Government Energy Management Policy A wide range of measures will be implemented to strengthen the Government Energy Management Policy. This includes targets for reducing energy use in government operations. Improvements to the policy include a focus on greenhouse reductions, new greenhouse standards and targets for office buildings and tenancies, better access to funding for efficiency projects and better use of air conditioning.	Abatement (Mandatory)	Low – Ongoing + increasing over time	0.8	-	DEUS

3.1.12 Promote co-generation in new and existing hospitals. The Department of Health is the largest contributor to greenhouse emissions in the NSW Government. Co-generation technology is the simultaneous production of electricity and heat. It works by capturing and using the heat generated by the electricity generating process. Hospitals have a large and continuous need for both power and heat and are therefore suitable sites for co-generation technology. Co-generation for new and existing hospitals will be required where the return on the investment in implementing the technology in a particular hospital meets benchmark levels set out in the revised Government Energy Management Policy.	Abatement (Mandatory)	Low – Ongoing	-	-	DEUS
Be more efficient in our use of water					
3.1.13 Improve water efficiency and seek to reduce government water use in the order of 15%. Water conservation is a priority for government and agencies must assess opportunities for water conservation. All Government agencies will develop a water conservation plan including a target. Where feasible, agencies should include a minimum target of 15% reduction in water use.	Mandatory Planning requirement	Low – Ongoing	0.3	-	DEUS
Produce less waste					
3.1.14 Review the Waste Reduction and Purchasing Policy to incorporate greenhouse impacts. The Waste Reduction and Purchasing Policy (WRAPP) encourages NSW Government agencies to purchase recycled products, increase resource recovery and reduce waste in four key material categories. These are office paper, toner cartridges, vegetation materials and construction and demolition materials. The effectiveness of the WRAPP in reducing greenhouse emissions will be reviewed.	Abatement (Mandatory)	Low – Ongoing	-	-	DEC
Use Government purchasing power to promote good practice					
3.1.15 Reduce the use of highly potent synthetic greenhouse gases in refrigeration Synthetic refrigerant gases typically in use are very potent greenhouse gases. Alternative natural refrigerants with very low global warming potential are available for most applications. The NSW Government will consult with industry; identify and prioritise suitable uses for alternative refrigerants; and develop a timetable for implementation.	Abatement (Voluntary)	Low – Ongoing	-	-	Commerce

3.1.16 'Quick Wins' – NSW Sustainable Procurement Policy The NSW Government will identify and promote products that meet sustainability criteria (economic, environmental and social) for purchase by the public sector. The key aim is to make it easy for public sector customers to locate and buy energy efficient and sustainable products. Certain product areas have been deemed 'Quick Wins' – where sustainability standards are achieved. The 'Quick Wins' products list will be made available to all Government purchasers.	Capacity Building	Low – Ongoing	-	-	Commerce

3.2 Emissions trading and strategic reform

The NSW Government will adopt a comprehensive and cost-effective approach to long-term emission reductions, taking into account other NSW environmental, social and economic objectives.

To do this, the NSW Government will:

- Develop a national emissions trading scheme
- Facilitate technological innovation and capacity building
- Reform markets and regulation to integrate greenhouse into decision making
- Work with National, State, Territory and local Governments
- Mainstream the consideration of greenhouse in investment and corporate decision making

Our achievements so far

Reducing emissions - Emissions trading and strategic reform	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.2.1 With all states and territories, announced agreement on the basis for further work in developing an emissions trading scheme in Australia. On 31 March 2005, Premiers and Chief Ministers released a joint communiqué, which outlines ten key design propositions to form the basis for further investigation and analysis in developing a national emissions trading scheme. The propositions relate to issues such as setting a cap, sectoral coverage, methods for allocating permits and assessing impacts on a range of businesses and consumers.	Potentially Abatement (Mandatory)	Potentially high	-	TCO

Our commitments

The following initiatives will further the NSW Government's strategic approach.

Reducing emissions - Emissions trading and strategic reform	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
3.2.2 Establish a $2.5 million per annum contestable grants program to promote the development and adoption of low greenhouse emission technologies and practices in the waste, transport, forestry and land use sectors. The fund is separated into two components in order to drive supply and demand of greenhouse abatement activities in NSW. • a component to support technological developments and innovation; and • a component to support the adoption of emission reduction projects.	Abatement (Voluntary)	Low. Ongoing; Increasing over time	-	10	TCO
Develop a national emissions trading scheme					
3.2.3 Work with states and territories to develop a national emissions trading scheme. In the absence of national leadership on greenhouse policy, NSW initiated and chairs an inter-jurisdictional working group to explore options for a national emissions trading scheme. An emissions trading scheme offers flexible and cost effective options to meet emission abatement targets.	Abatement (Mandatory)	High	-	-	TCO
Facilitate technological innovation and capacity building					
3.2.4 Undertake a major study to identify promising long-term solutions, and possible technological development and innovation and pathways to achieve future emission reductions. In order to inform industry development and long-term policy, a major study will be undertaken to better understand possible technology development and innovation pathways that might be followed in order to achieve future emission reductions. The study will include an analysis of the opportunity costs of reducing emissions as well as the economic cost of not responding to climate change. It will also consider the transitional measures for existing industries that are adversely affected by responding to climate change.	Research and development	NA	-	0.5	TCO

3.2.5 Identify training skills likely to be needed in the future. A study will be undertaken by the Board of Vocational Education and Training into the policies required to deliver the skills needed to meet future demand for low emission products and services.	Education + awareness	NA	0.15	-	DET
Work with National, State, Territory and Local Governments					
3.2.6 Work through the Council of Australian Governments' Climate Change Working Group to progress a national response to climate change and greenhouse emission reduction. The NSW Government recognises that reducing emissions and adapting to climate change is a national challenge. A nationally co-ordinated approach is desirable in order to ensure regulatory consistency and avoid gaps.	Policy Development	NA	-	-	TCO
3.2.7 Support a national framework for reporting and disclosure. NSW is committed to implementing public reporting of emissions, but recognises the benefits of a national framework. To this end the Government will participate in a national process to examine the options for a national framework for greenhouse and energy reporting from Australian industry.	Data collection + monitoring	NA	-	-	TCO / DEUS
Mainstream the consideration of greenhouse in investment and corporate decision making					
3.2.8 Provide guidelines for consideration of energy and greenhouse impacts in development consent approvals (through the Environmental Impact Assessment process). Guidelines will help clarify government expectations for the consideration of greenhouse performance in the environmental assessment process. Promotion of a nationally consistent framework, such as through the Commonwealth's Environment Protection and Biodiversity Conservation Act, will also be considered.	Planning guidance	Low – Ongoing and Increasing over time	-	-	DoP
3.2.9 Develop tools to assess and manage carbon risks. The Premier will host a roundtable with the investment community to assist the development of tools to assess and manage carbon risks to industry and government.	Policy Development	NA	-	-	TCO / Premiers

3.3 A clean green energy future

Encouraging low emission energy supply and decreased demand can have a big impact.

Greenhouse gas emissions related to energy use grew by 25% between 1990 and 2002, and account for around 47% of NSW emissions. Energy is the largest and one of the fastest growing emission-generating sectors and by 2010 national energy-related emissions are projected to be 41% higher than 1990 levels.

In NSW approximately 91% of our electricity supply comes from coal-fired generation, about 6% from hydro-electric generation, and the remainder predominantly from gas-fired generation. The sectors using the most energy are manufacturing (42%), residential (23%), commercial (18%) and mining (14%).

The NSW Government aims to curb growth in energy emissions and reduce energy intensity, while ensuring reliable, affordable and secure access to energy for all.

To achieve this, the NSW Government will:

- Implement a strategic response to meeting energy demand overall
- promote flexible market arrangements such as emissions trading
- use the Energy Savings Fund to support energy savings measures and stimulate investment in innovative savings measures
- encourage new forms of energy generation that have low emissions
- reduce energy demand and realise energy efficiency gains
- investigate the feasibility of carbon dioxide capture and storage

Our achievements so far

Reducing emissions - A clean green energy future	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.3.1 Released Energy Directions Green Paper The Green Paper has fostered discussion on how the Government should respond to increasing demand for electricity, in the context of managing greenhouse gas emissions and the long lead times necessary for planning, financing and constructing new power generation. Following consideration of submissions on the Green Paper, a White Paper that outlines expectations for future electricity generation projects is being developed and released.	Various	Potentially High	-	TCO

3.3.2 Diversified our energy mix by fostering renewables and meeting peak energy demand with gas. This has been demonstrated by recent announcements of: • Two new gas-fired peaking stations - one at Tomago in the Hunter Valley, and another at Uranquinty near Wagga Wagga. The plant at Tomago will be built by the Government in partnership with the private sector; • Planning approval for three more gas-fired power stations - Munmorah, Bamberang and Marulan; and • Approval for a new wind farm at Crookwell (46 windmills).	Various			
3.3.3 Announced the extension of the NSW Greenhouse Gas Abatement Scheme to 2020. The successful GGAS scheme will be extended until 2020 and will continue to be extended on a rolling 15 year basis, if agreement on a national emissions trading framework is delayed.	Mandatory			
3.3.4 Established the Energy Savings Fund The Energy Savings Fund provides incentives, particularly for businesses, to introduce measures to make sure they use water and energy more wisely. Some large businesses will be required to undertake energy savings plans. The Fund will provide funding to assist with implementation of these plans. Contributions to the Energy Savings Fund will be made by electricity distributors. The cumulative total of energy saved from these measures will save around 800,000 tonnes of harmful greenhouse gas each year by 2010/11.	Abatement (Mandatory and Voluntary)	Medium	200.0	DEUS
3.3.5 Management and promotion of the National Green Power Accreditation Program The NSW-initiated National Green Power Accreditation Program accredits and sets stringent environmental and reporting standards for renewable energy products offered to consumers by energy suppliers. Business and domestic consumers can purchase up to 100% of their energy needs from Green Power accredited products. In return, energy suppliers agree to purchase equivalent amounts of electricity from renewable, non coal-derived sources, and feed it into the national electricity grid.	Abatement (Voluntary)	Low	-	DEUS
3.3.6 Review potential for geological storage in NSW. There is significant work being undertaken to demonstrate the potential of capture and storage. NSW will continue to monitor these developments and participate in preliminary work to assess the potential role of capture and storage in greenhouse gas reduction, particularly in NSW. NSW will also conduct community consultation on this issue.	Research and development	NA	-	DPI-MR
3.3.7 Participation in COAL21 National Action Plan COAL21 is a national industry/government working group aimed at identifying options to reduce greenhouse gas emissions from coal fired power generation. A National Action Plan was launched in March 2004, setting out a roadmap for near-zero emissions from coal-based electricity generation by 2030. NSW is participating in this process, recognising the importance of encouraging research and development into new technologies to reduce emissions, especially in the existing coal fired power plants in the State.	Research and development	NA	-	DPI-MR

3.3.8 Inform consumer choice through office building environmental ratings The Australian Building Greenhouse Rating scheme allows tenants and building owners to rate their tenancy or building based on its greenhouse performance. This assists managers to benchmark and improve their performance and allows tenants to consider the information in making decisions about new office space. This is now being extended to include water use, waste generation, indoor air quality and other building parameters.	Abatement (Voluntary)	Medium-Ongoing Increasing over time	-	DEUS
3.3.9 Set minimum standards – BASIX for new homes and extend product Minimum Energy Performance Standards In 2003, the Government established targets to reduce potable water use and greenhouse gas emissions for all new residential developments through the Building Sustainability Index (BASIX). As of 1 July 2004, new single dwelling and dual occupancies in Sydney must be designed and built to use 40% less potable water and produce 25% less greenhouse gas emissions than average NSW homes. Mandatory Minimum Energy Performance Standards (MEPS) have been introduced for a range of household electrical appliances and commercial and industrial electrical equipment. Electrical products currently being targeted include home entertainment products and appliance using high levels of standby power. Mandatory MEPS for major gas appliances is planned for introduction by 2007.	Abatement (Mandatory)	Medium-Ongoing Increasing over time	1.6	DoP / DEUS

Our commitments:

The following initiatives will continue to embed energy efficiency, reduce demand and increase the supply of low emission energy sources in NSW.

Reducing emissions - A clean green energy future	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
Ensure a strategic response and extend market arrangements					
3.3.10 Release an Energy Directions White Paper. The Government has considered community and stakeholder comments on the Energy Green Paper and is preparing a White Paper that outlines expectations for future electricity generation projects, and considers greenhouse intensity limits on new power generation in NSW. It recognises NSW's participation in the National Electricity Market and the need to shape policy in the content of wider reform to the market across jurisdictions.	Abatement (Mandatory + Market Mechanism)	Low - High – Ongoing Increasing over time	-	-	TCO
Encourage low emission power generation					
3.3.11 Streamline development approvals process for low emissions technology. The Government will streamline development approvals for low emissions technology and offer Occupation Permits for wind powered generators on State Forests land.	Abatement (Mandatory)	Low – Ongoing Increasing over time	-	-	DoP / DEC / DEUS/ DPI

3.3.12 Require energy retailers to offer a 10% Green Power component to all new (or moving) residential customers. Currently, electricity customers can choose a Green Power scheme in which they pay a premium to have the equivalent to all or part of their electricity usage sourced from accredited renewable energy sources. This initiative would replace the current opt-in scheme with an opt-out scheme. All customers would be offered 10% Green Power, with the option to refuse, accept, increase or decrease the Green Power component.	Abatement	Low – Ongoing Increasing over time	-	-	DEUS / IPART
Reduce demand and realise energy efficiency gains					
Industrial					
3.3.13 Investigate options for encouraging uptake of industrial energy efficiency opportunities through government licensing and the development consent process. Licensing and the development consent process offer opportunities to work with industry to reduce emissions. Reporting of energy use by industry could help inform targeted energy demand management activities. Energy audits and development of implementation plans will build capacity within industry to be more efficient users of energy.	Abatement (Mandatory)	NA – scoping	-	-	DEUS DEC/DoP
3.3.14 Facilitate Sustainability Compacts between Government and industry. Three to five year partnerships will be established with leading companies to put in place joint projects to advance sustainability, including greenhouse outcomes. Projects will accelerate environmental improvements in company operations and along the signatory's supply chain. Emission reductions will be achieved through joint projects that target energy and other resource efficiencies, purchasing, product and service innovation, and environmental leadership (including greenhouse advocacy).	Abatement (Voluntary)	Medium	-	-	DEC
Commercial					
3.3.15 Set minimum greenhouse emissions standards for new commercial buildings, and improve the performance of existing buildings. The NSW Government will further develop measures to extend greenhouse gas emissions savings from new and existing commercial buildings, utilising existing measures such as the Building Code of Australia, the Building Sustainability Index (BASIX) and the Australian Building Greenhouse Rating scheme, to cover both design/construction and ongoing operational performance. The initiatives will cover office buildings, and scope other types of buildings, such as hospitals, schools and retail outlets.	Abatement (Mandatory)	Medium – Ongoing Increasing over time	-	-	DEUS / DoP

Residential					
3.3.16 Lobby the Commonwealth Government to introduce tax exemptions for landlords undertaking energy efficiency improvements to buildings. Tax exemptions would operate on the same basis that necessary maintenance costs are treated as tax deductions. Currently, there is no incentive for landlords to make properties energy efficient as the benefit of lower energy bills accrues to the tenant. This initiative would increase the energy efficiency of rental properties.	Abatement	Low – Ongoing Increasing over time	-	-	TCO
3.3.17 Investigate options for providing consumers with information on energy efficient use of air conditioners. Information and/or incentives could be provided to consumers to help them manage their air conditioner use to maximise comfort while minimising electricity consumption and greenhouse gas emissions.	Abatement/ Education and Awareness	Low – Ongoing Increasing over time	-	$0.1	TCO

3.4 Better transport solutions

Public transport and active travel (walking, cycling) provide low emission alternatives to car travel.

Transport contributes 15% of total NSW emissions and grew by 20% between 1990 and 2002. Nationally, transport emissions are projected to increase 42% from 1990 levels by 2010 and 61% by 2020. Private cars produced 47%, and commercial vehicles 25%, of all NSW transport emissions in 2002.

We are driving more cars, more often, and longer distances. Over the last 30 years the total number of Australian cars has grown three times faster than population. In the last decade in Sydney, the number of kilometres travelled per vehicle (VKT) has grown more than twice as fast as the population.

There has been little improvement in the last decade in the average fuel efficiency of vehicles, and gains that have been achieved are being undermined by the increasing demand for more and larger cars.

The NSW Government aims to curb the growth in transport emissions while maximising transport choice.

To achieve this, the NSW Government is:

- Adopting urban planning principles to reduce the need for car travel and the use of private transport
- Improving and promoting public transport
- Facilitating and promoting cycling and walking
- Forming strategic partnerships with Commonwealth Government and private sector organisations.

Our achievements so far:

NSW is already investing in public transport and clean transport and is ensuring that planning work for the greater Sydney metropolitan region takes into account the need to reduce transport emissions.

Reducing emissions - Better transport solutions	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.4.1 Better rail – The Rail Clearways Program The Rail Clearways Program is the Government's $1.018b initiative to increase reliability, capacity and improve service frequency on the Sydney metropolitan rail network, currently recognised as one of the most complex in the world.	Capacity building	Low – Ongoing Increasing over time	$1018	MOT
3.4.2 Better buses Through the Bus Reforms program NSW Government is undertaking an overhaul of the metropolitan bus network which aims to create an integrated city wide bus network with more frequent and reliable services.	Capacity building	Low – Ongoing Increasing over time	-	MOT
3.4.3 Improved integration of train, bus and ferry services and better transport information Train, bus and ferry services are being more closely integrated to enhance public transport as a convenient travel alternative.	Capacity building	Low – Ongoing Increasing over time	-	MOT
3.4.4 Incorporated greenhouse considerations in all Metro strategy work The NSW Metropolitan Strategy is providing directions and strategies to respond to the growth and change that will occur in Greater Metropolitan Sydney in the next 30 years. It will also outline action that the Government will take through its plans, budget decisions and future choices.	Planning	NA	-	DoP
3.4.5 Worked with other states to advocate for the reform of the Fringe Benefits Tax system Under the current Commonwealth Fringe Benefits Tax system there is a strong incentive for cars to be provided as part of a salary package, as the tax rate is less than what would be paid on cash. FBT provides incentives for increased use of cars to achieve lower taxation rates. The NSW Government is working with other states to urge the Commonwealth Government to reform the fringe benefits tax system so it does not provide a financial incentive to increase vehicle kilometres travelled.	Abatement (Mandatory)	Low - Ongoing	-	TCO

3.4.6 Introduced planning guidelines for walking and cycling The Government is keen to support NSW councils, communities and the development industry to improve planning for walking and cycling. The guidelines include information, concepts, case studies and illustrations designed to assist planners.	Planning Guidelines	NA	-	DoP

Our commitments:

These initiatives will continue our efforts to improve the energy efficiency of transport and reduce transport related emissions

Reducing emissions - Better transport solutions	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
3.4.7 Extend the Clean Car Benchmarks program to heavy vehicles The Clean Car Benchmarks program is a successful light vehicle environmental rating scheme. The NSW Government will extend this to include trucks and buses to recognise new technologies for reducing emissions from these vehicles, and to promote energy efficiency in truck and bus transport.	Education + awareness	NA	0.10	0.05	DEC
3.4.8 Include greenhouse implications in the metropolitan inter-modal freight strategy The Government is planning for more efficient freight transport through the development of a series of freight strategies in conjunction with the Ports Growth Plan and the new Metropolitan Strategy. Initial strategy development focuses on how to increase the use of rail transport. The assessment of various options will include consideration of greenhouse emissions.	Planning	NA	-	-	DoP
3.4.9 Monitoring the opportunities and greenhouse benefits arising from use of hydrogen as a transport fuel New hydrogen vehicle technology offers potential greenhouse emission savings when produced from renewable sources. The Government will continue to examine developments in this area and review relevant policy to ensure that the future introduction of a hydrogen economy is not impeded by conflicting or outdated regulations.	Research and development	NA	-	-	TCO/RTA

3.4.10 Continue to support the introduction of new vehicle emission and fuel quality standards as well as advocate for the development of national greenhouse (CO_2) standards for new vehicles. The Australian Design Rules (ADRs) set out standards for vehicle safety and emissions. The Commonwealth Government progressively upgrades the ADRs to align our standards with world's best. Many countries are now considering legislation to limit carbon dioxide emissions from cars. The NSW Government will work with other states to advocate for the development of national greenhouse (CO_2) standards for new vehicles in Australia.	Abatement (Mandatory)	Potentially high	-	-	TCO
3.4.11 Support local councils and develop public awareness programs to increase cycling and walking Increasing the popularity of cycling and walking can significantly reduce vehicle emissions and can result in substantial public health benefits. The NSW Government will implement several programs to increase the ease, safety and overall awareness of cycling and walking.	Various	Low - Ongoing	-	$0.5m	TCO

3.5 Waste, industrial processes and fugitive emissions

Growth of non-energy greenhouse emissions from industry must be addressed

Emissions from the decay of municipal waste, industrial processes (such as the production of metals and cement) and fugitive emissions from fossil fuel production together contributed around 20% of NSW emissions in 2002. Since 1990 waste emissions have grown strongly, while emissions from industrial processes and fugitive sources declined significantly. Each sector, however, is projected to grow strongly in the decade ahead.

The NSW Government aims to reduce non-energy greenhouse emissions from industry.

To achieve this, NSW Government will:

- Consider non-energy greenhouse gas emissions during environmental impact assessment of new projects
- Reduce waste disposal to landfills
- Encourage capture and use of methane from mines, industry and landfills
- Support R&D and demonstration of low emissions intensity industrial processes
- Reduce the use of potent industrial (synthetic) greenhouse gases

Our achievements so far:

Reducing emissions - Waste, industrial processes and fugitive emissions	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.5.1 Provided credit for emissions abatement from avoided waste disposal under the NSW Greenhouse Gas Abatement Scheme	Abatement (Economic Instrument)	Low - Ongoing Increasing over time	-	IPART
3.5.2 Continued to implement the Waste Avoidance and Resource Recovery Strategy The Waste Avoidance and Resource Recovery Strategy is the government's main instrument to avoid waste going to landfill.	Economic Instrument	NA	-	DEC

Our commitments:

Reducing emissions - Waste, industrial processes and fugitive emissions	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
Mainstream the consideration of greenhouse in decision making					
3.5.3 Review the adequacy of the waste levy in the 2005 Waste Avoidance and Resource Recovery Strategy update The effectiveness of the scheduled increases in the waste levy will be assessed and the findings incorporated into the 2005 review of the Waste Avoidance and Resource Recovery Strategy which will consider extending the regular increases in the waste levy beyond the existing schedule.	Economic Instrument	NA	-	-	DEC
3.5.4 Develop guidelines for energy and greenhouse in Environmental Impact Assessment (also see 1.10) Guidelines will help clarify government expectations for greenhouse performance in the environmental assessment process.	Planning Guidance	Uncertain – Ongoing and Increasing over time	-	-	DoP

Reduce waste disposal to landfills					
3.5.5 Develop a Waste Infrastructure Planning Strategy and Guidelines for the recovery of energy from waste. A Waste Infrastructure Planning Strategy will: guide appropriate investment in NSW; provide direction on the environmental assessment and approval process; and broaden the application of the State Environmental Planning Policy 48 (Regional Putrescible Landfills) to all landfills and other waste management facilities. Guidelines on the recovery of energy from waste will also be produced to ensure energy projects are consistent with the Waste Avoidance and Resource Recovery Strategy.	Planning Guidance	NA	-	-	DoP / DEC
Encourage capture and use of methane from mines, industry and landfills					
3.5.6 Require public reporting of fugitive emissions from coal mines and development of fugitive emissions mitigation strategies Introducing reporting of emissions on a mine by mine basis will provide baseline data and help identify emissions mitigation potential and commercial resources. The development of mitigation strategies will encourage greater use of the methane resource.	Mix of measures	Low - Ongoing Increasing over time	-	-	DPI
3.5.7 Revise the existing landfill guidelines to require consideration of gas measurement, capture and/or oxidation at existing and new landfills Revised guidelines will be implemented on a case by case basis through environment protection licence conditions such as pollution reduction programs.	Abatement (Mandatory)	Low - Ongoing Increasing over time	-	-	DEC
Reduce the use of potent industrial (synthetic) greenhouse gases					
3.5.8 Work with the Commonwealth to introduce stricter controls on synthetic greenhouse gases such as hydrofluorocarbon refrigerants Synthetic greenhouse gases are very potent and have very high projected emission growth rates. The Commonwealth's *Ozone Protection and Synthetic Greenhouse Gas Management Act* does not currently impose quotas or phase-outs for uses where alternative low potency gases exist.	Abatement (Mandatory)	Low - Ongoing Increasing over time	-	-	TCO

3.5.9 Permit the use of hydrocarbon refrigerants in Motor Vehicle Air Conditioning Systems subject to the demonstration of their safe use Synthetic refrigerants are typically very potent greenhouse gases but natural greenhouse friendly alternatives are available for most refrigeration applications. NSW regulation of hydrocarbon refrigerants in motor vehicles is being reviewed to make it consistent with national occupational health and safety standards.	Abatement (Voluntary)	Low - Ongoing Increasing over time	-	-	TCO

3.6 Natural resources and land management

There are significant opportunities for emission reduction and carbon sequestration sink development

Agriculture emissions contributed 14% of NSW total emissions in 2002. Strong growth in emissions from soils was offset by a large decline in emissions from livestock. This is likely to be a temporary effect of reduced stock numbers due to drought. Emissions from land clearing declined a significant 60% between 1990 and 2002, contributing 5% of total emissions in 2002.

There are significant opportunities to increase the amount of carbon sequestered in vegetation and the soil for the development of carbon sinks. The Australian Bureau of Agriculture and Resource Economics estimated that it would be economic to lock up more than 440 Mt of carbon in plantations if the market price for carbon dioxide was $30 per tonne, 278 Mt at $15 per tonne, and 106 Mt at $5 per tonne.

The NSW Government aims to reduce emissions and increase carbon sequestration.

To achieve this, the NSW Government will:

- Improve our understanding of the way carbon is stored and lost from the landscape through scientific research
- Raise awareness about ways to minimise emissions
- Promote carbon sequestration.

Our achievements so far:

Reducing emissions - Natural resources and land management	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Responsible agency
3.6.1 Implemented land clearing controls through the Native Vegetation Act 2003	Abatement (Mandatory)	Uncertain Probably High	-	DNR
3.6.2 Introduced carbon rights legislation The NSW Government introduced the world's first carbon rights legislation in 1998. This legislation recognises carbon sequestration (absorption and storage) by forests in law, and allows the ownership, sale, and management of these carbon rights as a kind of forestry right. Investors can now trade separately in the rights to land, trees and carbon in a given area.	Abatement	-	-	DPI (Forests NSW)
3.6.3 Attracted international investment into carbon sequestration in Forests NSW plantations Forests NSW plants and manages the forests on behalf of private investors. The three investors are the Tokyo Electric Power Company, Swiss based firm ST Microelectronics and Australian Forestry Management (part of the Rothschild Australia Group). The carbon benefits are all retained by the investors, however there are associated soil, salinity and biodiversity benefits to NSW. Planting continues with over 5 000 hectares planted to date.	Abatement	For every 1000 ha of planted forest, over 500 000 tonnes of CO_2 will be sequestered.	-	DPI (Forests NSW)

Our commitments:

Reducing emissions - Natural resources and land management	Type of measure	Emission abatement	Existing funding $m (05/06-08/09)	Innovation Fund $m (05/06-08/09)	Responsible agency
Improve our understanding through research					
3.6.4 Assess the emissions implications of implementing the Native Vegetation Act 2003 Some of the activities permitted under the Act may lead to emissions that will count against Australia's Kyoto target. Working with the Commonwealth government, the extent of these emissions will be estimated through the analysis of native vegetation maps, satellite images, records of native vegetation clearing, consents and the offset requirements under the regulations. The findings will be used in the development of future incentive programs.	Research and development	NA	-	-	DNR

3.6.5 Improve estimates of carbon sequestered through improved soil and vegetation management There is considerable uncertainty about the extent of carbon sequestration potential of improved native vegetation management and whether NSW soils are a net source or sink of carbon over various time frames. The results of these research projects will be used to inform CMA and DPI extension programs.	Research and development	NA	-	$0.75*	DPI /DNR
Promote carbon sequestration					
3.6.6 Pilot a system which allows a Catchment Management Authority to act as a carbon pool manager for revegetation works. IPART is developing a generic methodology for accrediting carbon sequestration pool managers as Abatement Certificate Providers under the Benchmarks scheme. This project will adapt that accreditation method to a CMA and communicate the tools and experience from this process to other CMAs interested in seeking accreditation.	Abatement (Mandatory)	Low - Increasing over time	-	$0.15	DNR / IPART / DPI
3.6.7 Investigate the potential for carbon sink plantings on publicly managed land including enabling legislation. Degraded government-managed land in suitable locations, including conservation reserves, will be revegetated to both store carbon and to restore natural habitat. Associated benefits are likely to include biodiversity conservation, aesthetic enhancement, improved water quality, and weed and pest control.	Abatement (Government)	Low - Increasing over time	-	-	TCO / DNR
3.6.8 Review the regulatory and incentive environment for farm forestry. The Plantations and Reafforestation Act 1997, which currently requires consent for plantings (including environmental planting) greater than 30 hectares, will be reviewed with the intention of streamlining the approval process. The Government will also continue to research and promote more accurate carbon accounting methods that support sustainable forestry.	Abatement (Mandatory)	Uncertain. Probably low Increasing over time.	-	-	DNR

** Subject to matching funding from the Commonwealth Government*

Glossary and abbreviations

Abatement	reducing the degree or intensity of, or eliminating, greenhouse gas emissions.
Adaptation	planning and preparation that aims to minimise the costs (or maximise any benefits) of climate change impacts.
Afforestation	defined by the Kyoto Protocol as, "direct human–induced conversion of land that has not been forested for at least 50 years to forested land through planting, seeding and/or the human-induced promotion of natural seed sources."
AGO	The Australian Greenhouse Office. The Office is the lead Commonwealth agency on greenhouse matters.
Anaerobic	without oxygen. Methane producing organisms are anaerobic and easily killed through contact with oxygen.
Bioenergy	energy derived from plant and animal material, such as wood from forests, residues from agricultural and forestry processes, and industrial, human or animal wastes.
Biofuel	fuel derived from plant or animal material, such as wood from forests, residues from agricultural and forestry processes, and industrial, human or animal wastes.
Biomass	plant materials and animal waste used as fuel or alternatively the total mass of living matter in a given area.
Carbon-constrained	an economy where emissions of CO_2 (and frequently other greenhouse gases) are regulated, for example through a carbon tax or emission trading system.
Carbon dioxide equivalent	see CO_2e
Carbon sequestration rights	generally, a form of property right for carbon sequestered in trees.
CH_4	methane.
CO_2	carbon dioxide.
CO_2e	carbon dioxide equivalent. Carbon dioxide equivalent is the universal unit of measurement used to evaluate the impact of releasing different greenhouse gases. It is based on the global warming potential of each of the gases.
CSIRO	Commonwealth Scientific and Industrial Research Organisation.

Deforestation	the direct human-induced conversion of forested land to non-forested land.
DET	NSW Department of Education and Training.
DEUS	NSW Department of Energy, Utilities and Sustainability .
DEC	NSW Department of Environment and Conservation.
DNR	NSW Department of Natural Resources.
DoP	NSW Department of Planning.
DPI	NSW Department of Primary Industries.
DMR	NSW Department of Mineral Resources.
DSRD	NSW Department of State and Regional Development.
Emissions trading	a system designed to allow greenhouse gas emission reductions to take place wherever it is least costly. It typically works by capping the quantity of allowable emissions. The cap is generally divided into tradeable permits equivalent to one tonne of CO_2e. Participants must hold a number of permits greater or equal to their actual emissions level and the right to emit becomes a tradeable commodity.
Fugitive emissions	includes emission from coal mine seams, flaring and venting associated with oil and gas production and gas leaks from pipes, pumps and valves.
Global Warming Potential (GWP)	an index describing the combined effect of the differing times greenhouse gases remain in the atmosphere and their relative effectiveness in absorbing heat. For example, over a 100 year time horizon, carbon dioxide has a GWP of 1, while methane has a GWP of 23 and nitrous oxide has a GWP of 296.
GHO	NSW Greenhouse Office
HFCs	hydrofluorocarbons
Intensity	a measure of efficiency. Energy or emissions intensity refers to the amount of energy required or emissions generated to produce a given amount, such as electricity.
IPART	Independent Pricing and Regulatory Tribunal of NSW.
IPCC	the Intergovernmental Panel on Climate Change, established by the United Nations Environment Program and the World Meteorological Organisation, brings together the world's leading scientists to report on climate change science.

LULUCF	Land use, Land Use Change and Forestry.
Mt/a	Millions of tonnes per annum.
N_2O	nitrous oxide.
Negative externalities	occur when a decision (for example, to emit greenhouse gases) creates a cost to individuals or groups other than the person making the decision. In other words, the decision-maker does not bear all of the costs from his or her action.
NRC	Natural Resources Commission.
NGGI	National Greenhouse Gas Inventory.
PFCs	perfluorocarbons.
ppm	parts per million – a measure of concentration.
Ratification	acceptance of a legally binding commitment under a Convention or Protocol by a national government.
Reforestation	defined by the Kyoto Protocol as the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or promotion of natural seed sources, on land that was forested but that has been converted to non-forested land. For the first commitment period, reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on the 31 December 1989.
RTA	Roads and Traffic Authority of NSW.
SF_6	sulphur hexafluoride.
Sequestration	removal of greenhouse gases from the atmosphere by vegetation or technological measures. Carbon sequestration is defined by the IPCC as the process through which carbon is absorbed by biomass such as trees, soils and crops.
SES	State Emergency Service.
Sink	a pool or reservoir that stores carbon, lowering the amount of carbon dioxide in the atmosphere. Examples include a geological structure or trees and other vegetation.
Source	any process or activity that releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.
Stationary energy	Stationary energy emissions are those from fossil fuel consumption other than that associated with transport. The main subdivisions include electricity and heat production and manufacturing and construction industries.
TCO	The Cabinet Office.

Endnotes

[1] Further information about the greenhouse effect and global climate change is available from the websites of the Intergovernmental Panel on Climate Change (www.ipcc.ch) and the World Meteorological Organisation (www.wmo.ch/web/wcp/wcdmp).

[2] The complete CSIRO/BoM reports on climate projections for NSW can be found on the NSW Greenhouse Office website at www.greenhouseinfo.nsw.gov.au.

[3] Further information about climate change impacts in Australia can be found at www.greenhouse.gov.au/impacts.

[4] Further information about the United Nations Framework Convention on Climate Change and the Kyoto Protocol is available at www.unfccc.int.

[5] These figures were produced by the Intergovernmental Panel on Climate Change and are included in the CSIRO's climate projections for NSW (www.greenhouseinfo.nsw.gov.au).

[6] Further detail about the NSW Greenhouse Gas inventory is available from www.greenhouse.gov.au/inventory.

[7] The full report on the emission abatement cost curve, including assumptions, is available on the NSW Greenhouse Office website at www.greenhouseinfo.nsw.gov.au.

Useful Links

NSW Greenhouse Office	www.greenhouseinfo.nsw.gov.au
NSW Greenhouse Gas Abatement Scheme	www.greenhousegas.nsw.gov.au
NSW Department of Energy, Utilities and Sustainability	www.deus.nsw.gov.au
Energy Smart Home (how to make your home more energy efficient)	www.energysmart.com.au
Energy Smart Allies (directory of providers of energy efficient products)	www.energysmartallies.com
Energy efficient labelling/ Minimum Energy Performance Standards	www.energyrating.gov.au
United Nations Framework Convention on Climate Change	http://unfccc.int/
Australian Government Green Vehicle Guide	www.greenvehicleguide.gov.au
NSW Energy Sector Greenhouse Benchmarking	www.deus.nsw.gov.au/eeg/gb/index.htm
NSW Government Energy Management Policy	www.deus.nsw.gov.au/eeg/gemp/index.htm
Australian Building Greenhouse Rating Scheme	www.abgr.com.au
BASIX	www.basix.nsw.gov.au
National Green Power Accreditation Program	www.greenpower.gov.au

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