# Western Australia and Greenhouse

## Issues Paper

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*"It would be naive to ask governments to put their economic interests aside. I hope, however, that a better appreciation of the costs of inaction and the economic benefits of innovation in technologies and lifestyles will generate a more balanced economic vision"*

Michael Zammit Cutajar, Retiring Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC), January 30, 2002

## Foreword:

The Gallop Government is committed to protecting our environment while maintaining the strength of our economy.

Greenhouse is one of the biggest environmental issues we – the Government and the community – face. It is likely to have significant impacts on our environment and our way of life, and also will raise serious challenges for our energy based industries.

Scientists now agree that climate change has already started and that it will result in large and possibly sustained changes to the earth's climate and ocean systems. Global warming is also evident in Australian records during the past 50 years.

During the past 25 years, the South West of Western Australia has experienced a 15 per cent reduction in rainfall which has forced some significant adjustments to the decisions we make. This is thought to be at least partly due to global climate change.

Western Australia must make its fair contribution to abating the greenhouse effect. This will require Government leadership and the active involvement of all sectors of our community.

There are several useful short term initiatives which we can promote, such as increasing energy efficiency. However, we require a well-considered and broadly supported medium to long term strategy to effectively address global climate change.

The government has established a Greenhouse Task Force to produce a strategy for Western Australia that:

- enables Western Australian businesses to reduce their emissions at the least possible cost;
- facilitates the development of greenhouse-friendly industries and the export of associated technologies and products;
- recognises Western Australia's unique resource base, our global role in the production of fuels from natural gas which will support the transition of energy from hydrocarbon to hydrogen and our contribution to the national economy;
- protects our unique environmental values, our agricultural and rural sectors and our way of life;
- delivers the best net State and national outcomes incorporating greenhouse abatement, environmental protection and economic and employment benefits; and
- facilitates timely adaptation to change, particularly for matters such as water mangement, where reponse is important in the short term.

This Issues Paper has been prepared to promote public involvement in the development of Western Australia's Greenhouse Strategy.

The paper includes a brief summary of the scientific basis for the greenhouse effect, international agreements about it and links to other information on these matters. It also outlines the Government's agreed framework for a response to the greenhouse effect, raises some of the critical issues Western Australia must address, and proposes questions which are intended to help guide public input to the considerations of the Task Force which will prepare a draft Western Australian Greenhouse strategy

The Task Force has already met with a variety of industry, environmental and agricultural organisations, and will continue to hold meetings and seminars to gain the views and comments of a broad range of the community.

This Issues Paper has been prepared to further extend the opportunities for the public to make comments to the Task Force.

I urge you to read this Issues Paper, consider the matters that it raises and forward your views to the Greenhouse Task Force.

Minister for Environment and Heritage
Hon Dr Judy Edwards, MLA

Chair, Greenhouse Task Force
Francis Logan, MLA

# The Science of climate change

## Global climate research

The World Meteorological Organisation (WMO) and the United Nations Environment Program (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to bring together information relating to what was then a scientific theory: that global climate conditions were being altered by human activities such as fossil fuel use, land clearing and agriculture.

In its first two reports (released in 1991 and 1996) the IPCC brought together existing scientific knowledge relating to atmospheric chemistry and physics, climate observations and modelling, and means by which communities could reduce their contribution to atmospheric changes and the impacts they might experience from climate changes.

In these reports, the IPCC tentatively reported indications of changes to the earth's climate, subject to considerable uncertainty and a lack of scientific consensus.

The IPCC produced its Third Assessment Report in 2001, in which it declared:

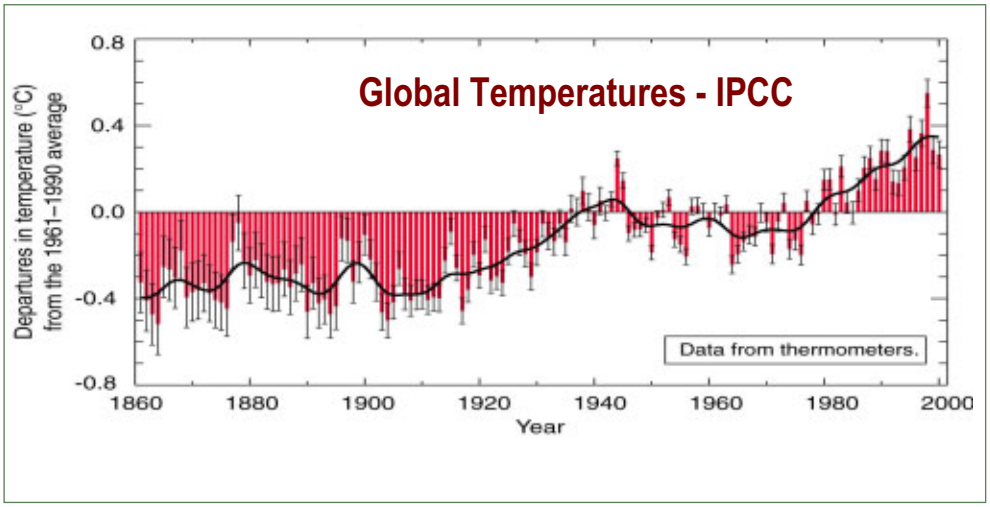
- a scientific consensus that human activities were already generating measurable changes to certain aspects of global climate conditions and that these impacts will increase;
- that these changes will have both detrimental and beneficial impacts on many parts of the world, with the greatest problems being caused in some of the poorest and most vulnerable communities; and
- the global community could still mitigate the extent, scope and impacts of climate change by reducing greenhouse gas emissions and by taking steps to protect important resources.

In short, the IPCC has now declared that climate change is no longer a theory, but is an emerging reality which governments and communities must face.

These findings, and the more focussed research by the CSIRO and the Bureau of Meteorology must form the basis of Western Australia's response to the greenhouse effect.

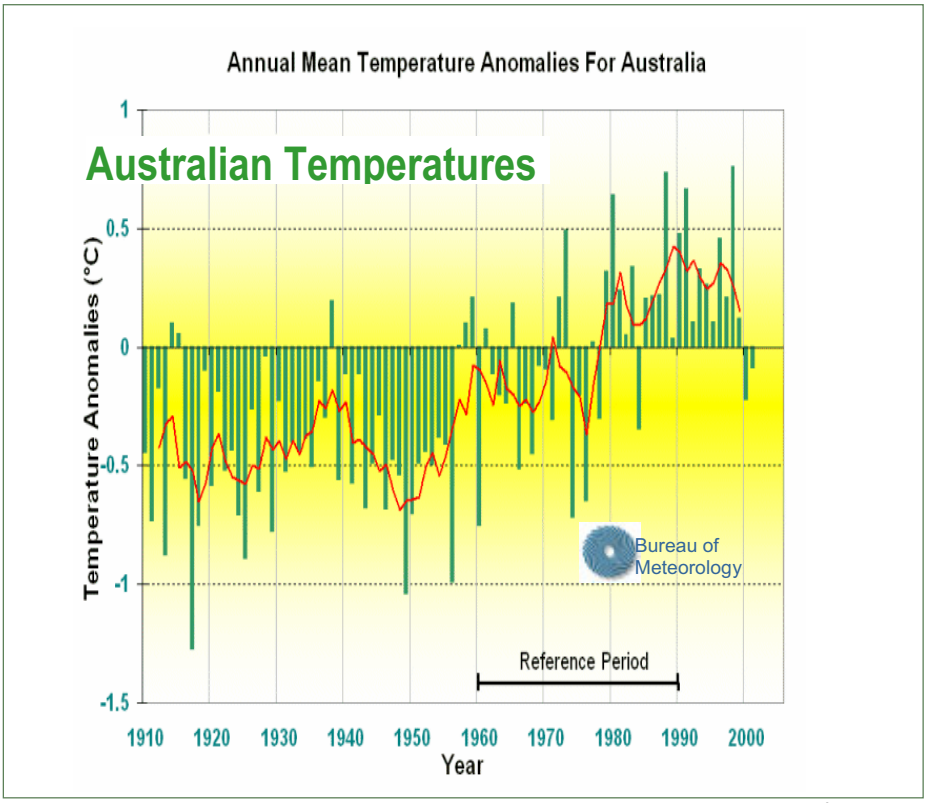
*The IPCC's Third Assessment Report can be found at* www.ipcc.ch

Figure1 **Global Temperatures**



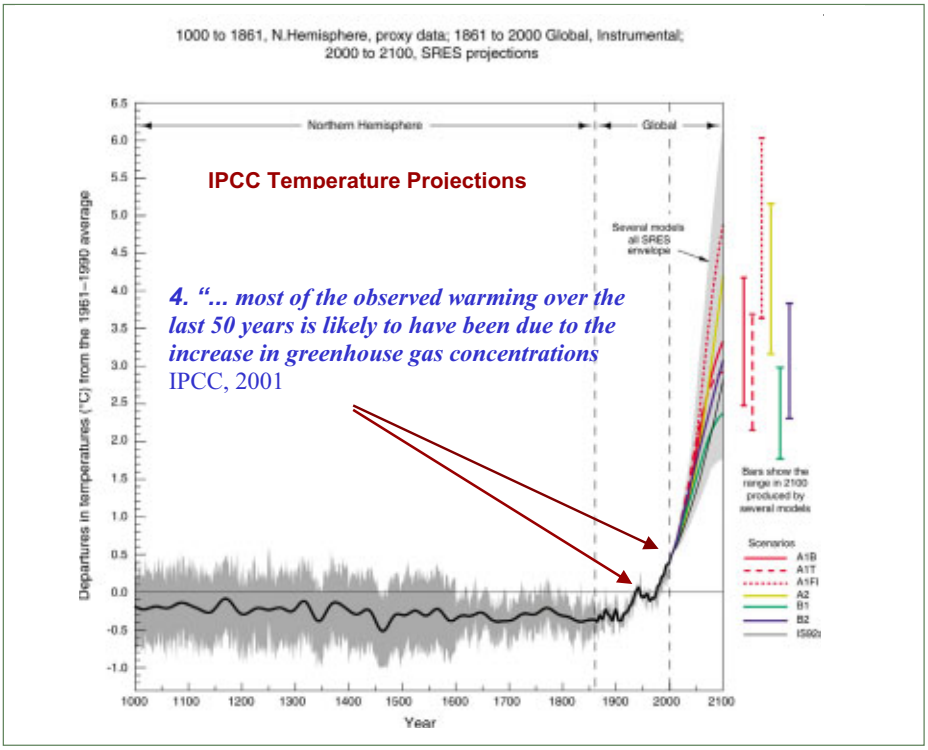

Source: IPCC

Figure 2 **Annual Mean Temperature Anomolies**




Source: Bureau of Meteorology

Figure 3 **Global Temperature Projections Under Differing Emission Scenarios**




Source: IPCC

## Enhanced climate change

Global climate change, or the greenhouse effect, is the term used to describe observed and projected climate changes which result from alterations to the chemical composition of the earth's atmosphere. These chemical changes have been caused primarily by fossil fuel use (coal, petroleum, natural gas), land clearing, agriculture and some industrial processes during the past 300 years.

The earth's atmosphere has for millions of years provided a natural "greenhouse" effect because of pre-industrial levels of water vapour, carbon dioxide, methane and other gases. However, atmospheric heat capacity has grown because of increasing levels of these gases since about 1770 and from chloro fluoro carbon (CFC) emissions during the twentieth Century.

The earth's climates system is finely balanced. Increased temperatures in the lower atmosphere are likely to produce changes to weather and climates worldwide. Changes to ocean energy levels are similarly likely to produce changes to maritime conditions.

On a global scale the climate changes will be broadly experienced as warmer atmospheric temperatures, changes to rainfall, wind and storm patterns and rising sea levels.

These changes are collectively termed the enhanced greenhouse effect, global climate change or global warming.

One of the critical questions is how these broad global climate changes will be experienced in particular regions at specific times.

*Photograph courtesy of Department of Conservation and Management.*

# Australia's and Western Australia's greenhouse emissions

## Australia's greenhouse emissions

Using the UNFCCC greenhouse gas emission accounting rules, Australia has reported its greenhouse emissions in 1990 as amounting to about 503.3 Mt $CO_2$-e and in 2000 as about 535.3 Mt $CO_2$-e, an increase of about 6.3 per cent during that 10 year period.

In 2002, the energy sector as a whole, comprising stationary energy, transport and fugitive emissions, is reported as generating about 70 per cent of Australia's emissions. Agriculture is reported as producing about 18 per cent of Australia's emissions, land use change and forestry about seven per cent and industrial processes and waste produce the remainder.

Between 1990 and 2000, emissions from the land use change and forestry sector have decreased by about 56 per cent and industrial process emission have fallen by about 14 per cent; the emissions from all other sectors have increased during this period.

Accounting under the Kyoto Protocol uses slightly different rules, primarily relating to land use change and forestry emissions. Australia has reported that under Kyoto Protocol accounting rules, Australia's net greenhouse gas emissions increased about five per cent between 1990 and 2000.

The change in emissions by sector, as reported by Australia using UNFCCC accounting, is shown in Table 1.

Australia has reported projections based on these figures indicating that the nation would emit an average of 11 per cent more greenhouse gases during the first accounting period for the Kyoto Protocol (2008 – 2012) than it did during 1990. This means that Australia's Kyoto target is achievable, if challenging. However, although these figures include emissions arising from the recently announced export sale of natural gas to China, they do not include emissions from other proposed industrial developments in Western Australia. Should a large number of these developments proceed, Australia could face a more significant challenge in meeting its Kyoto Protocol commitments.

*Further information about Australia's greenhouse gas emissions is available at* www.greenhouse.wa.gov.au

**Table 1 Australia's Greenhouse Gas Emissions by Sector**

| Sector | 1990 Mt | 2000 Mt | Change: Mt CO2-e | Change: % |
|---|---|---|---|---|
| | $CO_2$-e | $CO_2$-e | | |
| Energy | 298.7 | 371.8 | 73.1 | 24.5 |
| Stationary Energy | 208.5 | 264.0 | 55.4 | 26.6 |
| • Transport | 61.5 | 76.3 | 14.9 | 24.2 |
| • Fugitive | 28.8 | 31.5 | 2.8 | 9.6 |
| Industrial processes | 12.0 | 10.3 | -1.7 | -14.3 |
| Agriculture | 91.3 | 98.4 | 7.1 | 7.8 |
| Land Use Change & Forestry | 85.9 | 38.0 | -47.9 | -55.8 |
| Waste | 15.3 | 16.7 | 1.4 | 9.2 |
| Total net national emissions | 503.3 | 535.3 | 32.0 | 6.3 |

Source:AGO

## Western Australia's greenhouse gas emissions

Western Australia's most recent greenhouse gas emission inventory was prepared in 1995.

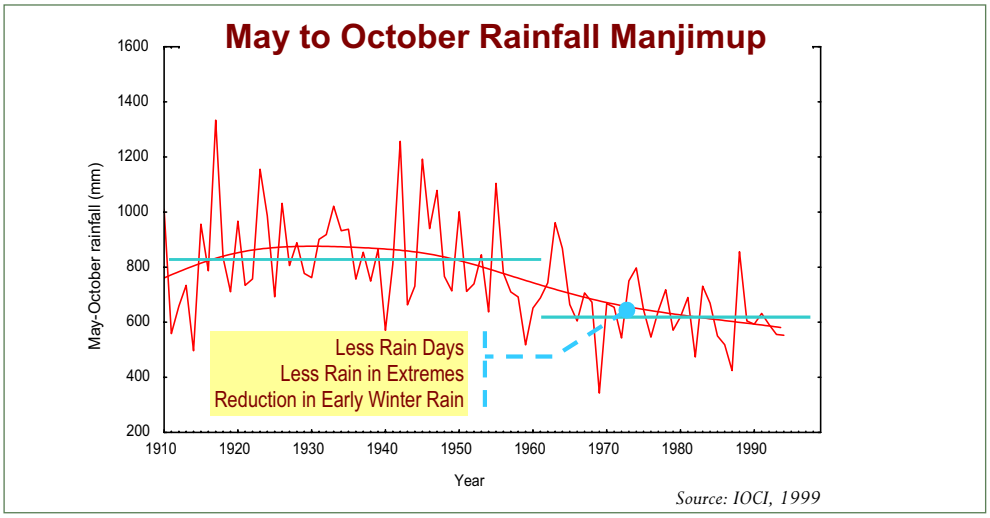
In a general sense, Western Australia's emissions have a broadly similar nature to Australia's. However, there are several unique factors which affect the State's emission profile.

- There has been a substantial shift to natural gas from coal and oil for stationary energy, a shift that other states have yet to make.
- Land use change and resultant emissions have dropped by about 75 per cent from 1990 to 2000.
- A large number of energy intensive industries have been developed during the past decade and many more are proposed.
- The establishment of tree plantations has been promoted and have already sequestered substantial amounts of carbon.

Because of these factors, Western Australia's emissions management challenges will be different from those of other Australian states.

The preparation of an inventory of Western Australian greenhouse gas emissions will enable the State to develop and implement an emission reduction program that suits the particular issues we face.

Figure 4






# Impacts on Western Australia's climate

## Greenhouse climate projections for Western Australia

Because atmospheric processes are complex, even the best available models cannot provide future climate projections with a high level of certainty. This problem is addressed by international scientists by comparing climate projections developed from a suite of different international models.

The limitations inherent in current climate science and modelling are further exacerbated by uncertainties relating to future global greenhouse emissions. International bodies have addressed these uncertainties by generating a range of alternative emission scenarios. A doubling of atmospheric $CO_2$ concentrations by 2100 is at the mid range of these scenarios.

In 2001 the IPCC published its findings on global warming and the CSIRO published more detailed interpretations for Australia. Global temperatures have increased around 0.7°C during the last century and Australian temperatures increased similarly, mostly during the last 50 years.

The IPCC is now satisfied that modelling of global temperature change is sufficiently robust to conclude that the enhanced greenhouse effect has been the primary cause of warming in the last century and has projected this modelling forward to estimate temperature rises associated with alternative greenhouse gas emission scenarios.

The mid range of IPCC scenarios and models suggests a further global warming of around 0.6°C or 0.7°C by 2030. During this century, a further global warming of at least two or 2.5°C is very probable for 2100 with a rise of between 1.4°C and 5.8°C degrees celsius representing the range of uncertainty.

In 2001 the CSIRO released climate projections for Australia for the years 2030 and 2070, based on the projections produced by seven international global climate models and the IPCC's range of typical alternative emission scenarios. These results were presented as the range of lowest to highest model projections.

Models project that in Western Australia:

By 2030:

- regional temperatures will range above and below the trend in global average temperature, with the strongest warming being inland, particularly in the Pilbara and Gascoyne, and the least in coastal areas.
- rainfall will have probably decreased in southern Australia because of increased atmospheric pressure in our latitudes. Because of model and emission scenario inconsistencies, rainfall projections range widely (between one and 12 per cent) around a decrease of about eight per cent in average annual rainfall throughout the South West.

This projected decrease in rainfall for southern Australia may extend to a decrease of winter rainfall in the Gascoyne-Pilbara, but elsewhere in the State, including the Kimberleys and Goldfields, no consistent pattern is clear.

By 2070:

- regional temperatures will range above and below the trend in global average temperature, with the strongest warming inland, particularly in the North West and Gascoyne, and the least in coastal areas.

*LEFT: Cossack Pioneer, photograph courtesy of Woodside Energy. RIGHT: Iron ore truck, photograph courtesy of BHP-Billiton.*

**Figure 5. Average Rainfall During May to October 1975-2000 as % of Corresponding Rainfall During 1925-1975.**

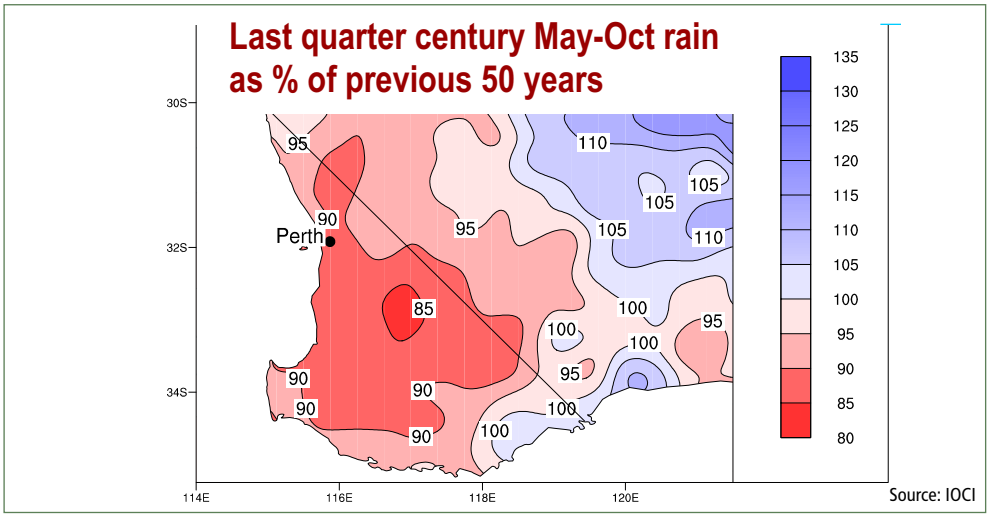
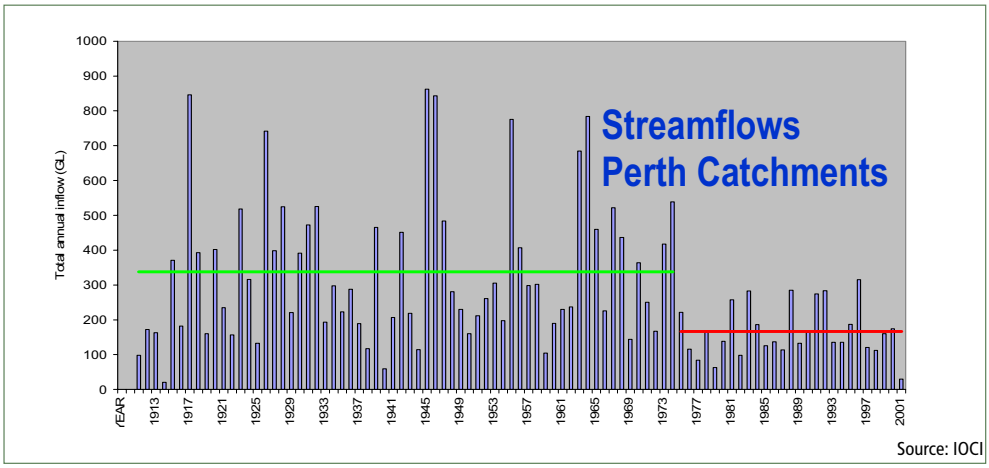



**Figure 6. Stream flows to Perth Water Catchments**






- a large rainfall decrease is probable in southern Australia – but scientists warn that the projections must be treated with great caution because of the difficulty in modelling so far into the future. The projected rainfall decreases range widely around a mid range of around 25 per cent, with decreases up to 60 per cent possibly occuring in the South West. This trend may extend to a decrease of winter rainfall in the Gascoyne-Pilbara, but elsewhere in the State, including the Kimberleys and Goldfields, no consistent pattern is clear.

Associated with these changes would be more very hot days, increased evapo-transpiration and increased soil moisture stress.

Extreme rainfall events may be stronger in northern regions of Australia and in summer rainfalls generally, but such increased intensity seems unlikely in the South West winter rainfalls. Wind speeds may increase in tropical cyclones and preferred paths may run further south. Global sea levels are expected to rise between nine and 88 centimetres this century.

The full extent of future changes to our climate is uncertain, and to a large extent depends on how much we and the global community are able to reduce greenhouse gas emissions. Nevertheless, significant changes to our climate are inevitable. The projected future temperature and rainfall figures, developed through atmospheric and climate modelling, indicate the general direction and possible scale of climate change in Western Australia. Changes of the nature currently projected would affect our natural environments, agricultural systems and water resources. Fortunately, climate science is advancing rapidly and projections will enhance our capacity for successful adaptation.

*Further information about climate projections for Australia can be found at:*

- www.marine.csiro.au/iawg/impacts2001.pdf
- www.dar.csiro.au/publications/projections2001.pdf
- http://www.dar.csiro.au/information/greenhouse.htm

## Research into climate change in Western Australia

Since 1989 the State Government has undertaken research to investigate climatic change and variability in Western Australia to improve our understanding of linkages between Western Australia's climate patterns and global climate drivers, such as the El Nino.

The climate research program, the Indian Ocean Climate Initiative (IOCI) was established in 1996 to investigate relationships between observed climate variations in the South West of Western Australia, particularly reduced rainfall since 1975, and changes to global climate patterns during that period. This research is being carried out as a partnership between State government agencies, the CSIRO Division of Atmospheric Research and the Bureau of Meteorology. The report on Stage one of the IOCI research program states:

- the rainfall decline observed in the South West of Western Australia accompanied, and was associated with, a well-documented change in large-scale global atmospheric circulation;
- the rainfall decline was similar to changes projected by climate models to accompany an enhanced greenhouse effect, but was not sufficiently similar to indicate that the enhanced greenhouse effect was to blame for the rainfall decrease; and
- winter daytime and nighttime temperatures have increased. Global climate research infers a strong association between these temperature increases and the enhanced greenhouse effect, suggesting that temperatures are likely to continue to increase throughout this century.

Stage two of IOCI will continue this research.
*Further information about the IOCI research report can be found at:*
www.ioci/new.html *and*
wre.wa.gov.au

*Photograph courtesy of Department of Conservation and Land Management.*

# International and national responses to climate change

## United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC, the framework for the current international response to climate change, was developed in 1992 and entered into force in 1994. The objective of the UNFCCC is to stabilise atmospheric greenhouse gas concentrations at a level that would prevent dangerous changes to the climate system. Australia has committed to the UNFCCC and its objective.



Achieving the UNFCCC objective requires a significant shift from global dependency on fossil fuels, stopping land clearing and reconsidering many agricultural and industrial practices. The UNFCCC objective is a long term goal towards which all greenhouse strategies, including the Western Australian Greenhouse Strategy, must aim.

The Kyoto Protocol was adopted in 1997 to give binding and legal effect to commitments under the UNFCCC through the establishment of short term greenhouse gas emission targets and a framework for accounting national emissions. The Kyoto Protocol commits industrialised countries to achieve quantified targets for reducing their emissions of greenhouse gases, and establishes three market mechanisms to achieve reductions in a cost-effective way.

Under the Kyoto Protocol, all industrial nations except Australia and Iceland are required to reduce their emissions. Australia will be permitted to increase its average annual greenhouse gas emissions during the first accounting period (2008-2012) by up to eight per cent compared with 1990 emissions.

Countries may offset emissions during the first accounting period through domestic or overseas carbon sequestration or other emissions reductions activities in developing nations. These options will significantly reduce the economic and social impacts of meeting Kyoto Protocol targets for this initial period.

The Kyoto Protocol will enter into force once it has been ratified by at least 55 signatory nations including nations which emit at least 55 per cent of the emissions from industrialised nations. At this time (September 2002) the Protocol has been ratified by 96 nations including nations which emit about 37.4 per cent of the emissions from industrialised nations.

The Kyoto Protocol is the first step towards reducing global emissions to required levels. Many parties contend that it is less effective than it might be because it does not address the growing emissions from developing nations and does not take a "systems" approach to emissions reductions. It is, however, the only broadly supported international agreement that addresses this global challenge – it is the only game in town if the greenhouse effect is to be tackled by the global community.

The Western Australian Government is committed to greenhouse abatement and believes that a national approach is required if Australia is to make a meaningful contribution to a global solution.

The Western Australian Government calls upon the Commonwealth Government to

show leadership in creating a national approach to greenhouse abatement that:

- enables Western Australian businesses to take part in an international emissions trading framework;
- facilitates the development of greenhouse friendly industries and export of associated technologies and products;
- recognises Western Australia's unique resource base, our global role in the production of transition fuels from natural gas and our contribution to the national economy; and
- delivers the best net national outcome incorporating greenhouse abatement, economic and employment considerations.

*Further information about the UNFCCC and the Kyoto Protocol is available at:*
http://unfccc.int
http://www.iisd.ca/climate/
The Website for text of the Convention and Protocol is available at:
http://unfccc.int/resource/convkp.html#kp

## Australia's response to climate change

### International activities

Australia is a signatory to the UNFCCC and the Kyoto Protocol. The Commonwealth government has, however, declared it will not ratify the Protocol, but that Australia will play a constructive role in international activities aimed at reducing the impact of the greenhouse effect. Moreover, the Prime Minister has declared that Australia will meet its greenhouse gas emissions target under the Kyoto Protocol. Current national emission accounting practices comply with rules established under the Kyoto Protocol.

Australia has delivered its third national communication on climate change as part of its responsibilities and commitments under the UNFCCC. This document sets out Australia's progress in implementing its international obligations under the UNFCC.

*Iron ore mine, photograph courtesy of Hamersley Iron.*

**Australian Greenhouse Office**

The Commonwealth Government has established a central greenhouse agency to provide national leadership and coordination on climate change. This agency has developed several innovative programs and products, including the National Carbon Accounting System, the Cool Communities Program and the Greenhouse Challenge Program. The Greenhouse Gas Abatement Program offers investment incentives for greenhouse gas reductions.

**National Greenhouse Strategy (1998)**

The National Greenhouse Strategy (NGS) was endorsed by the Commonwealth and all State and Territory governments in 1998. The NGS contains actions to encourage reductions in greenhouse gas emissions, promote carbon sequestration and improve the nation's adaptation capacity. The actions are to be pursued by differing levels of Government, and offer opportunities for private sector and community involvement.

**Partnerships**

The Commonwealth Government has initiated partnerships with industry and the community to reduce emissions.

The Greenhouse Gas Abatement Program distributes funds for large-scale, cost-effective and sustained emission abatement by industry and the community.

The Greenhouse Challenge is a voluntary Commonwealth-industry program encouraging firms to develop emissions inventories and action plans to reduce emissions, and to report on their progress.

The Cities for Climate Protection Program helps local government to reduce emissions.

The Greenhouse Friendly Program offers voluntary certification and labelling to inform consumers of the relative energy efficiency of appliances and other products.

**Renewable energy initiatives**

The Commonwealth government has sought to promote renewable energy through a number of initiatives, including the Mandatory Renewable Energy Target, the Renewable Energy Showcase Program, the Photovoltaic Rebate Program, the Renewable Remote Power Generation Program.

**The way ahead for Australia 2002**

The Commonwealth Government is commencing a program which it claims will ensure Australia continues to cut greenhouse emissions while building its economy. This program has four main elements:

- striving for a comprehensive global response;
- reducing the greenhouse intensity of Australia's energy intensive and trade exposed industries through the development of technologies;
- reducing the greenhouse intensity of Australia's economy through other least cost means; and
- preparing for unavoidable climate changes through adaptation plans.

*Further information about climate change national responses is available at:*
www.environment.gov.au

*Photograph courtesy of Western Power.*

## Western Australia's response to climate change: aiming for sustainability

Western Australia leads the nation in promoting effective climate change responses through an informed sustainability context.

In September 2002, Premier Geoff Gallop released the draft Western Australian Sustainability Strategy for public consideration. This Strategy recognises that climate change is one of the most critical factors that must be addressed for sustainability to be achieved.

The draft Sustainability Strategy has a number of initiatives which aim to reduce our contribution to climate change and lessen the impact of climate change on communities, industries and natural values. This Issues Paper builds on the draft Sustainability Strategy. The final Greenhouse Strategy will incorporate responses to the draft Sustainability Strategy and this paper.

In line with a sustainability ethic, the Government's vision is to ensure Western Australia can promote its quality of life and economic development while limiting its greenhouse gas emissions as a responsible member of the global community and consistent with the United Nations Framework Convention on Climate Change and the National Greenhouse Strategy.

The Government believes that with intelligent and innovative policies, significant emission reductions can and should be achieved in the long term, with a net positive effect on Western Australia's economy. By resisting and delaying such action, Western Australia may miss out on opportunities to grow and diversify its economy by being denied access to national and international markets for "greenhouse friendly" goods and services.

Reducing greenhouse gas emissions will have direct and indirect costs. However, adopting greenhouse efficient technology and production systems will produce economic benefits for both industry and the state. Already, private sector companies that have invested in energy saving, emission reducing technologies and work practices have seen significant returns and cost savings. Innovations have emerged from examining ways to reduce greenhouse gases. These can and will form the basis of industries that will grow here in Western Australia.

*Details can be found at:*
http://www.sustainability.dpc.wa.gov.au



*Photograph courtesy of Department of Conservation and Land Management.*

# Developing the Western Australian Greenhouse Strategy

Western Australian Governments have been investigating the possible impacts of climate change on the environment and analysing options to reduce greenhouse gas emissions since the early 1980s. Original response strategies focussed on promoting activities that provided a range of benefits beyond their overt cost. Many of these "no regrets" actions were adopted by Government, industry and the community, and have generated economic, environmental and other benefits.

Since the Kyoto Protocol was signed in 1997, Western Australian governments have established a number of research and consultative activities aimed at developing the basis for a greenhouse response strategy. These include a Western Australian Greenhouse Council, which developed and released a series of sectoral analyses (available at http://www.environ.wa.gov.au).



### Strategic framework for the Western Australian Greenhouse Strategy

In 2001 the State Government agreed that the overriding considerations for its Greenhouse Strategy would be to protect the environment, quality of life, employment, economic activity and equity of Western Australians and to fully engage the community in forming the Strategy. The Government agreed that the strategic framework for the Western Australian Greenhouse Strategy would have four substantive elements to ensure it was comprehensive and balanced. These were:

- reducing emissions,
- sequestering carbon,
- adaptation, and
- new commercial opportunities.

To support these elements, it was agreed the Strategy must include:

- community awareness and involvement,
- ongoing research, and
- engagement with national and international processes.

Importantly, the State Government agreed that it needed to show leadership from its own activities.

These elements and supporting processes will form the strategic framework of the Western Australian Greenhouse Response Strategy.

### Greenhouse Task Force

To bring the Strategy to a conclusion and educate and engage the community, the State Government appointed a Greenhouse Task Force headed by Francis Logan MLA, Member for Cockburn and Parliamentary Secretary to the Minister for Environment and Heritage and the Minister for Agriculture, Forestry and Fisheries.

Since being established in February 2002, the Task Force has held a series of meetings with industry, environmental groups, academics, agricultural groups and Government departments. It has received more than 100 written submissions and heard numerous oral submissions for the Greenhouse Response Strategy.

Task Force subgroups are investigating options to reduce emissions from energy, industries, agriculture and transportation, housing and planning. The subgroups will report to the Task Force in mid-December, with their recommendations being used in the Strategy.

*Information about the development of the Western Australian Greenhouse Strategy is available at:* www.greenhouse.wa.gov.au

*Burrup Peninsula, photograph courtesy of Woodside Energy.*

# State Government leadership

All community sectors must play a part in responding to the greenhouse challenge.

However, the significance and complexity of climate change requires Government leadership to be clear and effective.

### Reducing Government contributions to the greenhouse effect

Government is a major purchaser of goods and services, and therefore has a major part to play in reducing the State's greenhouse gas emissions by:

- directly reducing emissions from its own operations,
- establishing sustainable procurement policies, and
- supporting the development of low emissions options.

### Energy Smart Government:

The State Government has asked agencies to use energy efficiency programs to reduce energy use by five per cent immediately and by 12 per cent in five years. By 2005-6 this is expected to reduce emissions by 54,000 tonnes of $CO_2$ a year, the equivalent of removing 12,000 cars from the road or planting 4.3 million pine trees.

This project is being coordinated by the new Sustainable Energy Development Office (SEDO). The State Government will also investigate the scope for utilising renewable energy sources for an increasing proportion of its electricity requirements.

To facilitate ongoing energy efficiency achievements and lower greenhouse gas emissions, the Taskforce will investigate the development of an internal carbon trading scheme within Government, including a carbon sequestration credit facility.

### Reducing transport emissions

The extension of the suburban rail rapid transit system to serve southern suburbs from Perth through Thompsons Lake and Rockingham to Mandurah will reduce vehicle emissions from travel to the southern metropolitan corridor. The northern extension to Clarkson will reduce transport emissions in our northern suburbs. The State Government's vehicle fleet and commuter train system will be carbon neutral through purchases of carbon offsets.

In governments operations, the State Government will adopt a range of fuel efficiency policies through TravelSmart and public transport incentive programs in agencies, converting 25 per cent of the Government vehicle fleet to LPG and using natural gas, biodiesel and hydrogen fuel cells in bus demonstrations

*BELOW: Photograph courtesy of Department of Planning and Infrastructure.*

*BOTTOM: Photograph courtesy of Western Australian Government Railways Commission.*


### Carbon rights legislation

Establishing tree plantations and other environmental plantings in the Wheatbelt and other parts of the State can deliver significant economic and environmental benefits. These plantings will generate organic material such as timber, wood chips, natural products and biofuels, as well as regional employment and diversification, carbon rights and credits, and environmental improvements to counter salinity and biodiversity loss.

In June 2002, the Government introduced legislation to Parliament to reduce the commercial and legal risks associated with the ownership of plantations and carbon rights. The Carbon Rights Bill 2002 provides a simple and secure system for buying and selling carbon rights. This will, in itself, greatly encourage sequestration investments. Promoting the benefits of this initiative forms part of the work of the Western Australian Greenhouse Taskforce.

### State-based inventory system

The lack of up-to-date sector-based information relating to Western Australia's greenhouse gas emissions limits our capacity to focus our emission abatement efforts where they will be most effective. The Task Force recommends that the State Government establishes an inventory where emitters would report their greenhouse gas emissions annually and give an estimation of the total gases produced over the life of a project.

The program will link with the Commonwealth's greenhouse gas auditing processes to produce the National Greenhouse Gas Inventory and a Western Australian Greenhouse Gas inventory

### EPA guidance note

Following extensive consultation, the Environmental Protection Authority has finalised a Guidance Statement on Greenhouse Gas Emissions.

This statement specifies how the EPA will assess proposals that have a significant impact on greenhouse gas emissions. The Guidance Statement will ensure that:

- greenhouse emissions are reported,
- best available technologies are used,
- proponents make commitments to offset greenhouse gas emissions and
- a greenhouse management plan is

established to ensure continuous improvement in greenhouse gas abatement.
*More information can be found at:*
www.epa.gov.au/docs/1016_GS1202.pdf

### Integrating greenhouse considerations into Government decision-making

Greenhouse will be considered in the context of the sustainability analysis required for all agency activities. All State Government agencies will be asked to develop a Sustainability Code of Practice to provide direction and guidance on how government agencies should plan for, manage, report on and put into operation sustainable policies and practices. A Sustainability Resource Guide will be developed to assist agencies in this process.

### State Sustainability Strategy

The Government has released a draft Western Australian Sustainability Strategy. The Sustainability Strategy is a response to the global sustainability agenda. It provides a set of policies and actions to help Western Australia solve its unique complex, local sustainability challenges. Many issues that relate to sustainability can also be implemented under a greenhouse strategy.

**Question one**

**Key issues:** The State Government is committed to reducing greenhouse gas emissions from its own operations. What options would you favour for State Government action to reduce emissions from its own operations?

*To further assist us we would appreciate any other views you have on the following:*

1. How would you suggest the State Government include greenhouse gas emission considerations in:

- decision making (such as planning),
- housing,
- health care,
- education,
- sports infrastructure,
- transport options such as roads and public transport,
- goods and services purchasing,
- power generation,
- the provision of water and sewage, and
- natural-resource management.

## Reducing emissions

Australia's greenhouse gas emissions on a national basis are relatively small, estimated as one per cent of global emissions. However, because of Australia's energy based economy and low population, we have the highest per capita greenhouse gas emissions in the world.

Western Australia has already made a substantial transition from using coal and petroleum to using natural gas for electricity generation and other energy supplies, a transition that most other Australian states have yet to make. However, emissions are still dominated by $CO_2$ emissions from natural gas industries, particularly industries that serve overseas energy consumers. There are also considerable $CO_2$ emissions from other industrial, mining and transport activities and our domestic economy, and methane and nitrous oxide emissions from agricultural activities.

Domestically, Western Australia faces a challenge common to all developed societies; how can we maintain our quality of life while reducing our use of fossil fuels and greenhouse gas emissions? Like other communities, we can accomplish some of this through greater energy efficiency and some by working towards low emission energy options such as fuel cells and renewable energy.

Strategically, Western Australia should expand the use of its natural gas resources and make them available to the rest of the world, while still meeting our greenhouse gas responsibilities. If we are able to do this we will be able to contribute to lower global greenhouse gas emissions by:

- displacing other more greenhouse intensive fuels, such as coal or petroleum, in Australia and overseas countries; and
- using the resources in Western Australia to produce goods or materials using cleaner and more environmentally friendly technologies that are used overseas.

As a developed nation, Australia has been allocated an emission target under the Kyoto Protocol. The Commonwealth Government has declared that although it does not intend to ratify the Protocol, it will meet Australia's commitment under the Protocol.

Estimates of Australian emissions indicate Australia is close to meeting this commitment. However, these estimates do not take account of the industrial development proposals based on North West shelf gas resources. Overseas markets will expect that we will limit our net emissions from domestic activities.

There will be costs involved in meeting Australia's greenhouse targets, whether they are incurred through driving energy efficiency measures in our industries or through engaging in carbon sequestration or emission offsets. However, to do nothing could be even more costly because international customers could refuse to buy our exports.

New and existing industries must maximise energy efficiency and technology and process improvements to stay globally competitive. Our industries would also benefit from taking part in the international market options for emission trading established by the Kyoto Protocol, options that are available to industries based in the European Union and Japan.

Greenhouse gas emissions will be a significant political, economic and environmental challenge for State and Commonwealth Governments during the next decade and beyond. The renewable energy and energy efficiency industries represent an emerging technology-based sector with the potential to create valuable jobs while contributing to the State's sustainable energy future.



**Sustainable Energy Development Office**

The State Government has established the Sustainable Energy Development Office to implement policies and programs for a more sustainable energy future.

As well as programs to reduce greenhouse gas emissions, SEDO aims to stimulate growth in the sustainable energy industry. SEDO promotes awareness and provides tools for households, government and businesses to better manage energy in ways that make a tangible difference to the environment. It also provides a number of grants, rebates and incentives for homes and businesses to adopt renewable energy.

*More information can be found at:*
www.sedo.energy.wa.gov.au

**Bio Energy**

The State Government is finalising a Western Australian Bio Energy Policy to foster the development of a bio energy and bio products industry sector. The Bio Energy policy is being developed as part of the New economic Opportunities element of the Western Australian Greenhouse Strategy.

**Question Two:**

**Key issue :** The State Government is committed to a long term strategy to reduce greenhouse gas emissions from industry, commerce and the community. How should the State Government facilitate the 'least cost' options for abatement of greenhouse gases and what mechanism do you believe the Government should use to limit greenhouse gases from industry?

*To further assist us we would appreciate any other views you have on the following:*

1. What is your position on targets to reduce greenhouse gas emissions? Do you think they should be voluntary or mandatory?

2. What strategies do you (as an individual or company) have in place to implement a low carbon future (for example in your home or business equipment, vehicle, home location, home design, new business development, research and development into new technologies and sequestration)?

3. In what way do you believe that you (as an individual or company) could assist Government to develop and implement its greenhouse strategies?

4. How do you think the State Government could best promote low greenhouse intensity lifestyle options?

## Carbon sequestration

Carbon sequestration can be achieved in two ways, by:

- removing $CO_2$ from the atmosphere by photosynthesis through the growth of plants or through other organic processes, with the carbon being stored in the plant material until released; or

- removing carbon dioxide from industrial waste streams through engineering methods and storing it geologically or chemically.

Reducing our net greenhouse gas emissions in either of these ways can effectively augment our efforts to reduce emissions through efficiency and technology. Sequestration is therefore an important element to a comprehensive response to the greenhouse effect.

Carbon sequestration can reduce emissions directly and relatively rapidly when compared with technological innovations. Sequestration through organic processes is the only realistic option for removing greenhouse gases from the atmosphere once they have been emitted.

The Kyoto Protocol allows nations to be credited for increases in carbon stored in vegetation and soils resulting from land use changes undertaken since 1990.

These land use changes include establishing forests or other vegetation and changing farming and rangeland practices.

Kyoto Protocol rules have highlighted the need for good science to establish the amount of carbon being stored in an area and the opportunities for collateral natural resource benefits arising from increased vegetation.

Western Australia's cleared agricultural land and rangelands have a large potential for carbon storage through the establishment of trees and other perennial vegetation and changes in farming and rangelands management practices.

Large-scale investment in revegetation of cleared land, for carbon sink purposeshas synergies with State sustainability goals. For instance, it will contribute to combating dryland and land clearadation salinity, while helping to protect to some of Western Australia's high biodiversity values. There are also considerable opportunities for this revegetation to support new rural industries and provide a broader base for rural economies and communities.

Non-biological options to permanently store carbon require further research. It may be several years before any large scale geological or chemical disposal of $CO_2$ is likely to take place.

There are several uncertainties associated with either form of sequestration, including how the sequestration can be maintained over time, how much sequestration has occurred and risks associated with liability between parties in a sale of carbon credits. In addition, broadscale monocultural sequestration could be susceptible to environmental impacts or contribute to environmental problems.

An equally significant barrier to carbon sequestration activities is the Commonwealth Government's unwillingness to develop a national greenhouse emission management program and its refusal to ratify the Kyoto Protocol.

The Western Australian Government believes that carbon sequestration is a legitimate element of a comprehensive greenhouse response strategy, and that with intelligent and innovative implementation this option can deliver significant collateral benefits in regional economic development and employment, natural resource management and environmental protection.

The Western Australian Government is seeking to promote appropriate biological carbon sequestration activities by:

- enacting the Carbon Rights Bill 2002 to allow for carbon trading and carbon forestry investments in Western Australia ahead of proposed Federal Government greenhouse emission trading laws;
- supporting research into cost-effective carbon sequestration accounting data;
- providing support for the establishment of a co-operative research centre in greenhouse gas technologies which will investigate the opportunities for non-biological carbon sequestration; and
- promoting the establishment of a carbon accounting standard at the national level.

*Information about the carbon rights legislation is available at:*

http://www.parliament.wa.gov.au/parliament/bills.nsf/D0D5FBBB4D3B463248256C0E001491C8/$File/Bill+117-1.pdf

http://www.parliament.wa.gov.au/parliament/bills.nsf/D0D5FBBB4D3B463248256C0E001491C8/$File/EM+-+Bill+117-1.pdf

http://www.environ.wa.gov.au/downloads/1428_GHR0601.pdf

**Question Three:**

**Key issue**: The State Government is committed to promoting genuine carbon sequestration activities which satisfy certain minimum criteria relating to property rights, accounting and collateral benefits. How can the State Government best promote sequestration activities which yield these multiple benefits?

*To further assist us we would appreciate any other views you have on the following:*

1. Should the Government take a direct role in carbon sequestration activities beyond the legitimate role of the Forest Products Commission in establishing plantations?

2. What kind of barriers do you (as an individual or company) perceive which would stop you from engaging in carbon sequestration or trading activities?

3. Should the Government play a role in facilitating emissions trading activities, such as establishing and selling carbon credits from its own sources?



## Adaptation

There is broad scientific consensus that climate change has already started to have an effect on weather conditions and physical, biological and human systems across the world.

The South West of Western Australia is already experiencing reduced rainfall and water availability, changes in agricultural productivity and adverse impacts on a range of ecosystems.

Projections of future emission levels and climate conditions suggest that there will be significant impacts on temperatures, rainfall, sea levels and storms. Some of the projected changes might be considered as having positive outcomes, such as increased rainfall in parts of Australia that are currently arid. However, even such positive changes will impose costs to mitigate social and environmental impacts or take advantage of opportunities.

Climate changes will also affect our current trading partners and competitors. For instance, very cold areas in northern America or Asia could become warm enough for grain production, or increased rainfall in dry areas might enable food production or increased rangeland production. These changes could affect our markets or our capacity to compete in them.

Because there is so much uncertainty about the detail of future climates that we might experience, the development and implementation of adaptation strategies must be an incremental, adaptive and ongoing process, based in the first instance on a risk management approach.

However, while adaptation can offset some adverse impacts and optimise benefits, human and natural systems to some degree will adapt automatically to climate change, it is certain that some of our treasured amenities will be lost, particularly plants and animals which are restricted to specialised habitats.

There are several key elements to an informed and effective adaptation strategy, including:

- knowledge through research, experience and analysis,
- awareness through the dissemination of knowledge,
- capacity through awareness, confidence and training,
- actions arising from decisions based on improved information and
- monitoring revision, reflection and improved knowledge.

The Western Australian community will need to be able to adapt to climate change impacts to:

- biodiversity and ecosystem processes,
- industries - particularly those based on natural resources such as agriculture, aquaculture, nature-based tourism and forestry,
- infrastructure such as water supply, sewerage, gas and electricity supply, roads and rail lines, coastal developments, houses and other structures,
- the natural resource base of the tourism industry, and
- human health - including greater heat stress and the wider spread of some vector-borne diseases.



*Photograph courtesy of Department of Conservation and Land Management.*

The Government believes that adaptation will be an inevitable requirement for Western Australia's response to climate change, and that it must be based on good information and broad community involvement. Wherever possible, adaptation strategies should be synergistic with other Governmental, community and commercial activities.

**Question Four:**

**Key issue:** The State Government is committed to preparing and implementing adaptation strategies for each portfolio. How can the State Government best engage local government, the community and industry in forming long term plans for climate change adaptation?

To further assist us we would appreciate any other views you have on the following:

1. How should the Government promote the development and implementation of adaptation strategies by local government and the private sector?

3. What mechanisms should the Government develop to monitor the effectiveness of adaptation strategies?



*Photographs courtesy of Western Power.*

## New economic opportunities

While much of the focus of greenhouse issues has been on the challenges to the Western Australia to reduce greenhouse gas emissions and adapt to change, climate change also provides opportunities and incentives for businesses, communities and consumers to respond by developing new industries for the State.

Opportunities will arise from both the short to medium term requirement to increase energy efficiency and use less greenhouse intensive energy sources, and the transition to the longer term vision for a Western Australian economy built on a sustainable base of technological innovation, and a diverse range of industries with low greenhouse gas emissions.

Creating an environment in which these new opportunities can flourish could enhance the longer-term development of the Western Australian economy. Greenhouse challenges can provide a catalyst for innovation and economic growth.

Defining new industries and new opportunities that will emerge from a reduction in greenhouse gas emissions is difficult. Some will be well beyond our present capabilities and impossible to predict. However, new developments and business opportunities will be part of a continuum consisting of:

- new production processes that reduce the net greenhouse impact of manufacturing;
- improvements to existing products to reduce their net greenhouse impacts;
- further development of Western Australia's transitional fuels industry, including the production of liquified petroleum gas (LPG), liquified natural gas (LNG), methanol, and clean diesel;
- new business models that link sustainability to economic growth; and
- new industries based on evolving technologies such as hydrogen fuel cells, biofuels and a range of alternative technologies for electricity production and environmental intellectual property.

Maximising the benefits of new business opportunities as they arise from greenhouse management will require nurturing and the promotion of:

- existing industries that are either low greenhouse-intensive or can assist other industries to become less greenhouse-intensive, such as forest industries based on plantations in agricultural areas; and
- new industries using new greenhouse-friendly technologies.

A wide range of new industries may develop naturally from environmentally driven change, including those arising from:

- technological advances in high greenhouse-emitting industries such as power generation, transport fuel technologies and the production of cement and alumina; and
- information and services concerned with carbon sequestration and sustainable land management.

Identifying specific new technologies is not a role for Government. However,

Government does have a role – and the responsibility – to establish the framework through which both the public and private sectors can implement the necessary changes to the structure of the economy. Government action needs to have three horizons:

- a short-term horizon for immediate gains by providing community and industry education programs to encourage incremental improvements in the production of goods and services;
- medium horizon strategies in which industries can re-structure, for example, gaining energy efficiencies or substituting less greenhouse-intensive fuels in manufacturing processes; and
- long term horizon strategies in which new industries can be fostered to secure sustained high economic growth for the State.

## Six options…

The Greenhouse Taskforce is examining six key instruments that could achieve a reduction in the greenhouse-intensity of the Western Australian economy. These are:

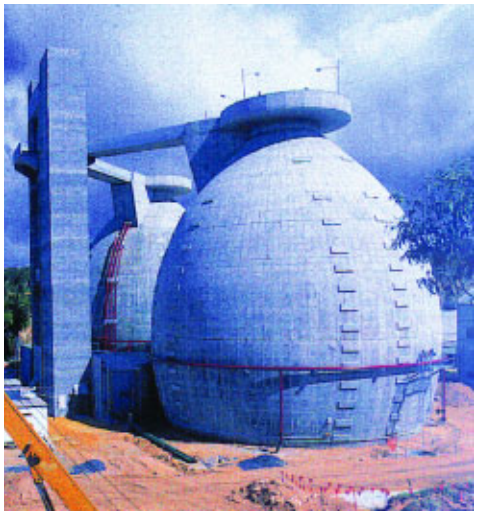
1. research, where funding could be directed towards promoting greenhouse-effective innovation, and research and development;
2. partnerships, between (and within) industry, the community and government;
3. facilitation, where help is given to individuals and businesses of all sizes and in all locations to successfully commercialise their ideas;
4. leadership, by ensuring that Government purchasing and activities minimises the emission of greenhouse gases;
5. economic instruments, by sending market signals to influence economic behaviour, using incentives and other investment attraction packages to attract new industries and technologies to the State; and
6. regulation, requiring the adopting of greenhouse-friendly practices.

**Question five:**

**Key issue:** The State Government believes that Western Australia's economy needs to be able to take advantage of opportunities which arise as a result of climate change. How can the State Government best promote the economic expansion of low emission, high value and high employment industries?

To further assist us we would appreciate any other views you have on the following:

1. Should the Government take a direct role in picking industry sectors for assistance and development?
2. What mechanisms should Government develop to promote industry awareness and response to innovations and opportunities that arise as a result of climate change?



*Photograph courtesy of the Water Corporation.*

## Public awareness and involvement

Sustained greenhouse emission reductions will only be possible through long-term behavioural and cultural changes by all sectors of the Western Australian community. This will require that individuals, business and local government have access to reliable information about greenhouse issues.

It will also require that everyone affected by the changes is fully engaged in determining those changes. Because changes will take place over a long period of time, ongoing community and industry involvement is vital.

*Information about the State's greenhouse emissions and potential climate change impacts is available through publications and the Government's greenhouse website* www.greenhouse.wa.gov.au

Advice about the greenhouse implications of household consumption, waste management and lifestyle choices is available either through passive media (websites and printed material), active media (such as the Travelsmart program) or a combination (for example, formal education programs)

*Information about sustainable energy, including greenhouse information about electricity bills, is available from websites such as* www.westernpower.com.au (Western Power greenpower), www.sedo.energy.wa.gov.au (the Sustainable Energy Development Office) and acre.murdoch.edu.au/acreintro.htm

Local government plays a critical role in helping the community reduce greenhouse gas emissions, adapt successfully to climate changes as they occur and implement innovative economic opportunities. Local government can directly or indirectly influence up to 50 per cent of emissions through land use planning, traffic management, open space planning, street lighting and waste management. Local governments have signed up to be part of the Commonwealth Government Cities for Climate Protection program covering nearly 70 per cent of the State's population.

Many local government programs, have adopted corporate and community greenhouse reduction targets ranging between 10 and 30 per cent over 10 to 15 years.

The State Government will develop and disseminate information about climate change impacts and opportunities relating to Western Australia, engage local government as active partners in developing and delivering greenhouse gas reduction action to their communities, and hold regular greenhouse education events.

The State Government is already promoting specific initiatives, including:

- research about greenhouse matters and dissemination of the findings; and
- information about household energy conservation and energy efficiency, and other sectors such as agriculture and transport and housing.

**Question six**

**Key issue:** The State Government believes that community awareness is critical to a successful Western Australian response to climate change. How should the State Government improve community awareness of climate change, the potential impacts of climate change on individuals and communities and the opportunities for individuals and communities to reduce their contribution to climate change and take advantage of opportunities that arise because of it?

*To further assist us we would appreciate any other views you have on the following:*

1. How effective are internet-based information sources for changing community or individual behaviour? Would you use internet information sources?

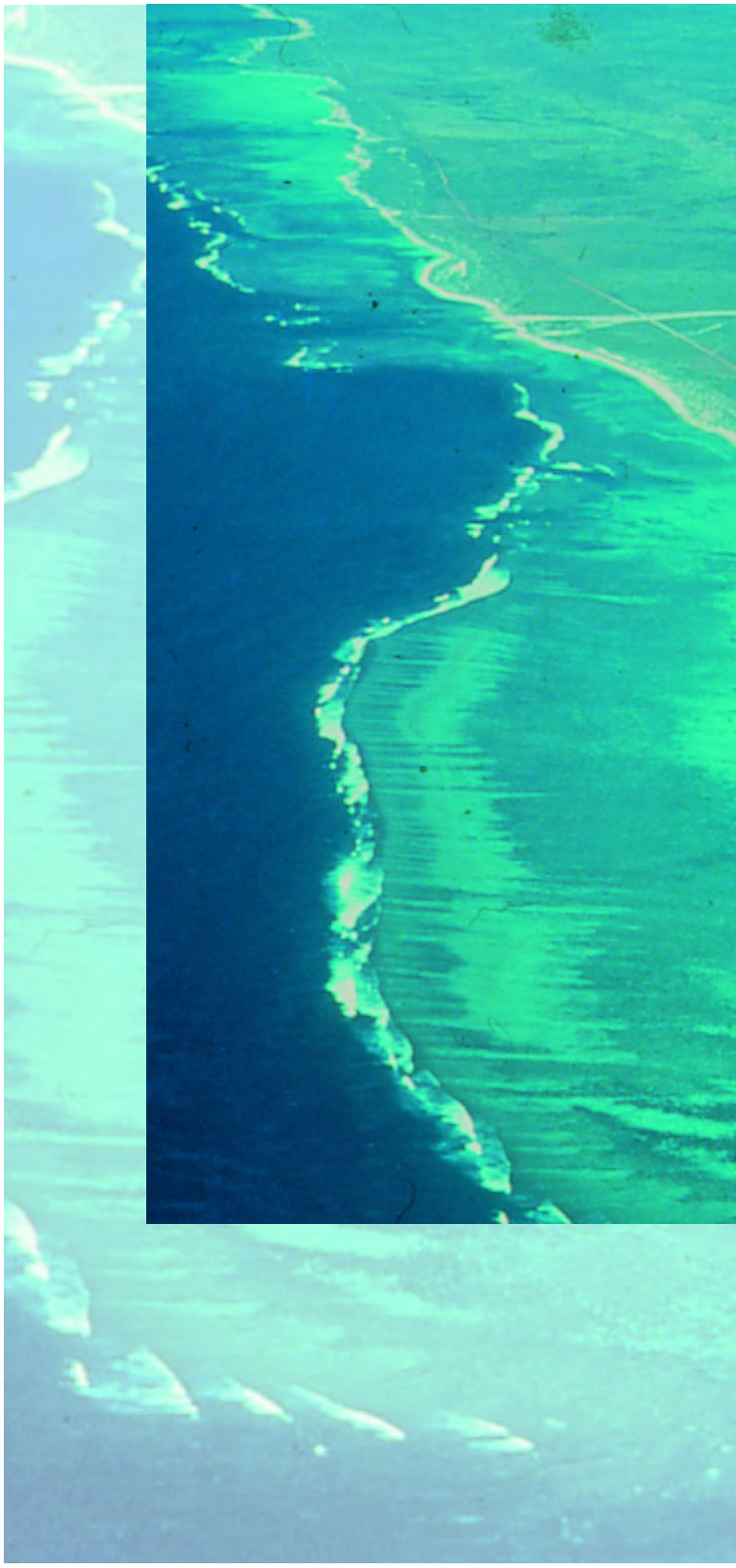
2. How could local government better deliver information about climate change to the general community, commerce or industry?

3. How should Government facilitate individual action to reduce household or transport emissions?

4. Should Government seek to change energy intensive lifestyle options through energy-related taxes or supporting energy efficient activities?

5. How can the Government tailor its greenhouse initiatives to meet the special needs of rural residents and communities?





*Photograph courtesy of Department of Conservation and Land Management.*

## National and international policies

The greenhouse effect is occuring because of the way we currently live and use resources. It is a global phenomenon being addressed by national governments through international agreements.

Western Australia must ensure that policies and agreements formed at the international and national levels recognise the specific circumstances of our State and support actions that will reduce emissions and overcome global warming impacts to the extent possible.

International agreements can affect Western Australia through definitions relating to national and project emission accounting, market mechanisms which govern emissions trading, and the years at which baselines are established.

Western Australia has actively participated in international meetings to ensure that reafforestation in this state is appropriately recognised as under the Kyoto Protocol. Some remaining issues of concern to Western Australia include the accounting of revegetation or land management changes in rangelands and national parks and nature reserves.

National greenhouse policies and standards can also affect Western Australia, such as Commonwealth decisions about recognising carbon sequestration arising from changes in rangeland management or the allocation of Australia's greenhouse gas emissions targets under the Kyoto Protocol, if it is ratified.

The Government will actively continue to take part in the development and implementation of international and national agreements to ensure that they recognise the State's particular circumstances and support the effective and efficient actions being taken in Western Australia.

**Question seven:**

**Key issue:** The State Government is committed to advocating international and national climate change policies that recognise Western Australia's particular circumstances. What special Western Australian characteristics, requirements or opportunities do you believe require advocacy, and how do you suggest the State should advocate for them?

*To further assist us we would appreciate any other views you have on the following:*

1. Do you think that Western Australia should establish a single body responsible for greenhouse matters, along the lines of the Australian Greenhouse Office, or would Government resources be better used within existing institutions?

2. Are there issues in which Western Australia could take a lead nationally or internationally?

*Goodwyn A, photograph courtesy of Woodside Energy.*

## Research

Climate change is an evolving global phenomenon generated by human activity, which acts through complex atmospheric chemical and physical processes, and impacts on dynamic human and natural systems. We are learning about it as we are experiencing its impacts. Ongoing research must therefore be an ongoing element of Western Australia's response.

For more than a decade the Western Australian Government has supported research by the CSIRO and BMRC on regional climate change and projections for Western Australia. Other research by Government agencies, universities and other bodies has generated information relating to the impacts of climate change on biodiversity, agriculture, water resources and fisheries, emissions from transport and urban development, energy systems, agriculture, and carbon sequestration in plantations and agricultural soils. However, this information remains partial.

Important further areas of research include:

- Water resources and catchments: the implications of climate change on the ongoing market reform of water resources and planning for water quality, river health and environmental flows; the interaction between climate change and salinity.
- Agriculture: the potential impact of increased atmospheric carbon dioxide levels and changed temperature and soil moisture conditions on plant productivity; how to maximise agricultural performance under such conditions; impacts on agricultural land systems at the catchment scale, long-term water availability to irrigated agriculture and the long-term impact of climate change on dryland salinity.
- Biodiversity: the dynamics between climate and biodiversity, the impact of increased $CO_2$ and changed temperature and soil moisture conditions on natural systems, and the processes of adaptation to climate change in altered landscapes.

There will also be important research requirements relating to infrastructure, human health and other matters which are yet to be determined.

The Government is supporting actions to increase our understanding of climate change; how we contribute to it, what its impacts will be and how we can adapt and benefit from it, including:

- further research into Western Australia's climate projections through stage two of the IOCI partnership,
- holding a greenhouse science forum to determine research priorities and partnerships, and
- engaging in the CSIRO's Healthy Country Initiative.

**Question eight:**

**Key issue: The State Government is committed to gathering the best information about climate change. How do you suggest this information be made available?**

*To further assist us we would appreciate any other views you have on the following:*

1. What do you think is the most critical information gap about climate change?
2. How do you suggest the State Government should address the challenge of maintaining a research program concerned with impacts that could take many years to understand?
3. Are there are areas of research in which Western Australia could take a lead nationally or internationally?

## Western Australia we seek your comments . . .

**Question one:**

**Key issue:** The State Government is committed to reducing greenhouse gas emissions from its own operations. What options would you favour for State Government action to reduce emissions from its own operations?

*To further assist us we would appreciate any other views you have on the following:*

How would you suggest the State Government include greenhouse gas emission considerations in:

- decision making (such as planning)?
- housing?
- health care?
- Education?
- sports infrastructure?
- transport options such as roads and public transport?
- goods and services purchasing?
- power generation? and
- the provision of water and sewage?

**Question Two:**

**Key issue:** The State Government is committed to a long term strategy to reduce greenhouse gas emissions from industry, commerce and the community. How should the State Government facilitate the 'least cost' options for abatement of greenhouse gases and what mechanism do you believe the Government should use limit greenhouse gases from industry?

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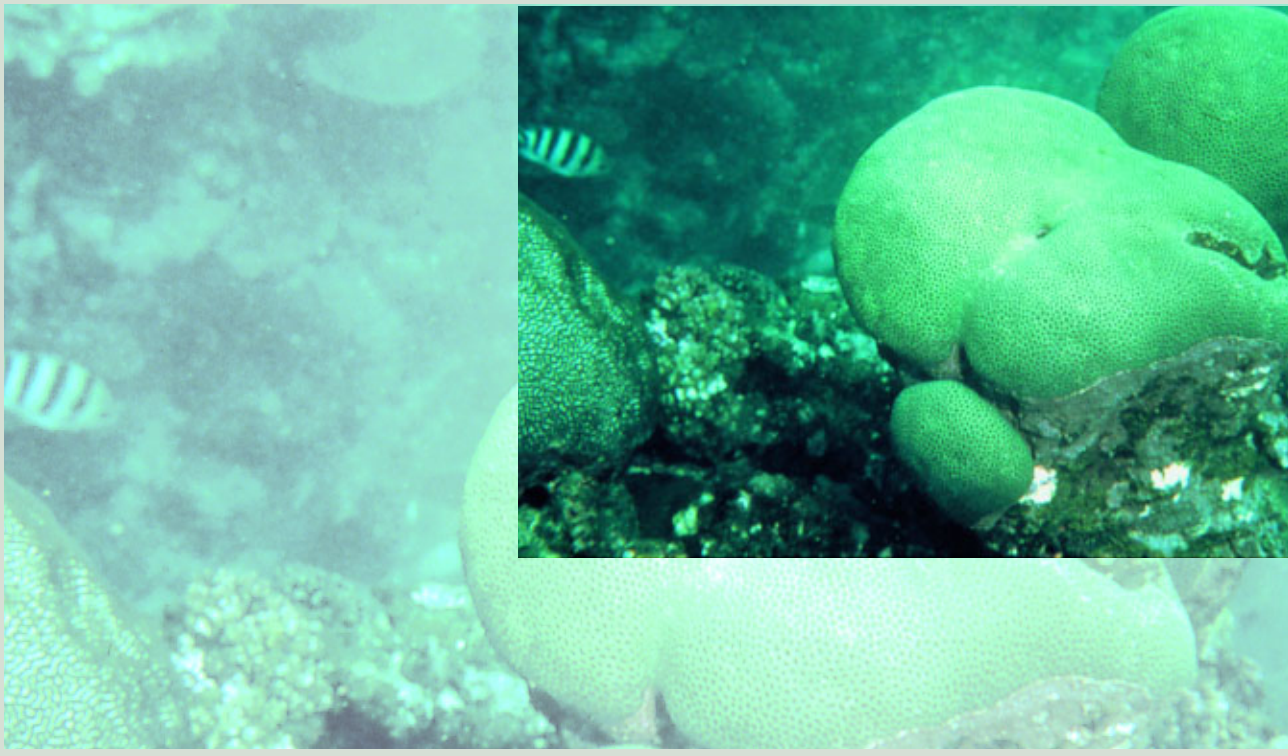

*Photograph courtesy of Department of Conservation and Land Management.*