

DRAFT CLIMATE CHANGE STRATEGY FOR TASMANIA



acting now...

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FOREWORD

It is clear that climate change will affect Tasmania.

Climate change is happening now and is one of the greatest challenges facing the international community. Even with significant reductions in global greenhouse gas emissions, there will still be changes to the global climate and to our climate here in Tasmania. While there is still debate about the likely rate of change there is no doubt that significant change is occurring.

These changes will affect everyone in our community – government, industry, community groups and individuals – and all sections of the community must play a part in responding to climate change.

To achieve this vision, we need to act now using our current knowledge. We need to set out long-term strategies to continue to improve our understanding of the impacts of climate change. We need to plan and adapt to the expected changes.

Tasmania has relatively low levels of greenhouse gas emissions when compared to other parts of Australia but it is incumbent on us to look for local opportunities to maintain these low greenhouse gas emission levels. We will also continue to participate in national policy development and strategies on greenhouse mitigation.

For the immediate future, the focus must be on planning to adapt to climate changes using the best available knowledge.

This Draft Strategy builds on the work already done here in Tasmania and sets out our direction now and for the long-term. It sets out the Government's commitment to –

- » **Leading the response** to climate change in partnership with other tiers of government, industry, research institutions and the community;
- » **Planning and adapting now and into the future** to minimise possible adverse impacts from climate change and to position Tasmania to take advantage of emerging opportunities;
- » **Developing renewable energy options and maintaining our low greenhouse gas emission levels;**
- » **Continuing to improve our knowledge** of the impacts of climate change.
- » **Informing and involving our industry sectors and the community** to ensure they are better able to adapt and respond to the challenges associated with a changing climate.

The Draft Strategy promotes a strategic outlook as well as practical actions, land use planning based on a risk management approach, and a culture of innovation and excellence to capture opportunities. It aligns with the goals established through Tasmania *Together* and will provide a sound foundation for future climate change responses in this State.

Michele Moseley

CHAIR, CLIMATE CHANGE IDC

Our vision is for Tasmania to be a model of environmental sustainability, maintaining and further reducing our relatively low levels of greenhouse gas emissions, well prepared to maximise the opportunities that climate change and a carbon constrained future may present, and adapting to the negative impacts of climate change.

THE STRATEGY



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INTRODUCTION

What is the enhanced Greenhouse effect?

An alteration of the world's climate system caused by increasing levels of certain gases in the Earth's atmosphere.

In 1999, the Government released the Tasmanian Greenhouse Statement to address greenhouse gas emissions and facilitate adaptation to climatic changes.

Since the release of the Statement, climate change has become recognised as a major challenge to the global community. The fundamental question now is not whether the climate will change, but rather when, where and by how much.

The issue for governments, business and the community is efficient adaptation planning, that is, what must be done now and in the future to minimise the extent and negative impacts of climate change, and also to capitalise on possible opportunities arising from those changes.

This Draft Strategy demonstrates Government leadership in responding to climate change. It promotes strategic policies and actions, land use planning based on a risk management approach, and aims to foster a culture of innovation and excellence to capture opportunities. The Strategy aligns with the goals established by the Tasmanian community through Tasmania Together.

This Draft Strategy is in four parts -

- » Strategic Setting – providing a snapshot of the current context and the high level drivers for action.
- » Goals and Guiding Principles.
- » The Action Plan – outlining the wide range of actions being pursued by the Government both to reduce greenhouse gas emissions and to facilitate an adaptive response to the impacts of climate change.
- » Review.

This Draft Strategy will ensure that Tasmania is well positioned to take advantage of the opportunities associated with a changing climate, while planning for the possible adverse impacts associated with climate change and managing our greenhouse gas emissions.

STRATEGIC SETTING

Our Climate is Changing

There is now general international scientific agreement that there is a discernible human influence on global climate.

Whatever the cause, it is generally accepted that the global climate is undergoing a period of transition. Climate change is also a much broader issue than a simple trend towards global warming. The flow on effects of increasing lower atmosphere temperatures will impact upon all aspects of the physical environment: influencing rainfall patterns, wind, sea level and ecosystem processes, and the frequency of severe weather events.

The best available scientific information indicates that some degree of climate change is inevitable due to the greenhouse gases already emitted into the atmosphere, and the continuing strong growth in global emissions. The report *Climate Change Risk and Vulnerability - promoting an efficient adaptation response in Australia*, March 2005, by The Allen Consulting Group for the Australian Greenhouse Office, Department of the Environment and Heritage identified the wide range of natural, productive and economic systems that would be impacted by climate change.

The extent of change is difficult to assess and to predict on a regional basis, but what is clear is that the global climate is changing and the rate of change is accelerating and such changes will have an increasingly significant impact on Tasmania's environment, communities, and businesses.

International and national trends

The Kyoto Protocol entered into force in February 2005 and the European Union's emissions trading scheme commenced operation on 1 January 2006. While the Australian Government has stated that it remains committed to working towards meeting Australia's Kyoto target, it has stated that it will not ratify the Protocol. The Tasmanian Government remains committed to Kyoto and considers that the Australian Government should ratify the Protocol.

In July 2005, Australia signed an Asia-Pacific Partnership on Clean Development and Climate with China, India, Japan, Korea and the USA. The Partnership aims to build local capacity, create new investment opportunities and promote development of existing and emerging cleaner, more efficient technologies and practices.

Recent national developments have recognised that some climate change is inevitable, and that adaptation measures must be considered alongside mitigation of emissions.

The 'Greenhouse Effect' is a natural process caused by gases in the Earth's atmosphere. This process maintains temperatures on the planet at a habitable level. Greenhouse gases trap the infrared radiation (heat), being radiated by the Earth and warm the lower atmosphere. Without greenhouse gases, the Earth's surface temperature would average approximately -18°C.

Australia's Climate Change Vulnerability Potential Negative Impacts of Climate Change¹

ECOSYSTEMS AND BIODIVERSITY

Modelling suggests an increase in annual national average temperatures of between 0.4° and 2.0°C by 2030 and of between 1.0° and 6.0°C by 2070 — with significantly larger changes in some regions by each date. Natural systems can be especially vulnerable to climate change because of limited adaptive capacity. There is potential for loss of alpine ecosystems, and increases in temperature and sea level may harm estuaries and coastal wetlands systems. There is also potential for increased weed and pest invasion.

WATER RESOURCES

Increased evaporation and possible decreases of rainfall in many areas would adversely affect water supply, agriculture and the survival and reproduction of key species. Water quality may also be affected due to increased soil erosion following drought, lower flows and higher water temperatures, leading to more eutrophication and algal blooms. Less secure water supplies would accentuate competition between users and threaten allocations for environmental flows and future economic growth.

AGRICULTURE AND FORESTRY

It is projected that reductions in average rainfall and run-off in Southern and much of Eastern Australia— as much as a further 20 per cent reduction in rainfall in Southwest Australia. Agricultural activities are particularly vulnerable to projected regional reductions in rainfall in the south-west and possibly other parts of southern Australia, and are especially threatened by general warming that will increase potential evaporation and water demand. The number of frosty days is expected to decrease and this may affect the setting of fruit in cultivars that require winter chilling. Climate change will be only one factor affecting Australian agriculture, but it may

exacerbate an already difficult situation, particularly in regard to the availability of water for irrigation.

FISHERIES

While there is not yet sufficient knowledge about impacts of climate changes on regional ocean currents to enable confident projections of changes in fisheries productivity, the increasing importance of marine aquaculture makes this industry of particular concern, as warming coastal waters may adversely affect production, especially of Atlantic salmon, which are near their high temperature limit in southern Tasmania.

HEALTH

There is high confidence that projected climate changes will enhance the spread of some disease vectors, thereby increasing the potential for disease outbreaks (e.g. Dengue fever and Ross River virus), despite existing bio-security and health services.

COASTAL AREAS

Projected increases in storm-surge heights and flooding of low-lying coastal areas during storm surge. The increased risk of exposure to extreme events has strong implications for the insurance industry, with increased premiums possible for clients, insurers and re-insurers, or reduced coverage. This in turn may adversely affect some property values. Natural coastal systems such as wetlands may be vulnerable.

INFRASTRUCTURE

An increased incident of extreme climate events, especially coastal flooding could impact on ports and coastal communities, and highways, rail lines, roads and bridges near the coast. Higher temperatures will also increase peak demand for electricity for air conditioning, requiring either adaptation to reduce demand or greater installed peak generating capacity.

¹Climate Change Risk and Vulnerability—promoting an efficient adaptation response in Australia, March 2005; Climate change - An Australian Guide to the Science and Potential Impacts, Australian Greenhouse Office, 2003.

Climate Change and Tasmania

Recent modelling indicates that climate change in Tasmania until 2040 may be relatively modest. Further work is required to identify longer-term trends.

The modelling, undertaken by the CSIRO in conjunction with Hydro Tasmania and the Tasmanian Partnership for Advanced Computing (TPAC), has provided a possible climate change scenario for Tasmania. The results were released in May 2006 and noted the International Panel on Climate Change's comment in the third assessment report (2001) that climate change in the southern hemisphere is moderated by the large proportion of ocean in the hemisphere. Land masses with a maritime climate such as Tasmania are likely to experience warming at slower rates than elsewhere.

Rainfall

The modelling projected that annual rainfall will increase by 7 to 11 per cent in the west and central areas, and decrease by around 8 per cent in the north-east. On a seasonal basis, increased winter and early spring rainfall is expected in all areas.

Temperature

The results found that annual maximum temperature trends were insignificant in all areas except the north-east where the projected warming by 2040 is 0.33 per cent. The trend in annual minimum temperatures is more definite, with generally warmer minimum temperatures in winter and late spring/ early summer, with a magnitude of about one per cent by 2040.

Evaporation

Annual potential evaporation is projected to increase in all areas except the west coast and associated highlands where small decreases are indicated.

Wind

Wind speeds are projected to increase by a small amount, with the strongest positive trends in winter/early spring and early summer. The greatest increases are indicated in the north-west in late autumn. The wind direction projection shows an increase in the westerly component in all areas.

Impacts

Climate change is projected to have a range of direct and indirect impacts on Tasmania, affecting settlements and infrastructure, regional water resources, biodiversity, and climate-dependent industry sectors such as agriculture, forestry and fisheries.

- » *Recent studies have highlighted the vulnerability of the Tasmanian coast to inundation and erosion due to sea-level rise and storm tides. This will have an increasingly significant impact on a broad range of infrastructure, development and natural systems.*
- » *Warmer temperatures, increased wind and changing rainfall patterns would impact on water availability.*
- » *Some agricultural activities eg. wine growing, could benefit from the projected change in climate. Other activities such as some stone fruit and bulb production may be negatively impacted by increasing minimum temperatures and fewer frosts.*
- » *Natural habitats, especially alpine environments and coastal systems, are likely to be impacted.*
- » *Warmer ocean currents off the east coast of Tasmania would change marine habitats, and potentially affect marine fisheries and aquaculture.*

- » *Increased wind speeds could affect the generation of electricity from wind farms. While a general increase may be good for renewable energy production, the operation of wind turbines can be adversely affected by strong winds.*

The climate change projections do not give a clear indication of how extreme events such as storms, heatwaves and cold snaps are likely to change. Further work is needed to understand these changes and their impacts.

Recent adaptation policy developments include the Australian Government's National Climate Change Adaptation Program and release of the report *Climate Change Risk and Vulnerability- promoting an efficient adaptation response in Australia* in March 2005.

The Council of Australian Governments (COAG), the peak intergovernmental forum in Australia comprising the Prime Minister, State and Territory leaders and the President of the Australian Local Government Association, met in February 2006 and adopted a new national Climate Change Plan of Action. The plan focuses on renewable and low emission technologies, adaptation, identification of gaps in technology development, and improved emissions reporting. Tasmania is represented on the high-level Climate Change Group which will oversee implementation of the plan.

The fourth assessment report of the Intergovernmental Panel on Climate Change is due for release in 2007 and will provide an updated assessment of current knowledge of climate change.

Our greenhouse gas emissions

In May 2006, the Australian Greenhouse Office released State and Territory emission inventories for 2004. The data showed that Tasmania continued to maintain a relatively-low level of greenhouse gas emissions when compared to other parts of Australia.

On a per capita basis, Tasmania's greenhouse gas emissions of 22 tonnes of carbon dioxide equivalent were well below the national per capita average of 28 tonnes.

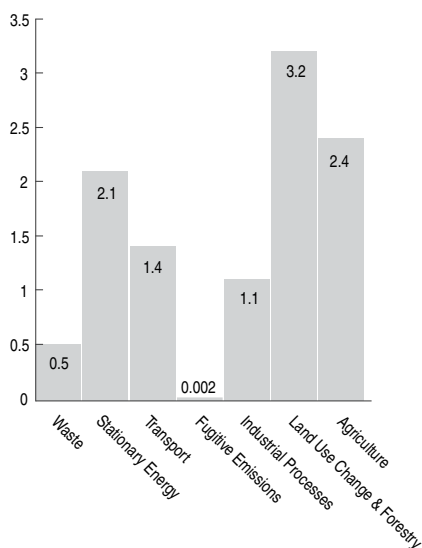
Tasmania's emissions in 2004 totalled 10.7 Mt, around 25 per cent below the 1990 base year. However, there was an increase in emissions in 2004 compared to the 2002 low when the State emitted 9.5 Mt.

The State's emissions profile reflects the large proportion of our energy requirements met from hydro-electric and wind power, which produce almost no greenhouse gases. Responsible stewardship of land and sustainable management of our forest resources, particularly reforestation and reduced deforestation, has provided a "sink" absorbing greenhouse gas emissions.

However, there are future challenges which the State must consider in responding to climate change, including:

- » The State has had a period of recent economic growth and an increase in population, and this trend is likely to continue.
- » Basslink, the energy cable to link the State with the national electricity market, will provide both challenges and opportunities. Basslink will enable the further diversification of the State's energy resources and provide opportunities for Tasmania through the export and trade of renewable energy.

Tasmanian Emissions 2004 (Mt CO₂e)



The Tasmanian response to Climate Change

The Tasmanian Government considers climate change is an issue of major significance and has already implemented policies and programs since the release of the 1999 Greenhouse Statement to address climate change.

Tasmania *Together* identified the importance of reducing greenhouse gas emissions and the mitigating of climate change impacts under Goal 24 – *Ensure our natural resources are managed in a sustainable way now and for future generations*. It also established a number of goals and standards aimed at: supporting our environment; maximising Tasmania's natural advantages; and ensuring sustainable, planned development (Goals 21 and 23).

Examples of actions taken by the State Government and Government Business Enterprises to respond to climate change include:

- » Developing a partnership approach to working with local government and other institutions and community groups to find new opportunities for economic, environmental and social development. Partnership agreements are integral to implementing the goals and specific benchmarks set by Tasmania *Together*. Where appropriate, Local Government Partnership Agreements include actions to reduce greenhouse gas emissions, and to plan for and adapt to the impacts of climate change. The Partnership Agreement with the University of Tasmania establishes an Environment Taskforce which has identified climate change as a key issue for joint activity.
- » In 2003, the Department of Primary Industries, Water and Environment initiated the Climate Change Project aimed at raising awareness of potential impacts and developing tools to assist with addressing climate change. Information has been released on sea level rise, coastal vulnerability, and greenhouse gas emissions.
- » *Powering Prosperity: Consolidating Tasmania's Energy Advantage* was released in 2004, providing a statement of the Tasmanian Government's position in relation to the State's stationary energy sector, and setting out a vision for the State's energy future. It recognised Tasmania's significant role in renewable energy production and development nationally, the importance of energy efficiency and conservation, and the need for sustainable management of Tasmania's natural resources in a changing climate.
- » Tasmania has invested in significant renewable energy sources. Wind farms have been developed and the Bell Bay Power Station has been converted from oil to gas, lowering greenhouse gas emissions. The roll out of natural gas will also help reduce greenhouse gas emissions from Tasmania as businesses and homes switch from coal and oil based energy.
- » Hydro Tasmania has been working with the CSIRO and the Tasmanian Partnership for Advanced Computing to develop climate change projections for Tasmania to 2040. These will be a valuable resource in determining the expected changes to Tasmania's climate and the actions required to adapt to those changes.

Researchers based in Tasmania are also contributing to the stock of knowledge about greenhouse and climate change. Institutions situated in Tasmania that are working on climate related issues include the Antarctic Climate and Ecosystems Cooperative Research Centre, the Tasmanian Aquaculture & Fisheries Institute; the Tasmanian Institute of Agricultural Research; the Australian Antarctic Division, the Australian Maritime College and the CSIRO Atmospheric and Marine Research. Tasmania is in a very privileged position to have such internationally renowned expertise situated here.

Local Government, business and the community are also focusing on climate change mitigation and adaptation, and some Tasmanian Councils have joined the national Cities for Climate Protection Program.

Future challenges for Tasmania from Climate Change

The concentration of greenhouse gases already in the atmosphere, and the projected further increases in these concentrations, means that some significant level of climate change is inevitable. It is therefore important for Tasmania to prepare for and adapt to the impact of climate change.

The Tasmanian community has a role to play in maintaining our low levels of greenhouse gas emission while allowing for sustainable economic growth. As the world economy adapts to the need to reduce greenhouse gases and adapt to climate change, the market will increasingly demand changes in government and corporate policy. This is likely to require an increased commitment to a reduction in greenhouse gas emissions related to export products, and appropriate adaptation policies to manage the risks associated with the changing emerging climatic environment. We need to take steps locally to manage greenhouse gas emissions and to work with other jurisdictions to avoid dangerous levels of climate change.

GOALS

The goals of this Draft Strategy are to -

- » provide a coordinated, consistent, timely and effective response in Tasmania to the complex issue of climate change and associated impacts.
- » maintain Tasmania's status as a low greenhouse gas emitter.
- » act now and into the future, through planning and adaptation, to respond to changing climatic conditions.
- » identify and take advantage of opportunities that may emerge from changing climatic conditions.
- » build community awareness and understanding of climate change issues, and the likely consequences for Tasmania, and actively involve the community in the response.

GUIDING PRINCIPLES

Government implementation will be guided by the following principles -

1. A holistic, long-term approach consistent with the goals identified in Tasmania *Together*.
2. A comprehensive and integrated response framework, incorporating risk assessment and management approaches where there is uncertainty.
3. A shared responsibility built upon cooperative partnerships across all levels of government, industry and the community.
4. Sufficient flexibility in planning mechanisms to adapt appropriately to the likely impacts of climate change balanced against the need to maintain business and community confidence and investment certainty.
5. A positive culture of innovation that recognises the potential opportunities of climate change especially in relation to low greenhouse gas emissions and technologies.
6. Assistance to the Tasmanian community and industry to make necessary adjustment through the provision of information, guidance and incentives wherever possible, and regulation only where necessary to address significant issues.

ACTION AREAS

The following action areas have been identified and are expanded in the Action Plan -

Government Leadership

- » The Tasmanian Government will lead the State response to climate change in partnership with other tiers of government, industry, research institutions and the community.

Acting Now

- » Planning and adaptation based on current knowledge will be undertaken now to minimise the potential adverse impacts of climate change and to take advantage of emerging opportunities.

Renewable Energy and Innovation

- » New renewable energy resources will be investigated for development, and opportunities in renewable and new energy technologies will be pursued to maintain and further reduce our low greenhouse gas emissions.

Improving our knowledge

- » Our knowledge and understanding of the impacts of climate change and the ways to address them will continue to be improved.

Informing and involving

- » Industry sectors and the Tasmanian community will be informed and actively involved to ensure they are able to respond to the challenges associated with a changing climate.

KEY INITIATIVES

The Action Plan has been developed to support implementation of the Draft Strategy.

In partnership with key stakeholders including industry organisations, research institutions and community groups, the Tasmanian Government will provide leadership in coordinating climate change activities in Tasmania and will -

1. Incorporate climate change issues including coastal vulnerability, the impacts of sea level rise and storm surge risk, in planning schemes, and develop practical planning tools to assist local government in taking predicted climate change impacts into consideration.
2. Model changing rainfall patterns and the impact on hydro-electric, irrigation and domestic water storage capacities to assist future planning and adaptation, and address dam safety and water management issues arising out of climate change.
3. Support efforts to improve and extend renewable energy technology and participate in investigations into an emissions trading scheme as a mechanism to reduce greenhouse gas emissions.
4. Identify climate change issues and adaptive actions in management plans and strategies for national parks and reserves, and include an assessment of the potential impact of sea level rise and storm surge in the environment assessment of proposed activities in coastal parts of national parks and reserves.
5. Ensure appropriate emergency management strategies are in place to enable the State's emergency services to respond effectively to the impacts of climate change on the frequency and scale of extreme weather events in Tasmania.
6. Promote energy efficient urban transport through improved service standards and the development of new technologies including the use of hydrogen.
7. Conduct new research projects in partnership with the University of Tasmania to investigate the most cost-effective approaches to retrofitting energy efficiency improvements in Tasmanian buildings and the environmental performance of "No Bill" and "Best 5-Star" rated houses.
8. Undertake a major new project to further identify coastal inundation and erosion risks from climate change and sea level rise by producing sea level rise probability charts for key time periods, developing risk categories for significant assets and identifying best practice risk management principles and practices to mitigate the risks.
9. In partnership with industry organisations and research institutions, conduct research into the climate change impacts on agricultural, forestry, tourism and other industry sectors, and the potential opportunities created by climate change in these sectors.
10. Hold regional information sessions on a regular basis to provide climate change information to local communities, and create a single web-based portal for climate change information.

THE ACTION PLAN



acting now...

INTRODUCTION

Since the release of the 1999 Greenhouse Statement, the Tasmanian community, private enterprise and the three tiers of Government have taken significant steps to reduce greenhouse gas emissions and have begun planning for the inevitable impacts of climate change.

It is clear, however, that more still needs to be done, especially in the area of adaptation to climate change.

Through this Draft Strategy, the Government will take the lead in coordinating the Tasmanian response to the complex issue of climate change.

The Draft Climate Change Strategy includes specific policies and programs within the five action areas:

1. Government Leadership

- » The Tasmanian Government will lead the response to climate change in partnership with other tiers of government, industry, research institutions and the community.

2. Adaptation and Strategic Planning

- » Planning and adaptation based on current knowledge will be undertaken now to minimise the potential adverse impacts of climate change and to take advantage of emerging opportunities.

3. Renewable Energy and Innovation

- » New renewable energy resources will be developed, and opportunities in renewable and new energy technologies will be pursued to maintain and further reduce our low greenhouse gas emissions.

4. Improving our knowledge

- » Our knowledge and understanding of the impacts of climate change and ways to address them will continue to be improved.

5. Informing and involving

- » Industry sectors and the Tasmanian community will be informed and actively involved to ensure they are able to respond to the challenges associated with a changing climate.

Some of the actions in this Draft Strategy have been under development for some time or are already being implemented. Others are new initiatives that will build on existing policies and actions to better enable the State to respond to the challenges and opportunities of a changing climate. Links to existing policies and programs are noted where appropriate.

GOVERNMENT LEADERSHIP

The Tasmanian Government recognises the potentially serious implications of climate change for Tasmania and will continue to adopt a leadership role in the State's response, and contribute to the coordination of climate change adaptation and mitigation strategies at the national and local level.

Global climate change is already being addressed by international agreements and at a national level. It is important to coordinate activities in Tasmania, and to interact with other jurisdictions, to share knowledge and avoid duplication and gaps.

Current Actions

- » Tasmania participates in national forums on climate change, including COAG and ministerial councils, and is actively contributing to national working groups on climate change adaptation and technology. Tasmania is also participating in national assessments of research and information needs.
- » The Tasmanian Government advocates ratification of the Kyoto Protocol.
- » The Tasmanian Government fosters partnerships between departments and agencies, and local governments and their communities, business, researchers and other stakeholders

New Initiatives

- » Enhance partnerships with key community stakeholders and peak industry and business groups to undertake research relating to climate change and develop focused adaptation strategies.
- » Work closely with key stakeholders in Tasmania and coordinate the implementation of this Strategy and Tasmania's input into national and international programs.
- » Incorporate climate change issues including transport, native vegetation management and waste energy into partnerships with local government, research institutions and community based organisations.

Objective 1

Coordinate Tasmania's input into climate change adaptation and mitigation strategies at national and local levels

ADAPTATION AND STRATEGIC PLANNING

Some climate change is now inevitable, regardless of current and future action to reduce greenhouse gas emissions. Adaptation is vital and must start now.

While consideration must still be given to reducing greenhouse gas emissions to limit the extent and severity of climate change, it is also important to develop adaptation strategies that lessen the adverse impacts of climate change on the environment, society and the economy. Adaptation strategies can also be developed to exploit opportunities that may arise in a changing climate.

There continues to be an opportunity to integrate consideration of climate change impacts into Tasmania's strategic planning and policy decision-making.

It is particularly important to increase community awareness and understanding of potential climate change impacts and the need to adapt and take a lead in informing our community about climate change impacts and possible adaptation strategies based on risk management principles.

Actions will take place across the broad areas of:

- » Adaptation
- » Land Use, Infrastructure and Transport Planning
- » Population and Community Health and Safety

ADAPTATION

Adaptation to climate change, as a means of maximising gains and minimising losses, is becoming increasingly recognised as important for Australia. Adaptation often must be considered alongside mitigation measures, especially in relation to long-term planning of infrastructure.

Uncertainty about the nature and magnitude of the impacts of climate change underlines the need for research to remain an underlying component of action with respect to climate change impacts and adaptation. However, action on adaptation cannot be deferred until all questions are answered. Adaptation action can be progressed now, averting serious future damage and/or avoiding the need for more costly remedial action in the future.

ADAPTATION

Adjustment in natural or human systems in response to actual or expected climatic changes or their effects, which moderates harm or exploits beneficial opportunities.

(Climate Change: An Australian Guide to the Science and Potential Impacts, Australian Greenhouse Office, 2003)

Objective 2

Coordinate climate change adaptation strategies in Tasmania

The State Government will take a leadership role in the coordination of local adaptation strategies and participate in national policy development and programs.

Current Actions

- » Tasmania is participating in the development of a national climate change adaptation framework to assist effective risk management by business and community decision-makers, in accordance with the outcomes of the February 2006 COAG meeting.
- » Tasmania is involved in the National Climate Change Adaptation Program and the response to the report Climate Change Risk and Vulnerability- promoting an efficient adaptation response in Australia, March 2005.

New Initiatives

- » Support the implementation in Tasmania of relevant actions from the National Biodiversity and Climate Change Action Plan. This includes the identification of priority areas for research and monitoring, improving understanding of climate change impacts to enable the development of specific strategies, reviewing current biodiversity conservation policies and strategies, and improving communication and community awareness.

- » Ensure appropriate emergency management strategies are in place to enable the State's emergency services to respond effectively to the impacts of climate change on the frequency and scale of extreme weather events in Tasmania including storms and high bushfire threat days.

LAND USE, INFRASTRUCTURE AND TRANSPORT PLANNING

A challenge facing our community is to ensure the ongoing sustainability of our urban environments. Recent population growth and changes in demographics are driving expansion of many of our urban centres. Given the long life span of the built environment and urban infrastructure, it is important that the implications of climate change are considered early in the planning stage.

Sustainable urban development has the capacity to ensure communities are better able to adapt to a changing climate and can assist in reducing greenhouse gas emissions. Opportunities include improving the efficiency of the built environment, better waste management, and regional transport planning that recognises the small and dispersed nature of our population.

It is also important to understand the consequences of climate change on towns and cities and develop adaptation strategies through planning and urban design.

Current Actions

- » The State's planning system is being reviewed and improved through the Better Planning Outcomes Project, and the review of the State Coastal Policy is being progressed.
- » The State Government is working with local government and facilitating seminars and forums, particularly for councils, to encourage discussion about the integration of land use and transport planning within planning schemes.
- » Tasmanian councils are being encouraged to participate in the Cities for Climate Protection Program.

New Initiatives

- » Promote more energy efficient and sustainable urban transport through improved service standards and the development of new technologies including the use of hydrogen, fuel cells, compressed natural gas and biofuels.
- » Incorporate climate change issues including coastal vulnerability, the impacts of sea level rise and storm surge risk in planning schemes, and develop practical planning tools to assist local government in taking predicted climate change impacts into consideration (particularly sea level rise and increased flood severity).
- » Identify climate change issues and adaptive actions in management plans and strategies for national parks and reserves, and include an assessment of the potential impact of sea level rise and storm surge in the environment assessment of proposed activities in coastal parts of national parks and reserves.
- » Model changing rainfall patterns and the impact on hydro-electric, irrigation and domestic water storage capacities to assist future planning and adaptation.
- » Integrate rail freight issues into transport policy development and planning activities to improve the commercial viability and network performance of the rail system.
- » Integrate principles for improved land use and transport planning into projects and activities at a State, regional, council and local area level.

Objective 3

Promote sustainable urban development, which takes into account carbon/oil constraints and climate change implications

Objective 4

Plan for the impacts of climate change on Tasmanian industry sectors

Changes in climate are expected to vary in extent across the State, potentially affecting each region differently. Agricultural productivity, profitability and sustainability are exposed to changes in temperature, rainfall, evaporation and extreme weather events.

The impacts of climate change on agricultural producers include:

- » the amount of water available for irrigation is likely to decrease and the economic cost per megalitre to increase;
- » some crops may no longer be suitable for cultivation;
- » new crops may become suitable for cultivation; and
- » market opportunities may be created due to crop unsuitability in other regions.

There is insufficient detailed knowledge about the impacts of climate change on Tasmanian currents to allow confident predictions of changes in fisheries productivity. It is expected that the average temperatures of coastal waters will increase around the State, which could have significant impacts, including:

- » warming coastal waters may adversely affect the farming of Atlantic salmon which are already near their high temperature limit in southern Tasmania; and
- » fish species may migrate to areas where the water climate remains suitable. This may have both positive and negative effects.

Tourism may be impacted because of changes in regional rainfall patterns, particularly drier summers on the East Coast, which could affect water supplies.

Current Actions

- » Reports on rural land use trends in Tasmania are being produced.
- » The Tasmanian forest practices system ensures that forest practices on all tenures provides appropriate protection for the natural and cultural values in forest areas.
- » Under the National Water Initiative, water planning and accounting are taking potential climate change impacts into account. Risk management principles are being adopted in the adaptation to reduced water availability.

New Initiatives

- » Map land suitability for key agriculture commodities and identify emerging risks and opportunities under climate change scenarios in partnership with agricultural stakeholders, and communicate the information to farmers and agribusiness.
- » Develop partnerships with research bodies, eg CSIRO, to undertake research into climate change impacts and develop adaptation assessment modelling for the State.
- » Identify changes in the intensity and frequency of outbreaks of existing pests and disease, and the increased risk of introduction of new pests and diseases, and develop appropriate responses.
- » Publish information on how climate change will affect regions of the State using the latest research, including climate projections developed by the CSIRO and Hydro Tasmania.
- » Build knowledge and capacity relating to changes in water availability, and support appropriate water development in response to changing water availability.
- » Ensure dam safety programs take into account developing knowledge of the risk of extreme rainfall events arising out of climate change.

POPULATION AND COMMUNITY HEALTH AND SAFETY

Climate change has implications beyond the natural environment because changes in weather patterns, especially rising temperatures, will potentially lead to human impacts. These include impacts on vulnerable sections of the community, especially the very old, the very young and those with chronic lung problems such as asthma. Warmer temperatures may also contribute to the spread of diseases (eg Ross River virus), and affect food safety.

Limited research into the specific implications in Tasmania of climate change on human health has been undertaken.

Current Actions

- » The Tasmanian Government is monitoring emerging disease risks, including those associated with changing climatic conditions.
- » The Government is continuing to improve quarantine protection at entry points to the State. Increased funding is being allocated to appoint more quarantine officers.

New Initiatives

- » Identify any additional implications of climate change for human health, and identify priority areas for further work on adaptive responses.
- » Continue to review food safety and water quality standards and management systems to ensure appropriate standards are maintained as climatic conditions change.
- » Develop a risk management framework for the increased incidence of natural disasters including bushfires, floods and storm surges.

Objective 5

Plan for the impacts of climate change on human health and safety

RENEWABLE ENERGY AND INNOVATION

Tasmania has a unique emission profile as a large proportion of its energy is from renewable sources. At the same time, it has an important part to play in managing its greenhouse gas emissions. Tasmania also has an extensive carbon sink capacity.

Objective 6

Pursue economic opportunities from Tasmania's renewable energy system and continue to develop new renewable energy resources

Tasmania generates over 90% of its electricity from hydro-electricity and wind and produces around 60% of Australia's electricity generated from renewable resources. Tasmania has world class wind resources, and benefits from the combination of wind and water energy.

The State Government has supported the development of renewable energy within Tasmania and mainland Australia. Renewable energy is seen as an important aspect of future energy availability, security and sustainability in Australia. Tasmania supported the Mandatory Renewable Energy Targets Scheme and has supported the extension of this scheme because of its great success in starting to establish renewable energies on a greater and more cost effective scale.

Increased use of renewable energies will have a vital role in reducing the volume of greenhouse gases released into the atmosphere. At present Australia does not have a clear, effective and nationally agreed framework for controlling its annual greenhouse gas emissions and the Australian Government has failed to show leadership in achieving this.

Tasmania supports moves by the Australian Government and other jurisdictions to support the development and implementation of cleaner energy technologies. However, it believes that market measures are essential to the uptake of any such developments.

Now that Basslink is in operation, Tasmania is able to supply renewable based electricity to mainland Australia, as this is especially valuable in helping to meet mainland peak energy demands. Conversely, and especially if rainfall in Tasmania's catchment areas is low, Tasmania will import electricity in off-peak periods to allow its water reserves to recover.

The connection via Basslink means that there is now a greater environmental benefit from energy efficiency measures in Tasmania. Electricity saved means more electricity can be exported northwards, where it displaces electricity generated predominantly from fossil fuels, or less electricity has to be imported from such sources.

Hydro Tasmania is a leading renewable energy company and has expanded its operations to mainland Australia and overseas.

Current Actions

- » The Tasmanian Government promotes the development of Tasmania's renewable energy resources consistent with policy at the national and international levels.
- » The Government is completing the introduction of natural gas to Tasmania to make a diversity of energy sources available to an increasing number of potential consumers. By April 2007, more than 38,500 Tasmanian industrial, commercial and domestic premises will be able to connect to natural gas.
- » Hydro Tasmania has invested over \$100 million in upgrading and refurbishing its existing hydro power stations, leading to an increase in generating capacity. Roaring 40s Pty Ltd, jointly-owned by Hydro Tasmania and China Light and Power, is also increasing Tasmania's renewable energy generation by a further 140 MW through the Woolnorth Wind Farm.

- » Hydro Tasmania, the University of Tasmania, the Australian Antarctic Division and the Bureau of Meteorology are investigating the potential for generating hydrogen from renewable energy in Tasmania. The Tasmanian Hydrogen Stakeholders Network has been established to provide a forum for Tasmanian organisations involved in the development of hydrogen as an energy carrier for Tasmania and surrounding regions.

New Initiatives

- » Participate in investigations into a national emissions trading scheme as a mechanism to reduce greenhouse gas emissions. Identify and manage the threats and opportunities for Tasmania from an emissions trading scheme.
- » Work with other States to explore the possibility of developing a workable, effective and economically efficient approach to putting a price and caps on greenhouse gas emissions as an example to other developed countries.
- » Support efforts to improve and extend renewable energy technology.
- » Investigate opportunities for increased use of renewable energy on the Bass Strait islands.
- » Investigate the benefits of local and State government membership in recognised programs such as Greenhouse Challenge Plus to assist with energy efficiency and greenhouse gas abatement activities and enhance Tasmania's clean, green image on a national scale.

Energy efficiency programs and initiatives in Tasmania have the potential to create significant economic benefits to end-use energy users across each of the manufacturing, commercial and domestic sectors.

Electricity consumption in Tasmania is growing by almost 3% per annum, increasingly testing the limits of generation and transmission capacity. While Basslink and Tasmania's entry into the National Electricity Market (NEM) will help manage the growth in demand, energy efficiency is a low cost and effective means of significantly reducing demand.

Current Actions

- » Information is provided to industry and the community on Tasmania's greenhouse gas emissions through the Tasmanian Greenhouse Gas Emission Estimates Inventory 2002 and other publications. Tasmania is working with the Australian Greenhouse Office to report on industry emissions through the National Greenhouse Gas Inventory.
- » The Office of Energy Planning and Conservation (OEPC) in the Department of Infrastructure, Energy and Resources provides policy advice to Government on energy issues and the regulation framework for Tasmania's energy industry. The OEPC works with industry and other government agencies to assess the major implications of greenhouse issues and administer programs to reduce greenhouse emissions.
- » The Australian Government's Residential Remote Area Power Supply program and the Remote Renewable Power Generation Program are administered in Tasmania by DIER and target emissions from diesel generation.
- » Tasmania participates in the Ministerial Council on Energy which has endorsed the development of a National Framework for Energy Efficiency. The framework will identify and address barriers and challenges to the uptake of energy efficient solutions in Australia and provide a policy framework to facilitate energy efficiency in industrial, commercial and domestic energy sectors. It will build on the existing energy efficiency

Objective 7

Maintain Tasmania's status as a low greenhouse gas emitter by continuing to encourage the efficient use of energy by government, industry and the community

programs currently operating in Australia, such as government energy management programs, minimum energy performance standards for electrical equipment and appliances and the one watt Standby Program.

- » Hydro Tasmania is a member of the Commonwealth Government's Greenhouse Challenge Program and a signatory to the Greenhouse Challenge Plus.

New Initiatives

- » Conduct a three-year PhD project investigating the most cost-effective approaches to retrofitting energy efficiency improvements in Tasmanian buildings.
- » Conduct a new research project through the University of Tasmania's School of Architecture to investigate the environmental performance of "No Bill" and "Best 5-Star" rated houses.
- » Support building standards that improve energy efficiency for domestic dwellings and commercial buildings and incorporate broader greenhouse initiatives including the greater use of wood in buildings and other applications.
- » Investigate the potential greenhouse implications and social/economic/ecological costs and benefits associated with changing vehicle registration charges from energy capacity to distance-based pricing.
- » Model and improve understanding of where Tasmania's greenhouse gas emissions from energy use occur.
- » Work with councils and industry to investigate further waste energy opportunities from landfill gas, sewage treatment methane production, and biofuel from agricultural and forestry by-products.

Objective 8

Maintain Tasmania's status as a low greenhouse gas emitter, through the promotion of carbon sinks and sustainable land management

Forests have the potential to act as carbon 'sinks' absorbing the common greenhouse gas carbon dioxide from the atmosphere and storing the carbon. Carbon sinks may be created through commercial forest plantings or environmental plantings. Forestry sinks are valuable in offsetting greenhouse emissions from other sources. They also can provide simultaneous benefits for natural resource management as well as regional economic development opportunities.

Land clearing and farming practices can have greenhouse gas impacts. Some farming practices can cause a build-up of carbon in soil; other practices can release carbon from the soil back to the atmosphere.

Current Actions

- » Tasmania is participating in the national Climate Change in Agriculture and Natural Resources Management Working Group established under the Natural Resource Management Ministerial Council to progress action across government on priority climate change and natural resource management issues.
- » Voluntary and regulatory systems are in place to protect threatened species and threatened forest communities. The Tasmanian Government has made a commitment under the Tasmanian Community Forest Agreement to protect threatened non-forest vegetation from clearance and conversion.
- » Forest plantation and revegetation programs and Tasmania's conservation reserve system are enhancing Tasmania's carbon sink capacity.

- » The Tasmanian Community Forest Agreement provided for a new Permanent Forest Estate Policy to phase out clearing and conversion of native forest, and funding is being provided to support additional plantation establishment and productivity improvements in existing plantations and native forests.
- » Around 40 per cent of Tasmania is maintained in conservation reserves which are managed to maintain intact native vegetation, including extensive areas of forests, as natural carbon stores.
- » The Environment Challenge and the up2me program, part of the Government's Living Environment Program, are encouraging individual efforts to reduce energy use and to improve water and waste management.

New Initiatives

- » Expand guidelines for good agricultural practice to minimise greenhouse gas emissions by maintaining organic soil matter, minimising soil nitrogen losses and other actions.
- » Encourage farmers to participate in the Landcare Greenhouse Challenge Plus Program.
- » Promote sustainable plantation development for carbon sequestration.

IMPROVING OUR KNOWLEDGE

Climate change involves a complex series of integrated issues, and scientific knowledge about both causes and effects is continually evolving.

The Tasmanian Government is an active participant in national research activities relating to climate science, climate variability, regional climate modelling and the development of analytical tools for assessing impacts and adaptation strategies. This work is carried out through a range of national processes involving the Australian Government, other States and Territories, the CSIRO, the Bureau of Meteorology and other specialised research institutions.

Objective 9

Support research into the impacts of climate change in Tasmania and the development of innovative responses to climate change

Current Activities

- » The vulnerability of Tasmanian coastal areas to sea level rise and storm surges is being studied through the Tasmanian Government's Climate Change Project. The Sharples Reports released in 2004 and 2006 identified vulnerable coastal areas.
- » Research is continuing at key baseline sites including Macquarie Island and the Warra Long-Term Ecological Research site to monitor the impacts of climate change on Tasmanian flora and fauna.

New Initiatives

- » Undertake a new project supported by the Tasmanian Risk Mitigation Program to further identify coastal inundation and erosion risks from climate change and sea level rise by producing sea level rise probability charts for key time periods, developing risk categories for significant assets and identifying best practice risk management principles and practices to mitigate the risks.
- » In partnership with industry organisations and research institutions, conduct research into the climate change impacts on agricultural, forestry, tourism and other industry sectors, the potential opportunities created by climate change in these sectors, and adaptation strategies.
- » Research the impacts of reduced rainfall on Hydro Tasmania's water storages and operations to identify potential impacts and appropriate responses.
- » Incorporate climate change research priorities in the strategic directions of partner institutions such as TIAR, TAFI, the University of Tasmania, the CSIRO and the ACE CRC.
- » Investigate climate change impacts on natural values within the Tasmanian Wilderness World Heritage Area.
- » Support research to identify and fill knowledge gaps, improve modelling capacity and implement appropriate management strategies to address the climate change impacts on terrestrial, freshwater and marine ecosystems.
- » Monitor and respond to the outcomes of research into climate change impacts in other parts of Australia and overseas.

INFORMING AND INVOLVING

The Government has a strong commitment to working with our community in achieving outcomes. A shared community response is needed to deal with the challenges of a changing climate.

Community engagement is needed to ensure community ownership of the process of determining adaptive solutions that 'make sense on the ground'. Challenges can often be overcome when communities work with researchers to find solutions appropriate to local conditions.

The Government will play a lead role in informing Tasmanians about climate change, and in educating the community on the issues and options arising from climate change.

Current Actions

- » Information on climate change in Tasmania is provided to the community through the Department of Primary Industries and Water's website and printed publications.
- » Under Tasmania *Together* (Goal 24), the Tasmanian Government is establishing appropriate climate change benchmarks relating to greenhouse gas emissions and carbon sinks.
- » The Government is promoting efficiency programs in all areas of the Tasmanian community, especially those dealing with energy, waste and water
- » The Government is promoting education of young Tasmanians in sustainable and safe energy use through Aurora Energy, Transend Networks and Hydro Tasmania's Hands On Energy Discovery Centre.
- » The Government is implementing the Living Environment Program, a package of measures that, for the first time, creates a focus on the urban environment where the vast majority of Tasmanians live. Projects relate to hazardous waste at home and work, stormwater pollution, water-sensitive urban design, Tamar and Derwent estuary partnerships, noise pollution, contaminated sites, water efficiency, litter reduction, sustainable and eco-efficient industries and grants for environmental support groups.

New Initiatives

- » Hold regional information sessions on a regular basis to provide climate change information to local communities.
- » Pursue further opportunities within the formal education sector and in the wider community to build understanding of greenhouse issues, and promote active engagement in greenhouse gas abatement. Ensure there is specific reference to climate change in curriculum information made available to schools.
- » Create a single web-based portal for climate change information to assist industry sectors and regional and local groups, including natural resource management groups, to incorporate climate change issues into relevant programs.
- » Encourage individuals and organisations through the Environment Challenge to take the initiative themselves and reduce their impact on the environment.

Objective 10

Working with, and involving, the community in responding to climate change

REVIEW

The development of a comprehensive and effective response to climate change is an ongoing process. This Strategy is based on an adaptive management approach and is built on the principle of continual improvement.

A strategic approach to climate change requires ongoing review and evaluation. As knowledge of climatic changes, the impacts of climate change and the most effective response strategies improves, the Climate Change Strategy for Tasmania will be adapted and refined.

A comprehensive review of the Strategy will be undertaken every three years to ensure it reflects the most up-to-date knowledge and understanding of climate change, its impacts and the most effective responses.

The Action Plan contained within the Strategy will be reviewed on an annual basis.

FURTHER INFORMATION AND COMMENTS

Further information about climate change in Tasmania, including links to a broad range of resources, is available on the Internet at www.dpiw.tas.gov.au/climatechange. Comprehensive information on climate change in Australia and internationally is available on the Australian Greenhouse Office website: www.greenhouse.gov.au.

Comments on the draft Strategy should be forwarded to -

The Executive Officer

Climate Change Interdepartmental Committee

Strategic Policy Division

Department of Primary Industries and Water

GPO Box 44 HOBART 7001

or emailed to: ClimateChangeStrategyComments@dpiw.tas.gov.au

by close of business on 31 January 2007.