



Submission by Australia to the UNFCCC

June 2007

Adaptation planning and practices

At its twenty-fifth session, the SBSTA invited Parties and relevant organisations to provide structured submissions on adaptation approaches, strategies, practices and technologies for adaptation at the regional, national and local levels in different sectors, as well as on experiences, needs and concerns (FCCC/SBSTA/2006/11, paragraph 56). Australia is pleased to provide the following submission on this matter.

Australia notes that the structured submission format, while useful for indicating the specific information sought, proved in some ways restrictive. We therefore suggest that the provision of case studies also be considered as useful input for future 'structured' submissions.

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|--|---|--|--|--|---|---|
| Scope of adaptation action <i>Regional level</i> | | | | | | |
| Approaches/ strategies | Supporting the assessment of climate change risks and impacts in the South Pacific region to better inform adaptation decision-making processes and assist in setting regional climate change priorities through the <i>Pacific Islands Framework for Action on Climate Change</i> (PIFRAC). | Ongoing – see projects listed below. | | Lack of awareness of specific impacts of climate change and how best to use available information. | The PIFRAC provides a regional response to climate change – the challenge is now providing tailored responses within it to account for differing national circumstances. | |
| Practices/ projects | <i>Sea Level and Climate Monitoring Project</i> . This project will facilitate the collection of robust information on sea level and land movement changes in Pacific countries. Participants are the Cook Islands, the Federated States of Micronesia (FSM), Fiji, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Samoa. | 1991-2010 AU \$32 million | Long-term data collection and analysis. | Lack of awareness of specific impacts of climate change. Reliable internet access can be problematic. | Project data needs to be explained in the broader context of global datasets and findings. Communication mechanisms should not be overly reliant on internet access. | The Island Climate magazine (page 6) http://www.bom.gov.au/pacificsealevel/pdf/ICU_August_2006.pdf http://www.bom.gov.au/pacificsealevel/presentations/briefing_paper_spslcmp_nov_2006.pdf |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|---|--|--|---|---|---|
| Practices/ projects | <i>Pacific Island Climate Prediction Project.</i> This project seeks to improve the climate modelling, data management and climate-related prediction and decision-making capacity of the meteorological services and key sectors of developing countries in the Pacific. Participants include Samoa, Tuvalu, Niue, Fiji, Kiribati, Solomon Islands, Cook Islands, Tonga, Papua New Guinea and Vanuatu. | Phase I: 2003-2006 AU \$2.3 million Phase II: 2007-2009 AU \$3 million | Capacity building of National Meteorological Services (NMS). | The existing capacity of countries' NMS lower than expected. Loss of staff that underwent training in Phase I to other duties or organisations (or through migration). | Targeted and user-friendly software was taken up readily by the NMS. Climate predictions service now being provided by some NMS has been highly valued by client groups. Building the confidence of NMS has enabled them to participate more actively in regional and international forums. In-country training for the clients to continue in Phase II, but NMS staff will be further trained through regional workshops. | http://www.bom.gov.au/climate/pi-cpp/ |
| Practices/ projects | <i>Pacific Data Rescue Project.</i> This project secured paper based climate records at risk of | 2005-07 AU \$84,000 Complete | | Paper records are vulnerable. Digitisation of data is necessary to | Staffing resources in Pacific Island Countries are often limited. This limits | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|---|--|--|---|---|---|
| | loss in five Pacific region countries, protecting this resource for use in climate modelling. | | | ensure the preservation of records and in order to make data comparable and accessible. | the capacity of countries to take the action recommended for the preservation of records. Eventual digitisation of records is recommended. | |
| Practices/ projects | <i>Climate Change and Southern Hemisphere Tropical Cyclones Project.</i> This project will develop a tropical cyclone database for Australia and the South Pacific, along with the expertise to ensure the data is used widely in the region. | 2006-07 AU \$100,000 | | | Project has identified the difficulty in obtaining consistent climate records across national borders. It has also identified a range of missing historical data. | Linked to the Pacific Island Climate Prediction Project (see above) http://www.bom.gov.au/climate/pi-cpp/ http://www.bom.gov.au/cgi-bin/silo/cyclones.cgi |
| Practices/ projects | <i>Climate Change and Southern Hemisphere Tropical Cyclone Extension Project.</i> This project will utilise the data from the project above to analyse tropical cyclone variability and trends in relation to climate change, and conduct further analysis of the climatology | 2007-08 AU \$100,000 Commencing July 2007 | | | New project. | Linked to the Pacific Island Climate Prediction Project (see above) http://www.bom.gov.au/climate/pi-cpp/ http://www.bom.gov.au/cgi-bin/silo/cyclones.cgi |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|--|--|---|---|---|--|
| | of tropical cyclone variability to expand the database and develop a tropical cyclone forecasting scheme. | | | | | |
| Practices/ projects | <i>Building Robust and Reliable Data Monitoring Infrastructure for Climate Change Monitoring Project.</i> This project will use data management techniques to ensure that climate data in Pacific Island Countries is secure, accessible, and can be used to develop more informed responses to the impacts of climate change. | 2006-07 AU \$125,000 Ending 3 rd quarter 2007 | Additional key entry forms which mimic local paper observation registers. | Linking new forms to existing software. | Sufficient training in the use of relevant software is necessary for in-country staff. Ongoing support is needed to ensure systems continue. | Web site being developed. |
| Approaches/ strategies | Assisting Pacific Island Countries in managing and responding to the risks and impacts identified through practical adaptation projects. | Ongoing – see projects listed below. | Genuine and early community consultation is vital to ensure local engagement and ownership. | Comparable, long-term and high quality regional data will take time to develop. | Need to take into account local circumstances, capacity and competing priorities in order not to set unrealistic expectations, including overly ambitious timeframes. | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|--|---|-----------------------------|--|
| Practices/ projects | <i>Pacific Vulnerability and Adaptation Initiative.</i> This is a seven-year regional initiative to support practical adaptation initiatives, primarily to improve water security and coastal zone management. Participants are Tuvalu, Tonga, Vanuatu, Samoa, Fiji, Solomon Islands. | 2002-09 AU \$4 million | | Lack of awareness of the specific impacts of climate change and suitable adaptation measures. | | |
| Practices/ projects | <i>Kiribati Adaptation Programme.</i> Australia's contribution to the second phase of this World Bank project aims to help Kiribati to reduce its vulnerability to the potential impacts of climate variability and climate change. Australia's contribution will support improvements in freshwater management and sanitation. | 2006-08 AU \$2.9 million | This second phase requires both time to implement, and some level of existing capacity of the project proponents given its technical nature. | | | |
| Approaches/ strategies | <i>Climate Change Partnerships.</i> This initiative will support climate change adaptation and mitigation initiatives | 2007-08 AU \$32.5 million (approx half for adaptation measures) | | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|--|--|--|--|-------------------|-----------------------------|--|
| | <p>with the UNFCCC, World Bank, the Asian Development Bank and the Mekong River Commission through:</p> <ul style="list-style-type: none"> - funding of AU \$7.5 million to the UNFCCC's Least Developed Countries Fund (LDCF) to limit the impact of climate change on some of the poorest and most vulnerable countries (including our Pacific island neighbours) - support to the Asian Development Bank to support the Water Financing Programme, which will help to introduce integrated water resource management in 25 river basins across the Asia-Pacific region. | | | | | |
| Scope of adaptation action <i>National level</i> | | | | | | |
| Approaches/ strategies | <i>National Climate Change Adaptation Framework.</i> This framework outlines | Agreed by the Council of Australian | | | New initiative. | www.coag.gov.au/meetings/130407/docs/national_climate_cha |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|--|--|--|-------------------|-----------------------------|--|
| | <p>the future agenda of collaboration between Australian governments (federal, state and local), over the next five to seven years, to address key demands from business and the community for targeted information on climate change impacts, and to fill critical knowledge gaps which currently inhibit effective adaptation.</p> <p>The framework includes possible actions to assist the most vulnerable sectors and regions, such as agriculture, biodiversity, fisheries, forestry, settlements and infrastructure, coastal, water resources, tourism and health to adapt to the impacts of climate change.</p> | Governments (COAG) on 13 April 2007. | | | | nge adaption framework.pdf |
| Practices/ projects | Under the National Climate Change Adaptation Framework, the Australian Government has allocated AU \$126 million | Under development. | | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|--|-------------------|-----------------------------|--|
| | <p>for a <i>National Centre for Climate Change Adaptation</i> and AU \$44 million for an '<i>Adaptation Flagship</i>' – a research programme through Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO). The new Adaptation Flagship will provide more accurate information on localised climate changes. The new Australian Centre for Climate Change Adaptation will assist particularly affected sectors and regions, planning bodies, farmers, businesses and local government to understand better the impacts of climate change and to develop responses¹.</p> | | | | | |
| Approaches/ strategies | <p>The new initiatives directly above build on the <i>National Climate Change Adaptation Programme</i>. This programme was established to commence</p> | <p>2004-2007 AU \$14.2 million.</p> | | | | <p>http://www.greenhouse.gov.au/impacts/ncap/index.html</p> |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|---|---|--|-------------------|--|---|
| | preparing Australian governments and vulnerable industries and communities for the unavoidable impacts of climate change ¹¹ . | | | | | |
| Practices/ projects | <p>National risk and vulnerability assessment. This project identified sectors of highest priority for adaptation in Australia, namely biodiversity, water resources, human settlements and agriculture. Sector specific projects in these areas are discussed under sectoral approaches below.</p> <p>Additionally, some regions were pinpointed as high priorities for adaptation planning. These were the Murray-Darling Basin, the Cairns-Great Barrier Reef region, south-west Western Australia and the coastal zone. Further assessments in the Cairns-Great Barrier Reef region and south-west Western Australia have</p> | Completed in 2005. Results reported in <i>Climate Change Risk and Vulnerability - Promoting an Efficient Adaptation Response in Australia</i> . | | | For climate risks to be considered as a normal part of strategic planning and decision-making, a period of awareness raising, development of the necessary science and practical response techniques, and identification of priorities is essential. | http://www.greenhouse.gov.au/impacts/publications/risk-vulnerability.html |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|--|---|--|-------------------|---|---|
| | been subsequently undertaken (see below). Sector specific action in relation to the Great Barrier Reef, the Murray Darling Basin and the coastal zone are discussed under 'sectoral level' approaches below. | | | | | |
| Practices/ projects | Integrated assessment of climate change impacts in south-west Western Australia. | First phase of the assessment, examining responses and resilience to historical changes in climate, has been completed. | | | Some human systems appear to have significant autonomous adaptive capacity, although climate change may bring us close to the limits of this capacity. There can be a considerable lag between an abrupt climate shift and realisation that such a shift has occurred and responses are necessary. | Publication of report pending. |
| Practices/ projects | <i>Climate Change in the Cairns and Great Barrier Reef Region - Scope and</i> | 2004. The report of the study describes the | | | | http://www.greenhouse.gov.au/impacts/publications/pubs/gbr.p |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|--|---|--|-------------------|--|---|
| | <i>Focus for an Integrated Assessment.</i> This study was undertaken to determine the scope and focus for an integrated assessment of climate change impacts on, and adaptation options for, the Cairns Great Barrier Reef region. | study objectives and the process used to meet these objectives, and provides an overview of the Cairns Great Barrier Reef region, the views of technical experts on potential climate change impacts, stakeholder prioritisation of impacts and adaptation options, a list of perceived knowledge gaps, and a recommended structure for a future integrated assessment in the region. | | | | df |
| Approaches/ strategies | Providing guidance for the use of risk management in climate change adaptation. | Guidance developed and being applied by a number of organisations (see below). | | | | |
| Practices/ projects | <i>Climate Change Impacts and Risk Management: A Guide for Business and</i> | 2006. Workshops were also held around | | | Users of the guide will need to allocate adequate time and | http://www.greenhouse.gov.au/impacts/publications/risk- |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|--|-------------------|--|---|
| | <i>Government</i> (2006). This guide was produced to assist governments and business to adapt to climate change by showing how routine application of the Australian and New Zealand Standard for Risk Management AS/NZS 4360:2004 can be extended to include the risks generated by climate change. | Australia in May-June 2006, based around the risk management guidance publication and aimed at helping business and government plan for the impacts of climate change. | | | resources for proper risk management. | management.html |
| Practices/ projects | <i>Climate Change Scenarios for Initial Assessment of Risk in Accordance with Risk Management Guidance</i> (2006). This document accompanies the above <i>Guide for Business and Government</i> , providing simplified climate change scenarios for the year 2030 for use in the risk assessment process. | | | | Importance of well developed climate change scenarios for risk identification. | http://www.greenhouse.gov.au/impacts/publications/risk-scenarios.html |
| Approaches/ strategies | Australian State and Territory governments also have climate change adaptation strategies, | | | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|---------------------------|--|--|--|-------------------|-----------------------------|---|
| | <p>research programmes and projects in place. Examples include the following:</p> <p><i>NSW Climate Change Impacts and Adaptation Research Programme.</i> Under this programme approximately AU \$2 million over four years has been allocated to researching the likely impacts of climate change in the following areas: health; threatened species; aquatic ecosystems; bushfires; conservation planning; invasive species; coastal impacts; terrain mapping; and water.</p> <p><i>Victorian Climate Change Adaptation Programme (VCCAP).</i> Under this programme AU \$14.8 million over four years has been allocated to four initiatives: helping Victorian communities adapt to climate change by increasing scientific</p> | | | | | <p>http://www.greenhouse.nsw.gov.au/action/agencies/cabinet/climate_change_impacts_and_adaptation_research_projects</p> <p>http://www.greenhouse.vic.gov.au/greenhouse/wcmn302.nsf/LinkView/DB2BD54FA9CEEC7CCA25719A002A0E70013EE11B94AB8025CA2571A80011DB4B</p> |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|---|---|--|--|-------------------|-----------------------------|--|
| | knowledge and technical expertise; establishing a Centre of Research Excellence in climate change adaptation to collaborate on research, assessment and provision of advice to the government and the community; work with local government, regional groups and other stakeholders to build local understanding of the impacts of climate change to assist in developing local solutions; and assessing the potential public health impacts on Victorians arising from climate change. | | | | | |
| Scope of adaptation action <i>Local (community) level</i> | | | | | | |
| Approaches/ strategies | See programme of integrated assessment of human settlements described under sectoral approaches below. | | | | | |
| Practices/ projects | Climate change adaptation materials for local | Project commenced in April 2007. | | | New initiative. | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|--|---|--|---|-------------------|-----------------------------|--|
| | government. | | | | | |
| Scope of adaptation action <i>Sectoral level</i> | | | | | | |
| <i>Water resources</i> | | | | | | |
| Approaches/ strategies | <i>A National Plan for Water Security</i> . This AU \$10 billion Plan integrates adaptation over the next 10 years by: <ul style="list-style-type: none"> - requiring water sharing arrangements in the Murray-Darling Basin (MDB) to provide for the impacts of future climate change; - investing AU \$5.9 billion in modernising irrigation infrastructure to adjust to expected future declines in rainfall and run-off; - investing AU \$3 billion to address over use of water and place the MDB on a sustainable footing; and | Under implementation (announced January 2007). | The CSIRO will provide an assessment of water availability in the Murray-Darling Basin (MDB), including in light of climate change and other risks, by the end of 2007. This will be complemented by other environmental, social and economic information. Implementation of the Plan is contingent on successful negotiations between the Commonwealth Government and MDB state and territory governments, which are currently | | New initiative. | www.environment.gov.au/water/index.html |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|---|-------------------|---|--|
| | <ul style="list-style-type: none"> - improving Australia's water information base. | | <p>underway. Delivery of the Plan will require comprehensive stakeholder engagement and the development of delivery partnerships with a broad ranging engagement with the industry and community sectors.</p> | | | |
| Approaches/ strategies | <p><i>National Water Initiative (NWI)</i>. This initiative provides Australia's blueprint for national water reform, including risk sharing arrangements for reductions in water allocations due to climate change.</p> | Under implementation. | The NWI is supported by the AU \$2.2 billion Australian Government Water Fund. | | National-level coordination has been required to ensure effective implementation of NWI commitments. Independent assessment of whether parties have met their commitments within agreed timeframes has proved useful in driving reform. | www.nwc.gov.au/nwi/index.cfm |
| Approaches/ strategies | Australian State and Territory governments also have relevant adaptation strategies and research | | | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|---------------------------|--|--|--|-------------------|-----------------------------|--|
| | <p>programmes in place.</p> <p>Examples include the <i>NSW Climate Change Impacts and Adaptation Research Programme – Water</i>. This project aims to increase understanding of the impacts of anthropogenic climate change and natural climate variability on the supply of, and demand for, drinking water in Sydney and to formulate broad-brush policies for the resulting range of possible future water supply/demand balance scenarios.</p> | | | | | <p>http://www.greenhouse.nsw.gov.au/how_can_we_adapt_to_climate_change/climate_change_impacts_and_adaptation_research_projects/climate_change_impacts_and_adaptation_research_programs/climate_change_impacts_and_adaptation_research_programs_water</p> |
| Technologies | <p>Water use efficiency in irrigated agriculture.</p> <p>The National Plan for Water Security will make substantial investments in water use efficiency in delivery of water to the farm gate and in delivery on farm to crops.</p> | Under development. | | | | <p>www.environment.gov.au/water/index.html</p> |
| Technologies | Desalination plants. | A desalination plant | Good understanding | | Importance of a risk | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|---------------------------|--|--|---|-------------------|--|--|
| | | has been built in Perth as part of a broader water and climate change management strategy. Desalination is being considered for other major cities. | of risks to water resources as a result of climate change. Financial resources. | | management approach. Importance of bringing together the climate change and hydrological communities to generate the knowledge base for decision-making. | |
| Technologies | Upgraded water storage systems. | Following a major study of climate change implications for Melbourne's water, Tarago Reservoir – which was taken offline in 1994 – will be reconnected by 2011 to help protect Melbourne's water supplies from the impacts of climate change. A water treatment plant will be built near the reservoir to provide an extra 21,000 ML of drinking water to Melbourne each year – an additional 3.7% | Good understanding of risks to water resources as a result of climate change. Financial resources. | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|------------------------------------|---|---|--|-------------------|---|---|
| | | capacity. Other actions from water strategies will also be moved forward. In addition, further investigations are being made into demand management, desalination options, aquifer storage, stormwater harvesting and the Eastern Water Recycling Proposal. | | | | |
| Natural Resource Management | | | | | | |
| Approaches/ strategies | <i>The Framework for Future Natural Resource Management Programmes.</i> The need to develop adaptation responses to climate change is one of the major cross-cutting components of the framework, which provides for the future development of natural resource management (NRM) programmes across Australia. | Endorsed by the Natural Resource Management Ministerial Council on 24 November 2006. | | | One of the common understandings on which the framework is based is that an adaptive management approach based on continuous learning should continue to underpin the delivery of NRM services. | http://www.nrm.gov.au/publications/future/pubs/future.pdf |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|--|--|--|-------------------|-----------------------------|---|
| <i>Agriculture</i> | | | | | | |
| Approaches/ Strategies | <i>National Agriculture and Climate Change Action Plan 2006-2009</i> ⁱⁱⁱ . The Plan is an agreement by Australian governments to develop a coordinated framework for climate change policy in agriculture. It provides practical tools to develop effective and efficient policies to deal with climate change challenges. | Released by the Natural Resource Management Ministerial Council in August 2006 and now being implemented. AU \$5 million allocated under the Natural Heritage Trust. | | | | http://www.daff.gov.au/natural-resources/climate |
| Practices/ projects | See also footnote 1c (potential activities to be funded through the new National Centre for Climate Change Adaptation). | | | | | |
| Approaches/ strategies | Australian State and Territory governments also have relevant adaptation strategies and research programmes in place. Examples include the | | | | | http://www.greenhou |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|--|--|---|--|
| | <i>Victorian Climate Change Adaptation Programme</i> , which includes work to increase scientific knowledge and technical expertise to make agricultural systems more resilient to climate change. | | | | | se.vic.gov.au/greenhouse/wcmn302.nsf/LinkView/DB2BD54FA9CEEC7CCA25719A002A0E70013EE11B94AB8025CA2571A80011DB4B |
| <i>Biodiversity</i> | | | | | | |
| Approaches/ Strategies | National vulnerability assessment for biodiversity. | Under way. | | Inadequate understanding of ecosystem response to climate, including lack of historical distribution data. | | |
| Approaches/ strategies | <i>National Biodiversity and Climate Change Action Plan 2004-2007</i> . This three-year action plan was developed to help focus efforts on minimising the impacts of climate change on species, communities and ecosystems. | Under review. | | | Need to make sure key stakeholders (government and external) are on board and involved in each step of the process. Need to set specific and achievable targets, and to set out clearly how these targets will be achieved, including how key activities | http://www.environment.gov.au/biodiversity/publications/nbcap/background.html |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|--|---|--|-------------------|-----------------------------------|---|
| | | | | | under the plan will be resourced. | |
| Practices/ projects | Workshop identifying research needs and information gaps for the implementation of the key objectives of the National Biodiversity and Climate Change Action Plan. This scientific workshop was hosted by the Australian Government Department of the Environment and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in June 2005. | 2005. The findings of the workshop can be found in the report <i>Biodiversity Conservation Research in a Changing Climate</i> (2007). This report is the product of a collaborative effort by the Australian Government, state and territory governments and the scientific community. | | | | http://www.environment.gov.au/biodiversity/publications/biodiversity-climate-priorities.html |
| | Australian State and Territory governments also have relevant adaptation strategies and research programmes in place. Examples include the <i>New South Wales Climate Change Impacts and Adaptation Research Programme - Threatened Species</i> . This project will | | | | | http://www.greenhouse.nsw.gov.au/how_can_we_adapt_to_climate_change/climate_change_impacts_and_adaptation_research |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------------|--|--|--|--|-----------------------------|---|
| | focus on those ecological processes that have been identified as critical to species' persistence in the landscape or their ability to move to new habitats. This will include dispersal (fragmented and non-fragmented landscapes) and recruitment (arid landscapes), with a particular focus on a selected group of species and communities already perceived to be at risk. | | | | | h_projects/climate_change_impacts_and_adaptation_research_programs/threatened_species |
| <i>Protected areas</i> | | | | | | |
| Practices/ projects | Assessment of the impacts, vulnerability and management implications of climate change for: the National Reserve System; the World Heritage values of Australia's World Heritage properties; and the Australian Government's protected areas. | All three projects underway and due for completion by August 2007. | | Inadequate understanding of ecosystem response to climate, including lack of historical distribution data. | | |
| <i>Great Barrier Reef</i> | | | | | | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|--|---|--|---|--|--|
| Approaches/ strategies | <p><i>Great Barrier Reef Climate Change Response Programme.</i></p> <p>This programme aims to better understand and respond to climate change threats, including coral bleaching. Its aims are to: sustain Great Barrier Reef ecosystems; sustain industries and communities that depend on the Great Barrier Reef; and foster supportive policy and networks.</p> | <p>AU \$2 million funding allocated to understanding climate change impacts. This phase of the programme has been completed.</p> <p>New funding allocated to implement a 5-year climate change action plan building on existing best practice, such as increasing highly protected areas and improving water quality.</p> | <p>Scientific expertise.</p> <p>Community support.</p> <p>Effective partnership and co-investment from stakeholder groups.</p> | <p>Significant challenge is to raise awareness of climate change risk while also encouraging a sense of hope and motivation for action.</p> | <p>Important to invest in awareness raising about the risks posed by climate change - an effective strategy has been to work closely with stakeholder groups to assess the vulnerability/ resilience of ecological systems and dependent industries/ communities, and then facilitate them to formulate and implement stakeholder-specific adaptation strategies.</p> <p>A strong understanding of the factors influencing the resilience of ecological systems and the links between ecological and socio-economic systems is also important.</p> | <p>http://www.gbrmpa.gov.au/corp_site/info_services/science/climate_change</p> |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|----------------------------|--|--|--|-------------------|---|---|
| Practices/ projects | <i>Great Barrier Reef Coral Bleaching Response Plan.</i> This plan, part of the Climate Change Response Programme, is recognised worldwide as the leading model for tactical response to bleaching events. It has recently been adopted for use in Indonesia and the Florida Keys. It uses a combination of satellite imagery, aerial surveys and underwater surveys to rapidly and efficiently determine the extent and severity of a coral bleaching event, and to understand the impacts on the Great Barrier Reef. | Implemented every summer to monitor and document coral bleaching. | | | | http://www.gbrmpa.gov.au/corp_site/info_services/science/climate_change/response_plan.html |
| Practices/ projects | The Coral Bleaching Response Plan includes <i>BleachWatch</i> , a community monitoring programme that has formed from strong partnerships with reef tourism operators, research stations and the broader community and helps to detect and monitor coral | Ongoing. | | | Value of broader community involvement. | http://www.gbrmpa.gov.au/corp_site/info_services/science/climate_change/bleach_watch2.html |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|--|--|--|--|--|--|
| | bleaching. | | | | | |
| <i>Coastal zones</i> | | | | | | |
| Approaches/ strategies | National coastal vulnerability assessment. | Under way. | | Quantitative analysis at the level useful to decision-makers requires significant data, e.g. digital elevation models (DEM). | | |
| Practices/ projects | See also footnote 1a (potential activities to be funded through the new National Centre for Climate Change Adaptation). | | | | | |
| <i>Human settlements</i> | | | | | | |
| Approaches/ strategies | Programme of integrated assessment of human settlements. This programme aims to foster partnerships with a range of researchers, stakeholders and regional organisations in developing a body of knowledge, experience and expertise in the use of integrated assessment methods in | AU \$1.5 million allocated to five integrated assessment projects (to be completed in June 2008) that will provide information that local decision-makers can use to make informed adaptation decisions and develop a body | | | Importance of stakeholder-driven scientifically informed analysis. | |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|---|--|-------------------|-----------------------------|--|
| | Australia's urban environment. | of lessons, knowledge, methods and experience about integrated assessment of climate change impacts that can be applied to a broad range of Australian settlements. | | | | |
| Approaches/ strategies | <p>Australian State and Territory governments also have relevant adaptation strategies and research programmes in place.</p> <p>Examples include the <i>Victorian Climate Change Adaptation Programme</i>, which includes work to increase scientific knowledge and technical expertise to understand what climate change will mean for individual communities, and to make buildings, infrastructure and homes more adaptable to climate change.</p> | | | | | <p>http://www.greenhouse.vic.gov.au/greenhouse/wcmn302.nsf/LinkView/DB2BD54FA9CEEC7CCA25719A002A0E70013EE11B94AB8025CA2571A80011DB4B</p> |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|-------------------------------|---|--|--|-------------------|-----------------------------|--|
| <i>Health</i> | | | | | | |
| Practices/ projects | See footnote 1b (potential activities to be funded through the new National Centre for Climate Change Adaptation). | | | | | |
| Approaches/ strategies | <p>Australian State and Territory governments also have relevant adaptation strategies and research programmes in place.</p> <p>Examples include the <i>New South Wales Climate Change Impacts and Adaptation Research Programme – Health</i>. Under this programme NSW Health is undertaking research to more clearly characterise the effect of key climate change health impacts in NSW to assist in underpinning policy, to demonstrate future effects more clearly for NSW, and to provide some directions</p> | | | | | <p>http://www.greenhouse.nsw.gov.au/how_can_we_adapt_to_climate_change/climate_change_impacts_and_adaptation_research_projects/climate_change_impacts_and_adaptation_research_programs/climate_change_impacts_and_adaptation_research_programs_-_health</p> |

| Type of adaptation action | Title of adaptation action, including projects | Status of adaptation action - ongoing - under implementation - under development - under consideration | Needs in order to successfully implement the adaptation action | Concerns/Barriers | Experiences/ Lesson learned | References i.e. publications, websites etc. |
|---------------------------|--|--|--|-------------------|-----------------------------|--|
| | <p>for the development of climate change adaptation programmes.</p> <p>The <i>Victorian Climate Change Adaptation Programme</i> also includes work to increase scientific knowledge and technical expertise to help in understanding what climate change will mean for the health of Victorians.</p> | | | | | <p>http://www.greenhouse.vic.gov.au/greenhouse/wcmn302.nsf/LinkView/DB2BD54FA9CEEC7CCA25719A002A0E70013EE11B94AB8025CA2571A80011DB4B</p> |

ⁱ The *National Centre for Climate Change Adaptation* will be managed by the Australian Government but will work closely with the States and related bodies to ensure a coordinated national approach as envisaged by the National Adaptation Framework. The Adaptation Centre will commission scientific work, including from the new Adaptation Flagship, to develop tangible responses to climate change. Examples of the types of activities that could be funded include:

- a. identification of how to protect coastal infrastructure from likely changes in storm surge using well designed sea walls and flood barriers;
- b. work towards the design of a heat wave warning system and proposing ways to modify facilities to cater for those most at risk (the elderly);
- c. helping to plan for expanding the use of feedlots by farmers to reduce the exposure of their valuable stock to variation in pasture availability and heat stress; and
- d. identifying areas in national parks that will provide the best areas for recolonisation of plants and animals that have been displaced by climatic changes from their natural locations.

ⁱⁱ Key objectives of the four year *National Climate Change Adaptation Programme* were to:

- a. advise Government on policy issues related to climate change impacts and adaptation, including key risks to and opportunities for Australia
- b. build capacity to support the development of effective and targeted adaptation strategies
- c. engage stakeholders and provide targeted and scale-relevant information and tools to industry sectors and regions
- d. integrate climate change impacts and adaptation considerations into key policies and programmes, including into risk management practices across vulnerable sectors.

ⁱⁱⁱ The *National Agriculture and Climate Change Action Plan* aims to raise awareness about climate change issues among primary producers and rural communities and will provide a strategic framework for primary producers when decision-making and business planning. Four key areas identified for climate change management are:

- a. adaptation strategies to build resilience into production systems
- b. mitigation strategies to reduce or offset greenhouse gas emissions

-
- c. research and development strategies to enhance the agricultural and forestry sectors capacity to respond to climate change
 - d. awareness and communication strategies to inform decision-making by primary producers and rural communities.