LEGISLATIVE ASSEMBLY

Standing Committee on Natural Resource Management (Climate Change)

Impacts of emissions trading schemes on natural resource management

Report No. 4/54 – May 2009

New South Wales Parliamentary Library cataloguing-in-publication data:

New South Wales. Parliament. Legislative Assembly. Standing Committee on Natural Resource Management (Climate Change).

Impacts of emissions trading schemes on natural resource management: [report] / Legislative Assembly, Standing Committee on Natural Resource Management (Climate Change). [Sydney, NSW] : the Committee, 2009. – viii, 74 p. ; 30cm (Report / Standing Committee on Natural Resource Management (Climate Change) ; no. 4/54)

“May 2009”
Chair: David Harris
ISBN: 9781921012921

1. Conservation of natural resources—New South Wales.
2. Emissions trading—New South Wales.
I. Title.
II. Harris, David.
III. Series: New South Wales. Parliament. Legislative Assembly. Standing Committee on Natural Resources Management (Climate Change). Report ; no. 4/54

363.73874 (DDC 22)

Table of contents

Membership and staff

Chair	Mr David Harris MP, Member for Wyong (from 24 September 2008)
	Mrs Karyn Paluzzano MP, Member for Penrith (until 24 September 2008)
Deputy chair	Mrs Karyn Paluzzano MP, Member for Penrith (from 24 September 2008)
	Mr Michael Daley MP, Member for Maroubra (until 24 September 2008)
Members	Mr Thomas George MP, Member for Lismore
	Mr Gerard Martin MP, Member for Bathurst
	Mr Robert Oakeshott MP, Member for Port Macquarie (until 13 August 2008)
	Mr Greg Piper MP, Member for Lake Macquarie (from 24 September 2008)
	Mr Ray Williams MP, Member for Hawkesbury
Staff	Ms Vicki Buchbach, Committee Manager
	Dr Carolyn Littlefair, Senior Committee Officer (from September 2008)
	Ms Kylie Rudd, Senior Committee Officer (until September 2008) Research Officer (from September 2008 to February 2009)
	Mrs Cheryl Samuels, Research Officer (until September 2008)
	Mr Leon Last, Committee Officer (from April 2009) Assistant Committee Officer (from June 2008 to April 2009)
Contact details	Standing Committee on Natural Resource Management (Climate Change) Parliament of New South Wales Macquarie Street Sydney NSW 2000
Telephone	02 9230 3438
Facsimile	02 9230 3052
E-mail	climate.change@parliament.nsw.gov.au
URL	www.parliament.nsw.gov.au/climatechange

Committee terms of reference

The Legislative Assembly Standing Committee on Natural Resource Management (Climate Change) was established on 21 June 2007 to inquire into issues of sustainable natural resource management with particular reference to the impact of climate change and, in particular, to report on the following terms of reference:

(a) The likely consequences of human-induced climate change on land (including salinity), water and other natural resources;

(b) Options for ensuring ecologically sustainable natural resource use, taking into particular account the impacts of climate change;

(c) Approaches to land and water use management practices on farms and other natural resource management practices, having regard in particular to the role of such practices in contributing to climate change or as a tool in helping to tackle climate change;

(d) The effectiveness of management systems for ensuring that sustainability measures for the management of natural resources in New South Wales are achieved, having particular regard to climate change; and

(e) The likely consequences of national and international policies on climate change on natural resource management in New South Wales.

Inquiry terms of reference

On 5 March 2008, the Standing Committee on Natural Resource Management resolved to conduct an inquiry into the impacts of emissions trading schemes on natural resource management in New South Wales with the following terms of reference:

That the Committee inquire into and report on the implications for natural resource management in New South Wales of national and international emissions trading schemes with a particular emphasis on:

a) Costs and benefits for natural resource managers of national and international greenhouse gas emission trading schemes

b) Transitional arrangements for participants in the New South Wales emission scheme to a national scheme; and

c) Economic and environmental implications for the State of offset activities.

Chair's foreword

I am pleased to present this report of the Standing Committee on Natural Resource Management (Climate Change) on the impacts of emissions trading schemes on natural resource management in New South Wales.

The Committee decided to conduct this inquiry in early 2008 because the Commonwealth Government had announced that it would develop a national emissions trading scheme which would start in 2010. The Committee understood that such a scheme would be a fundamental change to the way the economy operated and it wanted to ensure that the full range of impacts on natural resource managers were considered in the policy development process. Of particular concern were the transition arrangements for participants in the Greenhouse Gas Reduction Scheme (GGAS), the pre-existing New South Wales emissions trading scheme.

State and national policies were developing very quickly during the time taken by this inquiry. The Committee has considered the various Commonwealth Government research and policy documents as they emerged over 2008 and early 2009. These include the various drafts and final report of the Garnaut Climate Change Review, the financial modelling of a national emissions trading scheme, the Carbon Pollution Reduction Scheme Green Paper and White Paper and subsequently the draft offsets standard and the exposure draft legislation for implementing the Scheme. These have been the core documents for the design of the national emissions trading scheme.

More recently, the Commonwealth Government has announced changes to the Carbon Pollution Reduction Scheme aimed at assisting businesses to adjust to the Scheme during these difficult economic times, increasing Australia's efforts should an ambitious global agreement be reached and encouraging households to play their part in reducing emissions. As consideration of the details of the Scheme by the Federal Parliament is likely to be ongoing, the Committee's report focuses on the details of the Scheme outlined in the White Paper. Should the finalisation of the Scheme result in significant changes, the Committee may decide to undertake a subsequent inquiry to assess any implications for natural resource management in New South Wales.

When the Committee was gathering evidence, stakeholders expressed a great deal of uncertainty about the shape and extent of the national emissions trading scheme. Key issues were whether forestry and agricultural emissions would be included, the type of offsets available and whether carbon stored in wood products and soil would be included. Some of these questions have now been answered in the Scheme as proposed in the White Paper, although the Committee notes that the Federal Parliament has yet to consider the legislation supporting the Scheme. Other issues are still subject to negotiation or have been deferred to a later date. The issue of most interest to natural resource managers will be whether in 2013 the Commonwealth Government decides to include agricultural emissions in the emissions trading scheme from 2015.

The Committee makes a number of recommendations about improving engagement with natural resource managers so that they are kept up to date about the latest developments in climate change policy, programs and research. We also consider that there should be a greater research effort into accounting for agricultural emissions and biosequestration. The

Committee also suggests that the New South Wales Government work with the Commonwealth to negotiate smooth transition arrangements for participants in GGAS.

I would like to thank all the organisations and individuals who made submissions to this inquiry and appeared at one of the Committee's hearings. I also wish to thank my fellow Committee members for their contributions and for the commitment and bipartisanship they have demonstrated in progressing the work of the Committee. Finally, I wish to express my thanks to the secretariat staff for preparing this report and for their ongoing support and assistance.

David Harris, MP
Committee Chair

List of recommendations

Abbreviations

AAU	Assigned Amount Unit
AFG	Australian Forest Growers
CER	Certified Emission Reduction
CO_2-e	Carbon dioxide equivalent
COAG	Council of Australian Governments
CPRS	Carbon Pollution Reduction Scheme
DCC	Department of Climate Change (Commonwealth)
DECC	Department of Environment and Climate Change
DPI	Department of Primary Industries
DWE	Department of Water and Energy
EDO	Environmental Defender's Office
ERU	Emission Reduction Unit
GGAS	Greenhouse Gas Reduction Scheme
Gt	Gigatonnes
IPART	Independent Pricing and Regulatory Tribunal
LUAC	Large User Abatement Certificate
Mt	Million tonnes
NGAC	New South Wales Greenhouse Abatement Certificate
NRAC	Natural Resources Advisory Council
OECD	Organisation for Economic Co-operation and Development
RFS	Rural Fire Service
RMU	Removal Unit
UNFCCC	United Nations Framework Convention on Climate Change
WSROC	Western Sydney Regional Organisation of Councils

Chapter One - The inquiry process

1.1 The Standing Committee on Natural Resource Management (Climate Change) was appointed on 21 June 2007 to inquire into issues of sustainable natural resource management with particular reference to the impact of climate change. In early 2008 the Committee became concerned about proposals to develop a national emissions trading scheme and wanted to ensure that the impacts on New South Wales natural resource managers were being addressed. On 5 March 2008 the Committee resolved to conduct an inquiry into the impacts of emissions trading schemes on natural resource management in New South Wales.

Submissions

1.2 On 14 March 2008 the Committee called for submissions on the inquiry's terms of reference. The Committee received 13 submissions from a range of industry, government and community groups and the general public. A list of these submissions is included in Appendix One and copies of the submissions are available from the Committee's website.

Hearings

1.3 The Committee took evidence from a broad range of academics, state and local government officials, and key interest and community groups. Public hearings were held in Sydney on 11 April 2008, 16 May 2008, 18 June 2008 and 31 October 2008. A list of witnesses at each hearing is included in Appendix Two and copies of the transcripts are available from the Committee's website.

Briefings

1.4 The Committee also arranged private briefings with key agencies to learn about their activities. On 22 October 2008 the Committee received an update from the Department of Environment and Climate Change (DECC) on the development of New South Wales Climate Change Action Plan.

1.5 On 3 December 2008 representatives from the Independent Pricing and Regulatory Tribunal (IPART) briefed the Committee on the Review of Climate Change Mitigation Measures being undertaken.

Visit of inspection

1.6 In November 2008 a delegation of the Committee travelled to the central west of New South Wales to learn about innovative land management practices to increase the amount of carbon in soil and the potential for soil carbon to be used as an offset to greenhouse gas emissions. The Committee met with the Central West Catchment Management Authority, the Little River Landcare Group and attended the Carbon Farming Expo and Conference. Further information on the visit of inspection is included in Appendix Three.

Timing of the inquiry

1.7 The Committee notes that the policy framework for climate change mitigation and emissions reduction is changing rapidly on global, national and state scales. This inquiry was initiated, most submissions received and numerous hearings undertaken

before the release of *The Garnaut Climate Change Review: Draft Report* in June 2008, the *Carbon Pollution Reduction Scheme: Green Paper* in July 2008, *The Garnaut Climate Change Review: Final Report* in September 2008 and the *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper* (the White Paper) in December 2008.

1.8 The Committee received a number of submissions and heard from witnesses about the difficulty in commenting on the implications of an emissions trading scheme for natural resource management in New South Wales when many of the details of such a scheme were not available at the time submissions were being accepted.[1] The Committee therefore notes that the evidence and submissions received reflect the varied level of information that was available at the time the submission was made or evidence was given.

1.9 Additionally, the Committee understands that the White Paper states that there are still some decisions regarding the Carbon Pollution Reduction Scheme (CPRS), notably the scope for domestic offsets and coverage of agricultural emissions, that will be made over the next two years and will not be known until after the Committee has completed its report.

Commonwealth Parliamentary inquiries

1.10 The Committee notes that there is a high level of interest in the details and development of CPRS and that there is still ongoing consideration of the CPRS by both Houses of the Commonwealth Parliament. There are a number of recently completed and ongoing Commonwealth Parliamentary inquiries of relevance to the CPRS and the Committee's inquiry:

- On 25 June 2008 the Senate Select Committee on Fuel and Energy was established to inquire into a number of fuel and energy related matters including the impact of an emissions trading scheme on the fuel and energy industry. Submissions to the inquiry were accepted until 26 September 2008 with a report due to the Senate by 21 October 2009.
- On 4 February 2009 the Minister for Agriculture, Fisheries and Forestry asked the House of Representatives Standing Committee on Primary Industries and Resources to inquire into the role of government in assisting Australian farmers to adapt to the impacts of climate change. Submissions to the inquiry were accepted until 20 March 2009 with the report yet to be tabled.
- On 11 March 2009 the CPRS exposure draft legislation was referred by the Senate to the Senate Standing Committee on Economics. The exposure draft legislation included six bills covering the introduction of the Scheme, changes to taxation and reporting arrangements, the establishment of the agency to administer the CPRS and customs and excise duties. Some elements of the CPRS, such as reforestation and household assistance, were not included in the exposure draft legislation but will be included in the final legislation. The final report was tabled in the Senate on 16 April 2009.
- On 11 March 2009 the Senate Select Committee on Climate Policy was established to inquire into: the choice of emissions trading as the central policy to reduce Australia's carbon emissions; the relative contributions of complementary

[1] Submission 3, EDO, p. 1; Submission 6, Dr David Pepper, p. 1; Submission 12, NRAC, p. 1; Mr Warwick Ragg, Transcript of Hearing 16 May 2008, p. 31

measures; the environmental effectiveness of the CPRS; an appropriate mechanism for determining Australia's contribution to the global emission reduction effort; and whether the CPRS will send appropriate investment signals for green collar jobs and research and development. Submissions to the inquiry were accepted until 8 April 2009 with a report due to the Senate on 14 May 2009.

Recent Commonwealth Government changes

1.11 The Committee understands that on 4 May 2009 the Commonwealth Government announced a number of changes to the CPRS.[2] These include:

- a delay in the start of the CPRS until 1 July 2011;
- a one year fixed price for permits of $10 per tonne of carbon in 2011-12;
- increased assistance for emissions-intensive trade-exposed industries, with industries previously eligible for 60% assistance receiving a 10% increase and industries eligible for 90% assistance receiving a 5% increase;
- eligible businesses will receive funding to undertake energy efficiency measures from 1 July 2009;
- a commitment to reduce greenhouse gas emissions by 25% of 2000 levels by 2020 if a global agreement to reached to stabilise greenhouse gas levels in the atmosphere at 450 parts per million; and
- the establishment of the Australian Carbon Trust to encourage individual action to reduce greenhouse gas emissions.

1.12 As developments in the finalisation of the CPRS are likely to be ongoing for many months, the Committee's report focuses on the details of the CPRS outlined in the White Paper. If the finalisation of the CPRS results in significant changes to the operation and implications of the Scheme, the Committee may decide to undertake a subsequent inquiry to assess any consequences for natural resource management in New South Wales.

Report structure

1.13 Chapter One of the report details the process undertaken to conduct this inquiry and issues relating to the timing of the inquiry. Chapter Two outlines the rationale for reducing global greenhouse gas emissions and the international agreements and national policy developments that seek to do this. Chapter Three discusses the costs and benefits of the CPRS for natural resource management in New South Wales, in particular for forestry and agriculture. Chapter Four discusses the economic and environmental implications of natural resource offsets and Chapter Five addresses the transition arrangements for the New South Wales Greenhouse Gas Reduction Scheme (GGAS).

[2] K Rudd (Prime Minister), W Swan (Treasurer) and P Wong (Minister for Climate Change and Water), *New Measures for the Carbon Pollution Reduction Scheme*, media release, Parliament House, Canberra, 4 May 2009

Chapter Two - Reducing greenhouse gas emissions

2.1 This chapter provides a brief description of the causes of anthropogenic climate change and the rationale for reducing greenhouse gas emissions. It outlines the international agreements and national policy developments that seek to reduce greenhouse gas emissions.

Greenhouse gases and climate change

2.2 Gases in the earth's atmosphere naturally act like the roof of a greenhouse by allowing short-wavelength solar radiation to reach the earth's surface but absorbing the long-wavelength radiation that is reflected back. This process is known as the 'greenhouse effect' and leads to a warming of the earth's surface and lower atmosphere. Without these gases in the atmosphere, known as greenhouse gases, the earth's average temperature would be –18^{o}C, compared to the current average of 14^{o}C.[3]

2.3 The majority of the Australian and international scientific community agrees that increases in greenhouse gas concentrations from human activities have enhanced the effects of the natural greenhouse effect and have already resulted in substantial global warming since the mid-20th century. Continued growth in greenhouse gas emissions is expected to generate high risks of dangerous climate change.[4]

2.4 The United Nations Framework Convention on Climate Change defines climate change as 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'.[5]

2.5 This report does not intend to examine the merits of the science of climate change or the potential impacts of climate change in New South Wales. The Committee noted in its previous report that considerable scientific resources are already being deployed to research many aspects of climate change impacts, mitigation and adaptation and the report itself discussed the impacts of climate change on natural resource management in New South Wales.[6] However, this report is based on the understanding that human induced climate change risks irreversible and potentially catastrophic effects and that reducing greenhouse gas emissions is essential to mitigate the impacts of dangerous climate change.

2.6 The greenhouse gases with the greatest influence on atmospheric warming are water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3). Additionally, there are human-made halocarbons (such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and chlorofluorocarbons (CFCs)) and sulphur hexafluoride (SF_6) that contribute significantly to atmospheric warming, although they

[3] S Smith, *The Science of Climate Change*, New South Wales Parliamentary Library Research Service, Sydney, 2006, p. 2

[4] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 23

[5] *United Nations Framework Convention on Climate Change*, 1992, Article 1.2

[6] Standing Committee on Natural Resource Management (Climate Change), *Climate Change and Natural Resource Management in New South Wales*, New South Wales Parliament Legislative Assembly, Sydney, 2008, p. ix

are only present in small concentrations.[7] Many of these gases have both natural and anthropogenic sources, outlined in Table 1.

Table 1 - Sources of greenhouse gases

Gas	***Natural sources***	***Main anthropogenic sources***
Carbon dioxide	Respiration from living organisms Volcanic eruptions Bushfires Decomposition of dead animals and plants Outgassing from the ocean	Combustion of fossil fuels and cement manufacture Land use changes (deforestation and changing agricultural practices)
Methane	Oceans Termites Natural wetlands Hydrates	Fossil fuel mining Vegetation burning Waste treatment Rice cultivation Ruminant livestock Landfill
Nitrous oxide	Processes in soils and oceans Oxidation of ammonia in the atmosphere	Nitrogenous fertiliser use Biomass burning Management of livestock manure Fossil fuel combustion Industrial activities such as nylon manufacture
Water vapour	The amount of water vapour in the atmosphere is a function of temperature and tends to fluctuate regionally and on short timescales	Irrigation Artificial dams and lakes
Chlorofluorocarbons and hydrochlorofluorocarbons	No known natural sources	Propellants in aerosol cans Refrigerants in refrigerators and air conditioners Manufacture of foam packaging
Tropospheric ozone	Chemical reaction between other gases (precursor species) including carbon monoxide, methane and nitrogen oxides	Limited direct influence but influence concentrations through the emission of precursor species such as methane, nitrogen oxides and organic compounds from industry, power generation and transport
Hydrofluorocarbons	Some perfluorocarbons and all hydrofluorocarbons have no detected natural sources. Other perfluorocarbons and sulphur hexafluoride are present in small amounts in the earth's crust and released into the atmosphere through volcanic activity	Refrigeration Air conditioning Solvents Fire retardants Foam manufacture Aerosol propellants
Perfluorocarbons		Aluminium production
Sulphur hexafluoride		Electricity supply industry

Source: R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, pp. 31–32

[7] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 31

2.7 The global warming potential of a greenhouse gas depends on the intrinsic capability of the molecule to absorb heat and the lifetime that the gas exists in the atmosphere. To determine the warming of different greenhouse gases, a global warming potential index is used to compare the radiative forcing of a given mass of a greenhouse gas to the radiative forcing of the same mass of carbon dioxide. The actual emission of a greenhouse gas is then multiplied by its global warming potential to determine its comparable amount of emissions in carbon dioxide, referred to as carbon dioxide equivalent (CO_2-e).[8]

Anthropogenic greenhouse gas emissions

2.8 Global greenhouse gas emissions have increased 70% between 1970 (28.7 Gt CO_2-e) and 2004 (49.0 Gt CO_2-e). In particular, global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly since the industrial revolution and concentrations now far exceed pre-industrial values (determined from ice cores).[9]

2.9 Australia's net greenhouse gas emissions was 576.0 Mt CO_2-e in 2006 (using Kyoto accounting provisions) which was approximately 1.5% of global emissions.[10] As illustrated in Figure 1, the stationary energy sector accounted for the greatest proportion of Australia's greenhouse gas emissions comprising 49.9% (287.4 Mt CO_2-e) of total emissions, followed by the agriculture sector which accounted for 15.6% (90.1 Mt CO_2-e), the transport sector which accounted for 13.7% (79.1 Mt CO_2-e) and land use change and forestry which accounted for 6.9% (40.0 Mt CO_2-e).

2.10 The total net greenhouse gas emissions for New South Wales in 2006 was 160.0 Mt CO_2-e, which accounted for 27.8% of Australia's emissions.[11] As illustrated in Figure 1, stationary energy accounted for the highest proportion of New South Wales's emissions with 48.7% (77.9 Mt CO_2-e), followed by the transport sector which accounted for 13.7% (21.9 Mt CO_2-e) and agriculture which accounted for 11.4% (18.2 Mt CO_2-e). Emissions from land use change and forestry only accounted for 5.6% (9.0 Mt CO_2-e) of New South Wales's emissions.

[8] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 35

[9] Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report – Summary for Policymakers*, Geneva, 2007, p. 5

[10] DCC, *Australia's National Greenhouse Accounts: National Greenhouse Gas Inventory 2006*, Canberra, 2008, p. 1

[11] DCC, *Australia's National Greenhouse Accounts: 2006 State and Territory Greenhouse Gas Emissions*, Canberra, 2008, p. 17

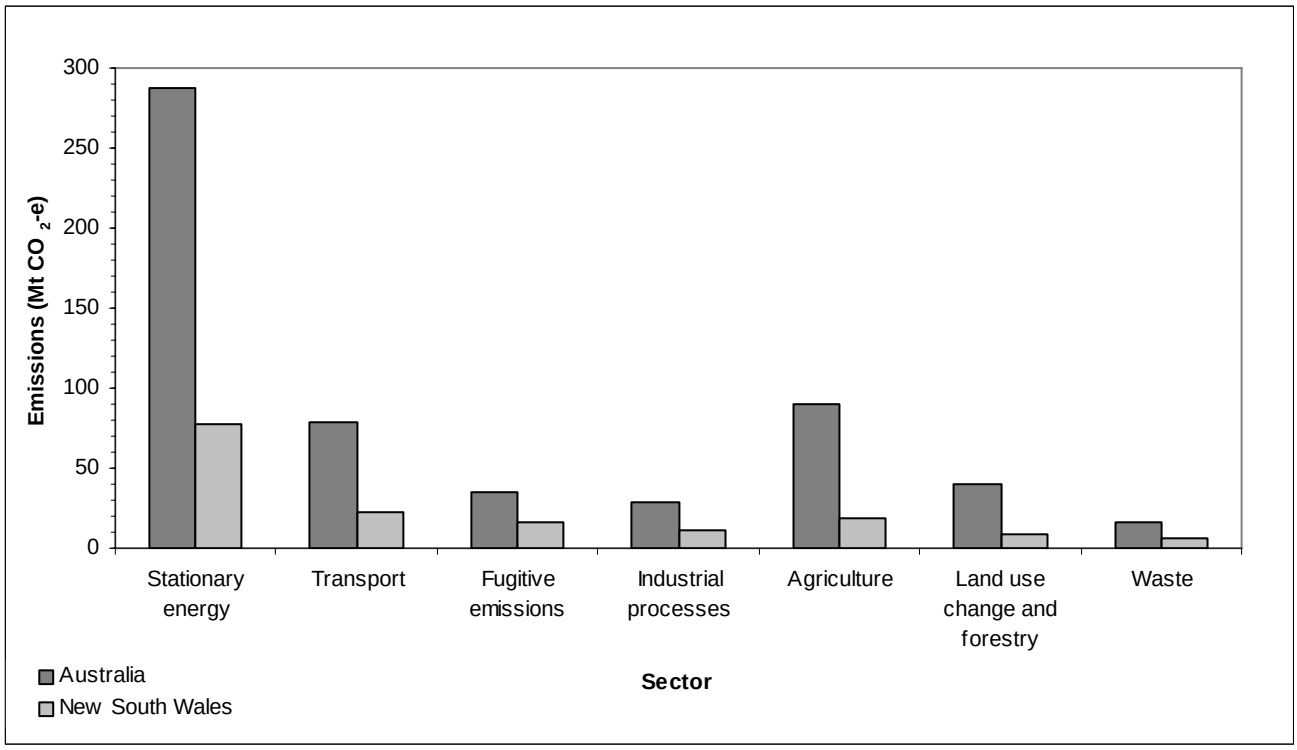

Figure 1 - Australian and New South Wales greenhouse gas emissions by sector in 2006

Source: Department of Climate Change, *Australia's National Greenhouse Accounts: 2006 State and Territory Greenhouse Gas Emissions*, Canberra, 2008, p. 17

International agreements to reduce greenhouse gas emissions

United Nations Framework Convention on Climate Change

2.11 There is widespread agreement that global action must be taken to mitigate the growth of greenhouse gases. The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that was developed to provide a foundation for intergovernmental efforts to tackle the challenge posed by climate change. It entered into force on 21 March 1994 and has near universal membership, with 192 countries having ratified it, including Australia. The objective of the Convention is to achieve:

> stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.[12]

2.12 In addition to reporting duties, all parties commit to:

> formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change.[13]

[12] *United Nations Framework Convention on Climate Change*, 1992, Article 2

[13] *ibid.*, Article 4.1(b)

2.13 The Convention divides parties into different groups according to their commitments. Australia belongs to the Annex I parties, which include developed countries that were members of the Organisation for Economic Co-operation and Development (OECD) in 1992 and countries with economies in transition.[14] Annex I parties are called on to take the lead in combating climate change[15] and bear the cost of financing developing countries to implement measures to mitigate and adapt to climate change.[16]

The Kyoto Protocol

2.14 The Kyoto Protocol is an international agreement linked to the UNFCCC that entered into force on 16 February 2005. The Protocol sets legally binding targets for Annex I parties to limit or reduce their greenhouse gas emissions for the period from 2008 to 2012 (the first commitment period), with the aim of reducing collective emissions by at least 5% from 1990 levels.[17] Australia's target is to limit its greenhouse gas emissions to 108% of its 1990 emissions during the first commitment period.[18]

2.15 Parties to the Kyoto Protocol must account for their emissions of six greenhouse gases: carbon dioxide (CO2); methane (CH_4); nitrous oxide (N_2O); sulphur hexafluoride (SF_6); hydrofluorocarbons (HFCs); and perfluorocarbons (PFCs).[19] Parties to the Kyoto Protocol also account for seven categories of human-induced greenhouse gas emissions:

- *Stationary energy*: primarily carbon dioxide from combustion of fossil fuels for electricity generation; from energy production in the petroleum refining, manufacturing, construction and commercial industries; and for domestic heating.
- *Transport*: primarily carbon dioxide from combustion of liquid fuels for road and rail transport, domestic aviation and shipping.
- *Fugitive emissions*: primarily methane, carbon dioxide and nitrous oxide emitted during the production, processing, transport, storage and distribution of coal, oil and gas.
- *Industrial processes*: primarily carbon dioxide from chemical reactions associated with manufacturing processes, mineral processing and chemicals, and metal production.
- *Agriculture*: primarily methane and nitrous oxide from livestock and cropping.
- *Land use, land-use change and forestry*: in this sector, only emissions from land-use change activities (reforestation and deforestation) are counted towards Australia's Kyoto Protocol target.
- *Waste*: primarily methane and nitrous oxide from solid waste sent to landfill, from the treatment of domestic, commercial and industrial waste water, and from solvent and clinical waste incineration.[20]

[14] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 174

[15] *United Nations Framework Convention on Climate Change*, 1992, Article 3.1

[16] *ibid.*, Article 4.3

[17] *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, 1997, Article 3.1

[18] *ibid.*, Annex B

[19] *ibid.*, Annex A

[20] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, pp. 6-2–6-3

2.16 The crux of the Kyoto Protocol is that each Annex I party must retire an amount of Kyoto units equal to or greater than its total greenhouse gas emissions target before the end of the 'true-up' period (most likely the end of 2014 for the first commitment period). Under the Protocol, countries must meet their targets primarily through national measures. However, the Protocol offers countries additional means of meeting their targets by way of three market-based mechanisms (known as the flexibility mechanisms): international emissions trading; clean development mechanism; and joint implementation.[21]

2.17 Kyoto units, which correspond to one tonne of CO_2-e are:

- *Assigned Amount Units (AAUs)* issued by an Annex I party on the basis of its assigned amount of emissions pursuant to Articles 3.7 and 3.8, for example, Australia will issue AAUs equal to 108% of 1990 emissions.
- *Removal Units (RMUs)* issued by an Annex I country on the basis of land use, land use change and forestry activities under Articles 3.3 and 3.4.
- *Emission Reduction Units (ERUs)* generated by joint implementation projects under Article 6. Joint implementation provides for an Annex I country to implement projects in the territory of another Annex I country and to count the resulting ERUs towards meeting its own Kyoto target.
- *Certified Emission Reductions (CERs)* generated from clean development mechanism projects under Article 12. The clean development mechanism is a project based mechanism to allow Annex I countries to implement emission reduction projects in developing countries to receive CERs.[22]

Accounting for land use, land use change and forestry activities

2.18 The Kyoto Protocol establishes rules to account for land use, land use change and forestry activities for the first commitment period. For Kyoto Protocol purposes a forest of trees is defined as having: a potential height of at least 2 metres; crown cover of at least 20%; and an area greater than 0.2 ha.[23]

2.19 Under Article 3.3 Annex I parties must account for direct human induced emissions and removals from afforestation, reforestation and deforestation since 1990. Afforestation is the direct human induced conversion to forested land of land that has not contained a forest for at least 50 years. It is distinct from reforestation, which is the direct human induced conversion to forested land of land that did not contain forest on 31 December 1989. Deforestation is the direct human induced conversion of forested land to non-forested land.

2.20 Under Article 3.4 Annex I countries may elect to account for greenhouse gas emissions from any or all of the following activities:

- forest management (a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological, economic and social functions in a sustainable manner);
- revegetation (a direct human-induced activity to increase carbon stocks through the establishment of vegetation that covers a minimum area of 0.05 ha and does

[21] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. C-1

[22] *ibid.*, p. C-2

[23] *ibid.*, pp. C-8–C-9

not satisfy the definition of afforestation or reforestation);

- grazing land management (the system of practices on land used for livestock production aimed at manipulating the amount and type of vegetation and livestock produced); and
- cropland management (the system of practices on land on which agricultural crops are grown and on land that is set aside for crop production).[24]

2.21 Australia has elected not to account for any such activities because the risk that unavoidable natural events such as drought or bushfire could result in significant emissions from those sources was deemed to outweigh any potential emission reduction benefits from including these activities.[25] Very few countries have elected to account for Article 3.4 activities.

2.22 As Australia did not elect to account for any Article 3.4 activities, it does not account for soil carbon from forest management, cropland management, grazing land management or revegetation. In the White Paper the Commonwealth Government acknowledged that there are likely to be important opportunities to increase the carbon stored in agricultural soils, however, it holds that scientific research suggests Australia does not have the same sequestration potential as other countries and there is significant risk of loss of soil carbon in times of drought or changed management practices.[26]

The Bali Roadmap

2.23 The United Nations Climate Change Conference held in Bali in December 2007 resulted in two negotiation tracks (the Convention track and the Protocol track), known as the Bali Roadmap, which aim to achieve agreement on the arrangement to succeed the first Kyoto commitment period. It is anticipated that parties will come together in Copenhagen in December 2009 to agree on the way forward post-2012.[27]

2.24 Of particular interest will be any change to the international accounting rules in the next agreement. In the White Paper, the Commonwealth Government noted that there may be changes to the rules relating to land use, land use change and agriculture in the next agreement.[28]

Market based approaches to reduce greenhouse gas emissions

2.25 At the launch of the *Stern Review on the Economics of Climate Change*, Sir Nicholas Stern said:

> The science tells use that greenhouse gas emissions are an externality; in other words, our emissions affect the lives of others. When people do not pay for the consequences of their actions we have market failure. This is the greatest market failure the world has seen.[29]

[24] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. C-9

[25] *ibid.*, pp. C-9–C-10

[26] *ibid.*, p. C-9

[27] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 175

[28] DCC, *op. cit.*, p. 6-4

[29] N Stern, *Stern Review of the Economics of Climate Change*, launch presentation, London, 30 October 2006, p. 1

2.26 Governments are responding to address this market failure of unpriced greenhouse gases by establishing a price on carbon emissions via a carbon tax, carbon trading system or regulation. Emissions trading schemes have generally emerged as the preferred market based approach in many developed countries to reducing emissions. They allow abatement to be achieved at the lowest costs to the economy because abatement can occur where and when it is most cost-effective.[30]

2.27 An alternative approach is a carbon tax which increases the cost of emissions by a set amount and allows the market to determine how much abatement to undertake in response, that is, whether it is more cost-effective to pay the carbon tax or to undertake abatement. The Commonwealth Government has indicated that an emissions trading scheme is preferable to a carbon tax because an emissions trading scheme delivers a defined environmental outcome and can be linked to other schemes internationally which gives businesses access to the lowest cost abatement opportunities.[31]

2.28 Governments could also choose to achieve abatement by regulating or placing legal restrictions on activities that emit greenhouse gases. However, such measures are often costly to administer and comply with. They may also impose significant costs on businesses as they usually require parties to achieve specific outcomes irrespective of the costs of such action. Such approaches also provide little incentive for businesses to do more than is required for compliance. The Commonwealth Government has stated its belief that the outcome from an emissions trading scheme is preferable.[32]

The Carbon Pollution Reduction Scheme

2.29 In the White Paper the Commonwealth Government stated that the CPRS will be Australia's primary tool to reduce greenhouse gas emissions.[33] The objective of the Scheme is:

> to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.[34]

2.30 The CPRS will put a price on carbon in a systematic way throughout the economy. The CPRS is a 'cap and trade' emissions trading scheme, whereby an annual limit (a cap) will be set on the aggregate greenhouse gas emissions that can be produced by firms in covered sectors of the Scheme. Setting a limit means that the right to emit greenhouse gases becomes scarce, and scarcity creates a price.[35]

2.31 Firms with facilities that emit more than 25,000 t CO_2-e will need to acquire and surrender a permit for every tonne of greenhouse gas they produce during a year,

[30] DCC, *Carbon Pollution Reduction Scheme: Green Paper*, Canberra, 2008, p. 77
[31] *ibid.*, p. 78
[32] *ibid.*, pp. 78–79
[33] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. xxv
[34] *ibid.*, p. 5-8
[35] *ibid.*, p. 5-8

which will impose Scheme obligations on around 1,000 firms.[36] For some firms, it will be cheaper to reduce emissions than to buy permits.[37]

Emissions caps and targets

2.32 The total number of permits available will be equal to the scheme cap. The cap is set at a level that is consistent with an environmental objective: the lower the cap, the more abatement that must occur. The Committee understands that the Scheme caps for the first two years will be aimed at meeting Australia's Kyoto Protocol target for the first commitment period.[38]

2.33 The Commonwealth Government has committed to a long term target of reducing Australia's greenhouse gas emissions by 60% below 2000 levels by 2050 (equivalent to 60% below 1990 levels). It has also announced a medium term target to reduce emissions by 5 to 15% below 2000 levels by 2020 (equivalent to 4 to14% below 1990 levels).[39]

2.34 The Committee understands that this medium term commitment represents a minimum unconditional target of an emissions reduction of 5% below 2000 levels by 2020. However, if a global agreement is reached, which includes commitments by all major economies to substantially restrain emissions and by all developed countries to take on comparable targets, the Commonwealth Government will commit to reducing emissions by 15% below 2000 levels by 2020.[40]

2.35 In the event that a comprehensive global agreement can be reached consistent with long term stabilisation of atmospheric concentrations of greenhouse gases at 450 parts per million of CO_2-e, the Commonwealth Government has announced it is prepared to establish post-2020 targets to contribute appropriately to an internationally agreed target.[41]

Coverage

2.36 The Scheme coverage determines what types and sources of emissions are subject to the cap. The CPRS is designed to have the broadest possible coverage of greenhouse gas emissions and industry sectors. Broad scheme coverage ensures that the cost of achieving emissions reductions is shared equitably across the economy and lowers the overall cost by increasing opportunities for abatement and ensuring that competing firms and sectors operate within equivalent market rules.[42]

2.37 The CPRS will cover all six greenhouse gases listed under the Kyoto Protocol and five of the seven sectors accounted for under the Kyoto Protocol: stationary energy, transport, fugitive emissions, industrial processes and waste. This means the CPRS will cover around 75% of Australia's emissions.[43]

---

[36] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, pp. 6-1 and p.6-8

[37] *ibid.*, p. 5-8

[38] *ibid.*, p. 10-2

[39] *ibid.*, p. 3-1

[40] *ibid.*, p. 3-2

[41] *ibid.*, p. xx

[42] *ibid.*, p. 6-1

[43] *ibid.*, pp. 6-1–6-3

Forestry

2.38 From the commencement of the CPRS in 2010, reforestation (as defined by the Kyoto Protocol) will be included in the Scheme on a voluntary basis.[44] This will require forestry operations to account for all their emissions and sequestration, however, as reforestation activities will generally sequester more greenhouse gases than they emit, they will be eligible to earn permits under the Scheme.

2.39 The Committee understands that the CPRS will cover only domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol account.[45] The Commonwealth Government noted in the White Paper that international accounting rules for land use, land use change and forestry under the Kyoto Protocol are currently under negotiation. As such, if international rules were to change, the Commonwealth Government would adapt the CPRS rules to align the Scheme with international agreements.[46] If this were to happen, affected entities would be provided with five years notice of any changes to accounting rules that would materially affect the supply and demand of Scheme permits.[47]

Agriculture

2.40 The CPRS will not cover emissions from agriculture from its start in 2010. The Commonwealth Government has indicated that it is not practical to cover agriculture at this stage as the sector contains many thousands of small emitters (unlike other sectors that have a small number of large emitters) and the calculation of emissions is highly complex.[48] However, the eventual inclusion of agriculture in the Scheme is desirable, if it can be achieved cost-effectively. The Committee understands that the Commonwealth Government has committed to consulting with the agriculture industry from 2009 to enable a decision to be made in 2013 on the possible inclusion of agriculture from 2015.[49]

2.41 The Commonwealth Government has committed to working with stakeholders to address the issues surrounding the inclusion of agriculture in the CPRS including:

- an economic analysis of the impacts of coverage and of different points of liability;
- analysis of the supply chains for agricultural products to identify cost-effective points of obligation, that is, to identify where permit obligations could be most effectively imposed;
- research to improve the accuracy of emissions estimation and development of emissions reporting capabilities; and
- a voluntary trial program of emissions reporting through the National Greenhouse and Energy Reporting System.[50]

2.42 While agriculture emissions will not be covered in the CPRS from its commencement, emissions from on-site waste water treatment facilities associated with food processing plants will be. The Commonwealth Government has decided that Scheme

[44] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-50
[45] *ibid.*, p. 6-50
[46] *ibid.*, p. 6-48
[47] *ibid.*, p. 6-50
[48] *ibid.*, p. 6-44
[49] *ibid.*, p. 6-46
[50] *ibid.*, pp. 6-45–6-46

obligations will apply to on-site waste water treatment for nine industrial sectors: dairy production; pulp and paper production; meat and poultry processing; organic chemicals production; sugar production; beer production; wine production; fruit processing; and vegetable processing.[51]

Alternative mitigation measures for non-covered sectors

2.43 The Commonwealth Government has indicated that where sources of emissions or sectors are likely to not be covered by the CPRS for some time, alternative mitigation measures would be applied. Alternative mitigation measures may include adopting low-emissions technologies or management practices, or regulatory requirements for entities to meet certain emissions standards.[52]

2.44 Such mitigation measures would ensure that firms with uncovered sources of emissions would make an equivalent contribution to achieving Australia's emissions reductions and have incentives to undertake abatement. Such alternative mitigation measures would be designed to deliver abatement up to a similar cost as the carbon price under the CPRS.[53]

Offsets

2.45 Carbon offsets represent reductions in greenhouse gases relative to a business-as-usual baseline, for example, forestry projects, soil management projects and improved management practices to reduce agricultural emissions. They are tradeable and often used to negate all or part of another entity's emissions.[54] Under the CPRS domestic offset credits can only be generated by those sectors that are not covered by the Scheme.

2.46 The Committee heard from the New South Wales Minerals Council that many industries already conducting offset activities, such as the minerals industry, will become covered sectors and no longer be able to generate credit revenue from offset activities.[55] However, the submission from DECC and the Department of Primary Industries (DPI) explained that as covered sectors must obtain permits for all their emissions, any mitigation actions being taken (such as offset activities) will reduce the number of permits required.[56]

2.47 Additionally, as discussed in paragraph 2.43 above, the Commonwealth Government has indicated that if sectors are likely to remain outside the Scheme for an extended period of time alternative mitigation measures would be applied. This would mean that offsets could only be issued for abatement that was additional to such alternative mitigation measures.[57]

2.48 The Committee understands that the Commonwealth Government has acknowledged that the broad sectoral coverage of the CPRS and application of mitigation measures to uncovered sectors means that the scope for domestic offsets is likely to be very

[51] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-38
[52] *ibid.*, p. 6-6
[53] *ibid.*, p. 6-6
[54] *ibid.*, p. F-5
[55] Submission 11, New South Wales Minerals Council, p. 3
[56] Submission 9, DECC and DPI, p. 12
[57] DCC, *op. cit.*, p. 6-62

limited.[58] The Commonwealth Government has indicated that it will consider the scope for domestic offsets in 2013. In particular, domestic offsets from agriculture will not be included in the Scheme prior to coverage of agriculture emissions. The Commonwealth Government has indicated that it will make a decision about the inclusion of agriculture offsets at the same time a decision is made about the coverage of agriculture emissions in 2013. This means that as a minimum, agriculture offsets would not be allowable until at least 2015.[59]

International linkages

2.49 The Committee understands that the CPRS has been designed to link with international markets and schemes and will allow an unlimited number of eligible international units to be accepted for Scheme compliance. The Commonwealth Government has stated that accepting international units has the potential to: control domestic costs; provide support for the international Kyoto architecture; promote technology transfer; and facilitate Australia's involvement in international carbon markets.[60]

2.50 The CPRS will allow liable entities to use Kyoto units to meet their compliance obligations, linking the Scheme to the Kyoto Protocol's flexibility mechanisms. This is consistent with the environmental integrity criterion of the CPRS that means that accepting a Kyoto unit into the Scheme will result in one less tonne of greenhouse gas being emitted elsewhere in the world, thus achieving the same environmental outcome.[61]

2.51 The White Paper outlines the following rules on the use of Kyoto units for compliance in the Scheme:

- AAUs will not be accepted for compliance. This will be reviewed for the post-2012-13 period in the light of developments in international negotiations.
- RMUs will be recognised for compliance. RMUs issued in the first commitment period will not be accepted for compliance in the Scheme beyond 2012-13. CERs issued in the first commitment period will be recognised for compliance in the Scheme from 2012-13.
- ERUs will be recognised for compliance. ERUs issued in the first commitment period will be recognised for compliance in the Scheme from 2012-13, however, ERUs converted from removal units in the first commitment period will not be recognised for compliance purposes in the Scheme from 2012-13.
- CERs will be accepted for compliance, with the exception of those that have associated contingent obligations and high administrative costs (currently, temporary CERs and long-term CERs).[62]

2.52 The CPRS will not accept non-Kyoto units for compliance in the Scheme. However, this position will be reviewed for the post-2012-13 period in the light of future developments in international negotiations.[63]

[58] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-62
[59] *ibid.*, p. 6-64
[60] *ibid.*, p. 11-9
[61] *ibid.*, p. 11-10
[62] *ibid.*, pp. 11-15–11-19
[63] *ibid.*, p. 11-22

Assistance measures

2.53 The Commonwealth Government has indicated that it recognises that Australia's adoption of a carbon constraint before other countries may have a significant impact on emissions-intensive trade-exposed industries. Carbon leakage is said to occur when firms whose prices are set in international markets relocate to countries without carbon costs, resulting in no global reduction in greenhouse gas emissions. The CPRS outlines a number of transitional assistance measures to reduce the risk that industries that produce traded goods and have the most significant exposure to a carbon price would relocate offshore.[64]

2.54 In February 2009 the Commonwealth Government released a Guidance Paper which established the process for determining emissions-intensive trade-exposed assistance eligibility. The assessment process will be used to inform the Commonwealth Government's decision on which activities will be eligible for assistance, the rates of assistance and the basis for allocations for eligible activities.[65]

2.55 The White Paper also outlines a number of assistance measures for other businesses and households to limit the impact of the CPRS, especially in its initial stages. One of these measures is the fuel tax adjustment. The Committee understands that the Commonwealth Government has committed to reducing fuel taxes for three years on a cent-for-cent basis to offset the initial price impact on fuel.[66]

2.56 Agriculture and fishing businesses currently pay no effective fuel tax and thus will not benefit from the fuel tax cuts. Therefore, the Commonwealth Government will provide a new 'CPRS fuel credit' which will equal the fuel tax cut to ensure that these businesses receive assistance equivalent to the full benefit of the fuel tax cut.[67]

Conclusion

2.57 The Committee notes that climate change is a significant global issues and that Australia has chosen to meet its international commitments on greenhouse gas emissions through a market-based solution of an emissions trading scheme. The costs and benefits of such a scheme for natural resource management in New South Wales will be discussed in the next chapter.

---

[64] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 12-1

[65] DCC, *Assessment of Activities for the Purposes of the Emissions-Intensive Trade-Exposed Assistance Program: Guidance Paper*, Canberra, 2009, p. 5

[66] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 17-16

[67] *ibid.*, p. 17-17

Chapter Three - Implications of the Carbon Pollution Reduction Scheme

3.1 This chapter discusses the overall positive and negative effects of the CPRS on natural resource management in New South Wales and then focuses on the implications of the CPRS specifically for forestry and agriculture.

3.2 Natural resource management is defined under the *Natural Resources Management Act 2003* as the management of water, native vegetation, salinity, soil, biodiversity, coastal protection, marine environment and forestry.[68] A natural resource manager is any individual or organisation with responsibility for natural resource management, which in New South Wales predominantly includes: New South Wales Government agencies; Catchment Management Authorities; local governments; farmers, forestry operators; and community groups.[69]

3.3 The Committee considers that there is likely to be both costs and benefits for natural resource management in New South Wales from the introduction of an emissions trading scheme. The submission from the Natural Resources Advisory Council (NRAC), an independent body consisting of a diverse range of natural resource management stakeholders, states:

> The consensus from NRAC members…is that an [emissions trading scheme] will be an important mechanism for emissions reduction and that there will be both positive and negative effects of such a scheme on [natural resource management] in NSW.[70]

3.4 In particular the Committee heard that the two areas of natural resource management that will be most affected by an emissions trading scheme will be forestry and agriculture.[71]

Benefits

3.5 The Committee heard that the introduction of an emissions trading scheme offers considerable opportunities for improved natural resource management, provided that policies are put in place to minimise the risk of negative outcomes.[72] The benefits of the CPRS for natural resource management in New South Wales are outlined below.

Mitigation of climate change impacts

3.6 A number of submissions stated that the major benefit of the CPRS would be emissions reduction and the resultant prevention or mitigation of climate change impacts.[73] The Committee has previously reported on the potential impacts of climate change in New South Wales, including impacts on water resources and salinity, agriculture, native vegetation and biodiversity, coastal and estuarine protection and the marine environment.[74] Reducing the impacts of climate change would prevent or

[68] *Natural Resources Commission Act 2003*, s 5
[69] Submission 9, DECC and DPI, p. 5
[70] Submission 12, NRAC, p. 3
[71] Submission 9, DECC and DPI, p. 5
[72] Submission 7, Greening Australia, p. 1
[73] Submission 9, DECC and DPI, p. 7; Submission 12, NRAC, p. 5
[74] Standing Committee on Natural Resource Management (Climate Change), *Climate Change and Natural Resource Management in New South Wales*, New South Wales Parliament Legislative Assembly, Sydney, 2008, pp. 7–13

mitigate these damaging impacts on natural resource management and in particular prevent significant losses to agricultural and forestry productivity.

Modified energy use

3.7 The commencement of the CPRS is likely to result in increased energy efficiency and the use of more energy from non-fossil fuel sources in natural resource management.[75] As in all sectors, a carbon price will increase the cost of energy from carbon polluting sources (such as coal generated electricity and petrol) and thus in an effort to reduce costs natural resource managers are likely to reduce their energy usage through greater energy efficiency. Additionally the higher costs of fossil fuel derived energy will encourage natural resource managers to shift to non-fossil fuel energy sources such as renewable energy.

Additional revenue stream

3.8 The introduction of emissions trading is likely to change the way in which society uses energy and thus may result in new opportunities for natural resource managers to gain an additional revenue stream from such activities as:

- providing sites for wind and/or solar power;
- production of biofuel from agricultural crops or forest and crop residues;
- generation of alternative energy, such as capture and use of methane from intensive livestock; and
- producing tradeable offset credits.[76]

3.9 At one of the Committee's public hearings Mr Simon Smith from DECC explained about some of these potential financial benefits for natural resource managers:

> There will be increased demand from some sectors that are opportunities for agricultural sectors. There will be demand for wind, which may be located on rural landholder's land, as you would know. There is likely to be a demand for biomass as we move to new technologies for alternative fuels, there will be demand for other types of biomass products rather than conventional food crops, and these are the most promising areas for fuels…Also there will be other demands for energy and for timber production, and opportunities as offset providers, as I have talked about before, planting of trees and forests and farms to sequester carbon from the atmosphere. There will be opportunities for some landholders.[77]

3.10 The commencement of the CPRS may also provide financial incentives for improved natural resource management practices as part of an overall strategy to reduce greenhouse gas emissions and enhance carbon sequestration.[78] The Committee notes that the Commonwealth Government has outlined a number of measures for other sectors in the White Paper aimed at providing assistance to transition to a carbon constrained economy. Once a final decision is made on the inclusion of agriculture in the Scheme additional incentive measures may be provided for the agriculture sector to improve resource management practices.

---

[75] Submission 6, Dr David Pepper, p. 3

[76] *ibid.*, p. 3; Submission 9, DECC and DPI, p. 8; Submission 12, NRAC, p. 5; L Kiely, *The Two Markets*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[77] Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 22

[78] Submission 12, NRAC, p. 5

Environmental benefits from offsets

3.11 The potential to create carbon offsets within an emissions trading scheme would also generate environmental benefits, for example:

- soil carbon sequestration can improve soil moisture holding capacity and nutrient cycling and can also reduce the impacts of drought on agricultural land;[79] and
- biosequestration through reforestation using native biodiverse plantations increases the amount of native vegetation which has multiple benefits including regenerating and improving native fauna habitat and connectivity and improved landscape function, such as nutrient cycling, hydrology and reduced salinity.[80]

3.12 The Committee heard from many stakeholders about the environmental benefits offsets. A detailed discussion is included in Chapter Four of this report as part of the implications of offsets for natural resource management in New South Wales.

Costs

Covered sector costs

3.13 The costs for natural resource managers of the CPRS are related to the coverage of the Scheme. The submission from DECC and DPI stated:

> If agriculture and forestry were included as covered sectors in the [CPRS], natural resource managers would face the cost of purchasing and surrendering sufficient permits to meet their net greenhouse gas emissions. The extent of the cost would depend upon the level of the target, emissions trajectory selected and the nature of the business.[81]

3.14 If the agriculture was a covered sector in the CPRS, livestock production would be more significantly affected than cropping because livestock is more emissions intensive and would therefore incur greater costs.[82]

3.15 As forestry is included as a voluntary covered sector, and is likely to be a net sequester rather than emitter of greenhouse gases, it will be subject to transaction costs associated with measuring and reporting to enable the generation of tradeable permits. Issues pertaining to transaction costs are discussed in paragraph 3.31 below.

3.16 As agriculture will not be included in the CPRS from its commencement there are currently no covered sector costs for the agriculture sector. A decision will be made in 2013 about the possible coverage of agriculture in the CPRS from 2015. If agriculture becomes a covered sector it will be subject to covered sector costs from 2015.

Increased complexity in decision making

3.17 The Committee has heard that the introduction of the CPRS will make natural resource management more difficult by creating increased complexity in decision making for natural resource managers. While appearing as a witness before the Committee on behalf of NRAC, Dr Mark Dangerfield said:

---

[79] Submission 9, DECC and DPI, pp. 7–8

[80] Submission 7, Greening Australia, p. 1; Submission 12, NRAC, p. 5

[81] Submission 9, DECC and DPI, p. 5

[82] *ibid.*, p. 5

> an emissions trading scheme will tend to make natural resource management harder for individuals on the ground doing the work. Natural resource managers are going to be in the front line of some of the emissions trading scheme implementation and they will be juggling on-ground actions for mitigation and adaptation to a change in climate and ongoing production. They will be looking to try to understand the ways their choices about making production work, but also getting good environmental outcomes, will sit within a new scheme for potentially giving them some financial returns. They will have to make decisions on these trade-offs and face more stringent compliance and reporting requirements. So there will be a filtering down of practical issues for producers.[83]

3.18 Dr Dangerfield went on to further explain:

> we believe the trade-offs in management actions will become increasingly complex. So, when you make a decision at the moment that "I am going to grow cotton instead of wheat," or "I am going to have a certain amount of grazing pressure on my paddock," it is relatively simple to calculate how long term my returns will be for that particular action. But, as you get more issues around alternatives to direct production, the trade-off reactions become increasingly complex. So resource managers will grapple with their choices in terms of complete carbon accounting, the impacts on conservation outcomes, and new market tools that might come along, in addition to carbon credits, as time passes.[84]

3.19 The Committee heard that some natural resource managers are already finding it difficult to make decisions about the most appropriate way forward due to a lack of understanding about the best solutions to the challenges being raised by climate change. At a public hearing Ms Pamela Green, the Catchment Management Authority representative on NRAC, spoke about the reaction of local landholders in her area:

> Currently, their comments to me are, "Don't tell us there's climate change and that emissions trading is coming; we know that. Tell us what we can do." So there is a high level of awareness, but not necessarily engagement, or understanding what the solutions are.[85]

3.20 This complexity in decision making applies not only to individual landholders but also to government agencies responsible for natural resource management. The Western Sydney Regional Organisation of Councils (WSROC) advised the Committee that their local councils are anxious to ensure that there are sufficient resources allocated to integrating the implications of the CPRS into their management plans as soon as there is clarity as to the impacts of the Scheme on local government.[86]

3.21 Stakeholders advised the Committee that a key action for the New South Wales Government to help natural resource managers would be to assist in developing capacity building and education programs to raise awareness of how natural resource management choices will be affected by an emissions trading scheme and what options and potential solutions are available for natural resource managers to assist their decision making.[87]

---

[83] Dr Mark Dangerfield, Transcript of Hearing, 31 October 2008, p. 1

[84] *ibid.*, p. 2

[85] Ms Pamela Green, Transcript of Hearing, 31 October 2008, p. 3

[86] Submission 8, WSROC, p. 4

[87] *ibid.*, p. 4; Dr Mark Dangerfield, Transcript of Hearing, 31 October 2008, p. 4

RECOMMENDATION 1: That the New South Wales Government develops a capacity building program for natural resource managers to inform them of management options in response to the CPRS so that they are able to make appropriate decisions.

Increased costs of inputs

3.22 The Committee heard from several stakeholders that the CPRS will increase the costs of inputs for natural resource managers, notably fuel, electricity, chemicals, fertilisers and transport, as a result of the inclusion of other sectors in the CPRS.[88] This would result in increased operating costs for farms and forestry operations.[89] However, Mr Simon Smith from DECC explained that such increased costs would not be unique to natural resource managers but would be felt across the whole community.[90]

3.23 Within the agriculture sector increased costs are likely to be greater for cropping rather than livestock as the inputs for cropping are generally more emissions intensive.[91] The Committee also heard from stakeholders concerned that such costs would be felt disproportionately by the agriculture sector because of the regional natural of agriculture. Mr David Eyre from the NSW Farmers' Association told the Committee:

> A carbon price, irrespective of whether agriculture is a covered sector, will also result in disproportionate costs of the national emissions trading scheme being incurred by the agricultural sector and regional communities due to the increased fuel and fertiliser costs. Carbon costs will flow through the whole economy but that impact will be disproportionately higher in regional communities due to the tyranny of distance, et cetera, and of course fertiliser is an integral part of production and we all know the price pressures that currently exist on fertiliser will only be exaggerated by a carbon price.[92]

3.24 The increased costs of inputs, especially energy, were also raised as a particular issue by WSROC. Its submission stated that:

> Natural Resource Management by councils is also vulnerable to budget cuts when financial pressures on councils increase, particularly as other services provided by local government (i.e. local roads, waste management, land use regulation, etc) are the sole preserve of councils and so are generally considered essential services for them to maintain. It would be a truly ironic situation if the [CPRS], which is designed to protect the (global and local) environment, negatively impacts the capacity of local government to implement local natural environment conservation and enhancement measures, including those which can assist in greenhouse gas reductions or climate change adaptation.[93]

3.25 At the Carbon Farming Expo and Conference in November 2008 the Committee heard from a number of farmers that carbon farming techniques had increased their farm productivity while requiring less or no fertilisers and pesticides and had

[88] Submission 6, Dr David Pepper, p. 3; Submission 8, WSROC, p. 1; Submission 9, DECC and DPI, p. 6
[89] Submission 9, DECC and DPI, p. 6
[90] Mr Simon Smith, Transcript of Hearing, 11 April 2008, p. 22
[91] Submission 9, DECC and DPI, p. 6
[92] Mr David Eyre, Transcript of Hearing, 11 April 2008, p. 29
[93] Submission 8, WSROC, p. 1

significantly reduced their fuel usage.[94] Further issues relating to carbon farming practices are discussed in paragraph 4.46 below.

Difficult for small players to participate

3.26 The Committee heard how important it was that the final design of the CPRS allowed small players to participate equitably.[95] Natural resource management is characterised by thousands of small players who all have an impact on the carbon budget.[96] This is in contrast to other sectors where there are very few entities that contribute to greenhouse gas emissions, for example, the CPRS will cover around 75% of Australia's emissions and will only impose obligations on around 1,000 firms.[97]

3.27 One of the concerns raised was that the design of the Scheme, and in particular the rules relating to coverage, would not be suitable for the agriculture sector. Mr David Eyre of the NSW Farmers' Association told the Committee:

> there is a real concern in the farming sector that the scheme designers will defer consideration of the rules for agriculture until they have sorted out the energy sector side of things and possibly until after the actual implementation of the scheme, and therefore they will develop a set of rules that will not work for agriculture.[98]

3.28 Stakeholders also raised concerns about the scale of reforestation operations that would be necessary to participate in the Scheme.[99] Dr David Butcher of Greening Australia explained that this same issue was raised with respect to the eligibility of native revegetation:

> it has got to be an area that is large enough to be economic to manage into the future. You cannot say: I've saved that tree and it's somewhere out there and no-one's ever going to cut it down. How do you know without actually having a process in place. You need areas most probably in the order of 1,000 hectares as a minimum, so you define it on a map, you can define what the quality of the vegetation is and you can put a covenant over it.[100]

3.29 The Commonwealth Government has acknowledged the difficulties associated with capturing all natural resource managers, particularly within the agriculture sector, in the Scheme. The White Paper states:

> The [agriculture] sector also includes more than 100 000 entities, many of which emit only small amounts of greenhouse gases each year. Only a small number of farm businesses emit more than 25 000 tonnes of CO_2-e a year, which is the general

[94] S MacCalman, *The Carbon Farmer's Experience*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008; C McKeller, *The Year That Was – Spring Ridge*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008; C Seis, *The Year That Was – Gulgong*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008; A Williams, *The Year That Was – Coonamble*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[95] Submission 12, NRAC, pp. 2–3; Dr Mark Dangerfield, Transcript of Hearing, 31 October 2008, p. 2

[96] Dr Mark Dangerfield, Transcript of Hearing, 31 October 2008, p. 1

[97] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-1

[98] Mr David Eyre, Transcript of Hearing, 11 April 2008, pp. 29–30

[99] Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, pp. 33–34

[100] Dr David Butcher, Transcript of Hearing, 11 April 2008, p. 9

> Scheme threshold. If Scheme obligations were applied to farm businesses above this threshold only, most agriculture emissions would not be covered by the Scheme.[101]

3.30 As one witness told the Committee, to effectively address greenhouse gas emissions in natural resource management, and particularly for the agriculture sector, it is critical that the majority of the industry is able to participate.[102] If the final design of the CPRS, particularly as it applies to agriculture, suits only large organisations, rather than individuals or small entities, then natural resource managers may be at a disadvantage in the Scheme. As negotiations on the inclusion of agriculture in the Scheme progress, it will be particularly important to ensure that final arrangements will not disadvantage individuals and small players if agriculture becomes a covered sector.

RECOMMENDATION 2: That the New South Wales Government continues to represent the interests of natural resource managers in its negotiations with the Commonwealth Government about the final design of the CPRS to ensure that individual and small operators are able to equitably participate should agriculture become a covered sector.

Transaction costs

3.31 Another concern amongst natural resource management stakeholders was that high transaction costs would prevent individual or small operators from participating in the Scheme, particularly providing offsets to generate credits. If excessive assessment, monitoring and reporting requirements were imposed on Scheme participants, such costs could be greater than the financial return received for offset credits.[103]

3.32 In an attempt to overcome these issues some stakeholders suggested that a pool manager or agent could be established. Such a body could be a government agency, such as a Catchment Management Authority, or a private organisation, such as Greening Australia, and would represent individual and small operators and bring them under the one umbrella organisation to average out the costs.[104] Mr Warwick Ragg of the Australian Forest Growers (AFG) explained:

> There are a couple of models out there now that are beginning to do that, to recognise that the compliance costs and the measurement costs, and the access to the market for that matter, are problematic for a small individual. But if has an "agent" who is able to act on his behalf and market his carbon, then we find that attractive.[105]

Reporting

3.33 The Committee heard that an emissions trading scheme is likely to result in increased reporting and compliance obligations and costs, however, the degree to which this is a burden on natural resource managers is dependent on the final

---

[101] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-44

[102] Dr Mark Dangerfield, Transcript of Hearing, 31 October 2008, p. 2

[103] Submission 12, NRAC Submission, p. 5; Mr Austin Whitehead, Transcript of Hearing, 11 April 2008, p. 46; Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, p. 32

[104] Mr Austin Whitehead, Transcript of Hearing, 11 April 2008 p. 44; Mr Warwick Ragg, Transcript of Hearing 16 May 2008, p. 34

[105] Mr Warwick Ragg, Transcript of Hearing 16 May 2008, p. 34

structure of the Scheme.[106] Additionally, as Scheme offsets could be used interchangeably with CPRS permits they would therefore need to meet internationally recognised standards.[107] Therefore reporting requirements are likely to apply to natural resource managers whether they are included as a covered sector under the CPRS or they participate through the generation of offsets.

3.34 As agriculture will not be covered by the CPRS and agricultural offsets are not eligible under the Scheme from its commencement in 2010, there are no reporting obligations imposed on the agriculture sector by the CPRS. If farmers choose to generate offset credits for sale in the voluntary offset market, they would need to comply with the requirements of the National Carbon Offset Standard which is currently being developed by the Commonwealth Government (see paragraph 4.17 below for further details).

3.35 Reporting requirements will be imposed on forestry operations that choose to participate in the Scheme to generate permits for trade. As part of the consultation for the White Paper a number of stakeholders indicated that their preference was for forestry reporting to adopt similar practices to the GGAS reporting, that is, annual reporting with full verification at periodic intervals, such as every five years or following each international commitment period.[108]

3.36 The design of the CPRS has sought to minimise reporting requirements and costs and the White Paper states:

> To minimise reporting requirements while ensuring the credibility of permits issued for reforestation, the Government will require forest entities to submit an initial emissions estimation plan and supply details of supporting forest management data, and then submit an emission estimation report at least once every five years. Forest entities may elect to report more frequently but not more than once a year. Forest entities will also be required to provide notice to the regulator of any major changes to forest management data or natural disturbance events that could materially change emissions estimates, as they occur.[109]

3.37 The Committee notes that reporting obligations for forestry operations will be similar to obligations under GGAS. Reporting obligations for agriculture will be dependent on a decision about its final inclusion in the Scheme. The Committee trusts that the Commonwealth Government will take reporting obligations and costs into consideration in the final decision about agriculture.

RECOMMENDATION 3: That the New South Wales Government continues to negotiate with the Commonwealth Government regarding the inclusion of agriculture in the CPRS to ensure that reporting obligations and other transaction costs do not impose excessive restrictions on the agriculture sector either as a covered sector or under alternative mitigation measures.

[106] Submission 12, NRAC, p. 4

[107] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-62

[108] *ibid.*, p. 6-53

[109] *ibid.*, p. 6-54

Delayed investment and research expenditure

3.38 The Committee heard that one consequence of natural resource management not being covered by the CPRS from commencement could be delays in investment and expenditure on research and development to assist natural resource managers to better understand their greenhouse gas emissions and sequestration and preferable mitigation and adaptation measures. This may make it more difficult for natural resource managers to generate offsets and could increase transaction costs for natural resource managers attempting to demonstrate the amount of actual abatement undertaken.[110]

3.39 The Committee heard from a number of stakeholders that ongoing and significant investment in research and development is necessary to improve understanding and practices that could reduce greenhouse gas emissions and facilitate carbon sequestration. The Committee heard that research is already being undertaken on:

- measuring methane emissions in cattle and assessing whether different diets can reduce their methane emissions;[111]
- new methods to measure greenhouse gas emissions from cattle herds;[112]
- the impacts of different farming practices on agricultural emissions;[113]
- monitoring and reporting requirements for agricultural emissions;[114]
- economic analysis of the point of obligation for scheme permits for agriculture;[115]
- the amount of carbon stored in wood products in landfill;[116]
- new techniques to measure soil carbon accurately and cost-effectively;[117] and
- how much carbon can be sequestered in New South Wales soils, how carbon remains in the soil, best management practices for sequestering carbon in soil and the saturation point of soil carbon sequestration.[118]

3.40 Additionally, the Committee understands that the Commonwealth Government has recently announced that $32 million will be spent on nine research programs to look at effective ways to store carbon in soil.

3.41 The Committee heard substantial evidence that further research is required on a number of issues to enable natural resource managers to participate in an emissions trading scheme, including:

- measurement methodologies and technologies for agricultural emissions;[119]

---

110 Submission 9, DECC and DPI, p. 7

111 Mr Jock Laurie, Transcript of Hearing, 11 April 2008, p. 39; Mr Austin Whitehead, Transcript of Hearing, 11 April 2008, p. 41

112 R Eckard, *The Science of Farm Emissions*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

113 Mr Austin Whitehead, Transcript of Hearing, 11 April 2008, p. 41

114 *ibid.*, p. 40

115 *ibid.*, p. 41

116 Mr Rick Fowler, Transcript of Hearing, 11 April 2008, p. 48

117 A McBratney, *Reducing the Cost of Measurement*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

118 Mr Rick Fowler, Transcript of Hearing, 11 April 2008, p. 45; Mr Austin Whitehead, Transcript of Hearing, 11 April 2008, p. 41

119 Mr Jock Laurie, Transcript of Hearing, 11 April 2008, p. 33

- on-farm technologies to abate nitrous oxide emissions;[120]
- methods and management practices to reduce agricultural emissions while maintaining productivity;[121]
- developing low-cost measurement methodologies and models of soil carbon sequestration;[122]
- ensuring the permanence of carbon sequestration in soil;[123]
- the role of pre-1990 forests and native forests in sequestering carbon and their potential inclusion in an emissions trading scheme;[124]
- carbon measurement and modelling of natural woodland and forest systems in New South Wales;[125]
- a vegetation connectivity analysis of New South Wales to determine the best places for biodiverse revegetation in light of impending climate change;[126]
- investigations into the best locations for biodiverse revegetation in terms of hydrology and salinity;[127]
- genetic provenance issues and climate change to build knowledge of how to source seeds so that the plants will cope with future rises in temperatures;[128] and
- whether modified fire management regimes currently being used in the Northern Territory to reduce carbon dioxide emissions have any merit in New South Wales.[129]

RECOMMENDATION 4: That the New South Wales Government provides additional expenditure for research and development, which complements other research being undertaken, to assist natural resource managers to participate in the CPRS.

RECOMMENDATION 5: That the New South Wales Government expands its dissemination of current research findings to affected natural resource managers and continues to inform them of further research outcomes and implications as they become available.

[120] R Eckard, *The Science of Farm Emissions*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[121] Submission 5, New South Wales Irrigators' Council, p. 4

[122] Mr David Eyre, Transcript of Hearing, 11 April 2008, p. 30; Mr Jock Laurie, Transcript of Hearing, 11 April 2008, p. 33; Mr Rick Fowler, Transcript of Hearing 11 April 2008, p. 45

[123] Mr Jock Laurie, Transcript of Hearing, 11 April 2008, p. 33

[124] Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, p. 32

[125] Submission 7, Greening Australia, p. 2

[126] *ibid.*, p. 2

[127] *ibid.*, p. 2

[128] *ibid.*, p. 2

[129] Submission 13, NSW Rural Fire Service, p. 1

Potential reduction in international competitiveness

3.42 If Australia's CPRS commences while there are no measures by other nations to impose carbon costs, New South Wales's natural resource managers could suffer a potential reduction in international competitiveness as they would be competing in export markets and against imports which do not have prices on carbon.[130]

3.43 The Committee heard that there will need to be consideration of whether agriculture is significantly trade-exposed and emissions-intensive to be eligible for assistance to ensure they can compete fairly against producers from other countries. Mr Simon Smith from DECC explained:

> Agriculture is obviously a very large export industry. The debates in the future will be about is it sufficiently energy intensive to justify protective mechanisms to be included. The obvious case will be where agriculture uses fuel in its productive processes or transport, does that represent such a large proportion of its costs that some kind of protection should be provided for it.[131]

3.44 The Committee has also heard from forestry stakeholders concerned about maintaining the competitiveness of emissions-intensive trade-exposed elements of the forests processing industry such as pulp and paper and reconstituted board products.[132]

3.45 The Commonwealth Government has advised that the eligibility of agriculture for emissions-intensive trade-exposed assistance will be considered in the process leading up a the decision on coverage of agriculture in 2013.[133]

Issues for forestry

Carbon stored in wood products

3.46 The Committee heard from forestry stakeholders that they were seeking an emissions trading system that included the sequestration value of carbon stored in wood products during use and after disposal.[134] Mr Christopher Davis from the University of Technology, Sydney, explained to the Committee:

> If you harvest the timber and use it in construction and encapsulate it and preserve it, you have locked that carbon away pretty effectively. If it is in the natural environment and can degrade, then the carbon gets back into the cycle and there is a steady state instead of a locking-up or an accretion of carbon.[135]

3.47 Mr Warwick Ragg of the AFG told the Committee about the industry's concerns on this issue:

> If we do not get formal recognition of carbon sequestered in harvested wood products we believe that will be outside the purity of the market because it ignores part of the cycle of the carbon, if you like. It will be a lost opportunity for the forests sector.[136]

---

[130] Submission 9, DECC and DPI, p. 6; Mr Simon Smith, Transcript of Hearing, 11 April 2008, p. 21

[131] Mr Simon Smith, Transcript of Hearing, 11 April 2008, p. 21

[132] Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, p. 31

[133] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-46

[134] Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, p. 31

[135] Mr Christopher Davis, Transcript of Hearing, 16 May 2008, p. 44

[136] Mr Warwick Ragg, Transcript of Hearing, 16 May 2008, p. 32

3.48 Under the Kyoto Protocol the value of carbon stored in wood products is not recognised, as harvesting of forests is treated as an emission at the time of harvest. The Commonwealth Government noted in the White Paper that almost all the forest industry stakeholder submissions they received in their consultation noted that the Kyoto Protocol rules for forestry are flawed and not comprehensive. As such, there was also argument that the CPRS should issue permits for carbon sequestration that is not recognised under the current Kyoto Protocol rules.[137]

3.49 The final position of the Commonwealth Government in the White Paper is that the CPRS will only cover domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol national account.[138] However, the Commonwealth Government also notes that the international accounting rules for a post-2012 climate change agreement, including those relating to forestry, are currently under negotiation.[139] The White Paper states:

> If international rules change, the Scheme should be flexible enough to include additional sinks and sources or accounting approaches that have been internationally agreed. This will ensure that the Scheme continues to align with the evolving international climate change framework.[140]

3.50 The Commonwealth Government has advised that it will provide five years notice if there are any changes to international accounting rules that would materially affect the supply and demand of Scheme permits.[141]

Permanence of sequestration

3.51 The Committee heard that some stakeholders are concerned about the permanence of forestry sequestration.[142] There are concerns that the permanence of carbon stored in forests, particularly in the context of the increasing impacts of climate change such as increasing number of droughts, higher temperatures, increasing number and severity of bushfires, insect attack and other natural hazards.[143]

3.52 However, the Committee heard from Mr Warwick Ragg of the AFG that issues of permanence would not be an issue if forestry is treated as a covered sector rather than an offset. He explained:

> If afforestation were to be a covered sector rather than an offsetting sector, it is our understanding that those issues of additionality and permanence become null and void because you are in a full open trading market, so you pay for your emissions and get credits for your sequestration.[144]

3.53 To address issues of potential reversal in sequestration, the averaging crediting approach used in the CPRS to calculate credits incorporates a risk of reversal buffer, which creates a reserve to help protect forests against the possibility of emissions

---

137 DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-47

138 *ibid.*, p. 6-50

139 *ibid.*, p. 6-48

140 *ibid.*, p. 6-48

141 *ibid.*, p. 6-50

142 Submission 3, EDO, Attachment A, p. 7; Submission 3, EDO, Attachment B, p. 11; Submission 8, WSROC, p. 2

143 Submission 3, EDO, Attachment B, pp. 11–12; Submission 6, Dr David Pepper, pp. 6–7; Mr Austin Whitehead, Transcript of Hearing, 11 April 2008, p. 48

144 Mr Warwick Ragg, Transcript of Hearing 16 May 2008, p. 34

from natural events such as fire, insect attack, storm or sever drought. The risk of reversal buffer deducts a small amount of permits each time they are issued.[145]

Measurability of forest sequestration

3.54 The Committee heard from some stakeholders concerned that there is still uncertainty about the measurement of how much carbon is stored in forests.[146] Measurement of carbon sequestered by forests is complicated by the fact that the level of sequestration fluctuates depending on the availability of plant resources, such as water, nutrient and light, and the temperature which effects plants' biochemical reactions such as metabolism and photosynthesis.[147]

3.55 However, the Committee was advised by Mr Simon Smith of DECC that:

> There are different levels of sophistication of development and measurement technologies for different types of agriculture, so within forestry measurement methodologies are pretty well established, that part of it is not really a problem. We have been in our New South Wales Greenhouse Gas Abatement Scheme, we have had for many years now, clear rules about sequestering carbon in forests and that is all working fine, so that is not an impediment to forestry being included.[148]

3.56 The Commonwealth Government has stated in the White Paper that all reforestation emissions and removals will be estimated using a single prescribed methodology, such as the National Carbon Accounting Toolbox.[149] The Committee understands that work is currently being undertaken to revise and finalise the National Carbon Accounting Toolbox so that it meets the CPRS requirements for reforestation activities.

Issues for agriculture

3.57 The Committee heard that the agriculture sector is both a source of greenhouse gas emissions and also provides opportunities for carbon sequestration. Mr Simon Smith of DECC explained:

> I think it is important to keep in mind that agriculture and land use change are both sources of emission and they are also sinks. So, for example, livestock belching is a source of greenhouse gas emissions. Planting of trees can be a sink, withdrawing carbon dioxide from the atmosphere. Within this sector there are both emissions and sinks that are relevant to consider.[150]

3.58 The issues for agriculture from the perspective of being both an emissions source and a source of sequestration are included in this section.

Measurement of agricultural emissions

3.59 One of the key challenges for the full inclusion of agriculture in an emissions trading scheme is the lack of accurate, verifiable and cost-effective emissions measurement and reporting mechanisms.[151] At the Carbon Farming Expo and Conference in

---

145 DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-56

146 Submission 3, EDO, Attachment A, p. 7; Submission 8, WSROC, p. 2

147 Submission 6, Dr David Pepper, p. 6

148 Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 21

149 DCC, *op. cit.*, p. 6-53

150 Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 19

151 Submission 9, DECC and DPI, p. 1

November 2008, the Committee heard that significant research is currently being undertaken to improve emissions measurement, however, the industry still lacks a low cost measurement method or an agreed model for calculating emissions.[152]

3.60 The Commonwealth Government has acknowledged the difficulty in measuring agricultural emissions. The White Paper states:

> Estimating agriculture emissions is complex. These emissions are highly variable in response to management practices and climatic conditions. For example, cattle breeds and feed types in tropical and subtropical regions differ from those in temperate regions, generating different amounts of methane. Nitrous oxide emissions from soils in major cereal-growing regions vary geographically and over time, according to rainfall, soil types and fertiliser application rates.[153]

3.61 As previously recommended more research needs to be undertaken to improve agricultural emissions measurement, because if emissions cannot be measured reliably and accurately then the agriculture sector can play no part in an emissions trading scheme, as either a covered sector or through providing offsets.

Point of obligation

3.62 The Committee heard that a significant challenge for the inclusion of agriculture in an emissions trading scheme is the point of obligation, that is, the point in the supply chain where scheme obligations are applied. The point of obligation can be a facility that directly emits the greenhouse gas or another point along the supply chain, referred to as either being 'upstream' or 'downstream' from the point of the emission.[154]

3.63 The Committee heard that in agriculture it is difficult for the point of obligation to be the farm, that is where the emissions occur, because of the high transaction costs that would result. Mr Simon Smith from DECC explained:

> So if you think about current considerations in relation to the transport sector, that means people who burn fuel in vehicles would have to be accountable for the carbon emissions from that activity. It would be very impractical to require every motorist to be dealing in certificates every time they go for a drive down to the shops, so the proposal is that you would deal with that at an upstream point in the distribution chain of petroleum products, so that it would actually probably be the importer or refiner of fuel where the point of accountability of this scheme would lie and motorists would simply experience that in a change of price in the fuel when they buy it, because the refiner had to take that into account. Transaction costs mean that it is not practicable to deal with every single motorist, you would deal with it higher up in the supply chain. Thinking about agriculture, transaction costs of engaging every single farmer in relation to what is happening on every single paddock and the relatively small amount of emission per paddock would mean you just would never go there. It would be far too expensive and impractical to include them.[155]

3.64 The Committee was advised by DPI that it would be easier for the farming community if the point of obligation was at least one step removed from farms.[156] However,

---

[152] R Eckard, *The Science of Farm Emissions*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[153] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-44

[154] DCC, *Carbon Pollution Reduction Scheme: Green Paper*, Canberra, 2008, p. 514

[155] Mr Simon Smith, Transcript of Hearing 11 April 2008, pp. 20–21

[156] Mr Austin Whitehead, Transcript of Hearing 11 April 2008, p. 41

when the point of obligation is moved from the point of emission, there is little incentive to change the behaviour of emitters. A representative from DPI told the Committee:

> The point of obligation is one of the key issues that are currently being reviewed through economic analysis, as to what price signals are being sent through transference of the point of obligation to an abattoir or to a grain storage or a silo. The concern is that if you transfer that cost to, say, an abattoir, there is no price mechanism or there is no incentive for the farmers to implement change on their property per se.[157]

3.65 In the White Paper the Commonwealth Government stated:

> The Government is still disposed towards an approach where Scheme obligations are generally applied off-farm while ensuring there are incentives for on-farm abatement, though this will be subject to further consultation with stakeholders and analysis.[158]

3.66 The Committee notes that determining the most appropriate point of obligation and appropriate incentives for on-farm reductions in greenhouse gas emissions will require significant consultation between the Commonwealth Government and the agriculture industry.

Alternative mitigation measures

3.67 Although agriculture will not be covered by the CPRS from commencement in 2010, agricultural emissions account for 15.6% of Australia's total greenhouse gas emissions, the second largest sectoral emitter. Therefore, agricultural emissions cannot be ignored in any serious effort to reduce greenhouse gas emissions.[159]

3.68 The Commonwealth Government has indicated in the White Paper that emissions reductions should be shared across the economy and that all sectors should be subject to equivalent carbon costs.[160] Should the Commonwealth Government decide in 2013 to not cover agricultural emissions in the CPRS, alternative mitigation measures would be applied to agriculture. The White Paper states:

> To ensure that the agriculture sector makes an equivalent contribution to other sectors, the Government is disposed to apply mitigation measures that result in costs similar to those under the Scheme. For example, if the carbon price was $25 per tonne of CO_2-e, the Government would seek to mandate the use of mitigation technologies or practices in the agriculture sector with the intention of achieving a cost of around $25 per tonne CO_2-e.[161]

3.69 At the Carbon Farming Expo and Conference in November 2008, the Committee heard that alternative mitigation measures applied to the agriculture sector may be less flexible for farmers than being covered under the CPRS.[162] The Committee trusts that the Commonwealth Government will fully discuss potential alternative mitigation measures with agriculture stakeholders should a decision be made that agriculture will not be covered by the CPRS.

---

[157] Mr Austin Whitehead, Transcript of Hearing 11 April 2008, p. 41

[158] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-44

[159] R Eckard, *The Science of Farm Emissions*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[160] DCC, *op. cit.*, p. 6-45

[161] *ibid.*, p. 6-45

[162] R Eckard, *op. cit.*

Recognition of soil carbon under the Kyoto Protocol

3.70 The Committee heard that one of the key impediments to soil carbon not being allowed in the CPRS is that Australia does not currently recognise soil carbon sequestration under Article 3.4 of the Kyoto Protocol.[163] Mr Simon Smith of DECC explained:

> There is a bit of a sticker in relation to soil carbon because it is not recognised under the Kyoto Protocol at this point. If it were to be recognised under the [CPRS], that part of it would not be internationally compatible at this point.[164]

3.71 As discussed in paragraph 2.21 above Australia has elected not to account for soil carbon under the Kyoto Protocol because of the risks of losing soil carbon. Mr David Eyre of the NSW Farmers' Association explained:

> The fundamental protocols are under the Kyoto Protocol and the Marrakesh Accord and right now under [Article] 3.4 you can elect to include soils or not. If you include soils in your national accounts, then you are exposed to the risk of losing soil carbon due to drought and natural causes. So Australia elected not to include soil, and neither would an African nation if they decided to come under a cap for that reason.[165]

3.72 The Committee heard that the Carbon Coalition Against Global Warming is seeking to have soil carbon recognised as an offset under the Kyoto Protocol. Work is currently underway internationally to develop a communiqué in preparation for the next round of international negotiations to develop a post-2012 global climate change agreement to be held at the end of 2009.[166]

Measurement of soil carbon sequestration

3.73 The Committee heard from many stakeholders and agencies that a significant challenge for soil carbon sequestration was the lack of a reliable, accurate and cost-effective method for measuring the amount of carbon stored in soil.[167] One of the problems of measuring soil carbon is that even a single paddock does not have a consistent level of soil carbon. Mr Rick Fowler of DPI explained:

> one of the issues the scientists keep raising is the variation in sequestration rates from one side of the valley to the other, which again causes problems with developing some model. Some model has to be worked out. You cannot go around measuring every paddock because that is a transaction cost which is just unrealistic, but the results are far from being conclusive yet.[168]

3.74 Additionally, Mr Michael Kiely of the Carbon Coalition Against Global Warming told the Committee:

> You can measure it; it is just very flexible. If I measure it in the morning and measure it in the evening it will be different. If I measure 100 different core samples in a paddock I will get 100 different measurements.[169]

---

[163] Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 21; Mr David Eyre, Transcript of Hearing 11 April 2008, p. 34

[164] Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 21

[165] Mr David Eyre, Transcript of Hearing 11 April 2008, p. 34

[166] L Kiely, *The Two Markets*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[167] Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 21; Mr David Eyre, Transcript of Hearing 11 April 2008, p. 30; Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 30

[168] Mr Rick Fowler, Transcript of Hearing 11 April 2008, p. 45

[169] Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 27

3.75 A further issue regarding measuring soil carbon is that the level of carbon in soil differs with soil depth. Dr Mark Dangerfield of NRAC explained:

> One of the reasons for that is that the soil carbon at the surface does not respond as quickly as it does further down in the profile. That creates enormous measurement problems. Trying to put a spade in a claypan is pretty hard going. So getting measurements out in a way that is accountable and transparent will be one of the challenges.[170]

3.76 As noted in paragraph 3.41 above agriculture stakeholders are urging for more research and development to be undertaken on low-cost methodologies and models to measure soil carbon so that these issues can be resolved.

Permanence of soil carbon sequestration

3.77 The Committee heard substantial evidence that a significant challenge is ensuring that carbon sequestered in the soil remains there.[171] Ms Pamela Green of NRAC told the Committee:

> Some of the challenges facing those communities are: If you do introduce increased carbon into the soil, then how do you actually keep it there?…There is still such a lot of complexity and lack of good information about that that people are still feeling very confused about it on the ground.[172]

3.78 The Committee heard that the challenge of permanence also relates to the way in which carbon in stored in the soil. Dr Mark Dangerfield of NRAC explained:

> The challenge is that carbon is stored in soil in several different ways. One way is that it simply catches onto the clay mineralogy in the soil and sticks on—that is the long-term stuff. There is medium-term material that is associated with the decomposing plants and then there is short-term material, which mostly is related to the microbes in the organisms and animals living in the soil. You really want to get a better balance between all three of those things.[173]

3.79 As previously discussed in paragraph 3.70 above, issues surrounding the permanence of soil carbon have been identified by the Commonwealth Government. The Committee notes that resolution of this issue will require further research, in close collaboration with the agriculture sector, to identify the best approaches and management options to ensure that sequestered carbon remains in the soil. The Committee trusts this issue will be included in the additional expenditure on research and development recommended above.

---

[170] Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

[171] Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 33; Mr David Eyre, Transcript of Hearing 11 April 2008, p. 34; Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

[172] Ms Pamela Green, Transcript of Hearing 31 October 2008, p. 3

[173] Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

Conclusion

3.80 There are likely to be significant costs and benefits of the CPRS for natural resource management in New South Wales. There is still considerable negotiation required to finalise the Scheme and further research and development needed to ensure that costs of the Scheme to natural resource managers are minimised.

Chapter Four - Implications of offsets

4.1 The Committee found that there is likely to be both positive and negative implications of natural resource offsets. This chapter outlines the environmental and economic implications of natural resource offsets more generally and then discusses the implications specific to the two most common natural resource offsets: forestry and soil carbon.

4.2 The Committee notes that while under the CPRS forestry is covered on a voluntary basis, submissions and evidence to the Committee regarding forestry were made before decisions about coverage were made and when it appeared likely that forestry activities would be considered an offset provider rather than a covered sector. As such, the Committee has included the implications of forestry activities in the offsets chapter.

4.3 The Committee understands that agriculture offsets will not be permissible under the CPRS until 2015 at the earliest and that if agriculture becomes a covered sector then there will be no opportunity for domestic agriculture offsets as offsets cannot be generated in covered sectors. However, the Committee notes that agriculture offsets are a significant issue and worthy of consideration in this report.

What are offsets?

4.4 Carbon offsets represent reductions in greenhouse gas emissions relative to a business-as-usual baseline that are tradeable and often used to negate all or part of another entity's emissions. Offsets are typically generated by sequestering carbon or changing management practices to reduce emissions compared to business-as-usual for an emitting activity.[174]

4.5 Offsets are widely acknowledged as an important part of reducing Australia's greenhouse gas emissions, but they are only part of the picture and cannot be relied upon completely to achieve greenhouse gas reductions targets.[175]

4.6 Typical offset activities include:

- forestry projects, such as avoided deforestation (e.g. protecting existing native trees and shrubs), reforestation (e.g. revegetating farmland, regeneration of native trees and shrubs) and afforestation (planting new forests/plantations on previously unforested land);
- soil management projects, such as stubble retention, grazing management, minimum tillage practices and organic amendment;
- methane collection and combustion from improved manure management;
- reducing methane emissions from ruminant livestock (e.g. by improved genetics or rumen biota modification); and
- reducing nitrous oxide emissions from soils (e.g. through better fertiliser and land management or soil amendments).[176]

[174] Submission 9, DECC and DPI, p. 12
[175] Dr David Butcher, Transcript of Hearing 11 April 2008, p. 4
[176] Submission 9, DECC and DPI, pp. 12–13

Principles for offsets

4.7 The Committee heard from Ms Rachel Walmsley of the Environmental Defender's Office (EDO) about the importance of offset projects adhering to rigorous assessment and standards to ensure that genuine abatement occurs and that emitting entities are not purchasing questionable offsets to discharge their emissions reduction obligations.[177] Such a sentiment is echoed in the White Paper which recognises that as offsets could be used interchangeably with CPRS permits for liable parties to meet their requirements, offsets would need to meet internationally recognised standards.[178]

4.8 These internationally recognised standards are:

- **Measurability** – offsets should be limited to projects for which there is a reasonable level of certainty about the accuracy of the measurement methodology to ensure that the project represents actual abatement that has taken place.[179] Measurability issues relating to forestry and soil carbon have already been discussed in paragraphs 3.54 and 3.73 respectively.
- **Additionality** – for an offset to be considered additional it must reduce emissions beyond business-as-usual practices and any action required by legal or regulatory drivers.[180]
- **Permanence** – offsets should only be allowed if there is certainty that the reduction in greenhouse gas emissions is permanent and cannot be reversed.[181] Permanence issues relating to forestry and soil carbon have already been discussed in paragraphs 3.51 and 3.77 respectively.

4.9 The Committee heard from stakeholders urging that a key principle of the use of offsets should be that they are not relied upon as the predominant means of achieving compliance with an emissions trading scheme and should only be allowed after all cost-effective emissions reduction and mitigation measures on site had occurred.[182] Mr Christopher Davis from the University of Technology, Sydney, explained:

> I guess the point was that we do not see any merit in people trying to duck responsibility for emissions control by using offsets or manipulating the environment. Having done what you can in emissions control you should still do whatever sensible actions can be done in natural resource management to achieve better results. It is not a trade-off; it is both, but the priority is emissions first and manipulation second.[183]

Viability of natural resource offsets

4.10 There are a number of factors regarding the carbon price and costs of offset creation that will influence the viability of agriculture and forestry offsets. These include:

---

[177] Ms Rachel Walmsley, Transcript of Hearing 16 May 2008, p. 13

[178] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-62

[179] Submission 3, EDO, Attachment B, p. 11; DCC, *op. cit.*, p. 6-62

[180] Submission 3, EDO, Attachment B, p. 10; DCC, *op. cit.*, p. 6-62

[181] DCC, *op. cit.*, p. 6-62

[182] Submission 3, EDO, Attachment B, pp. 9–10; Mr Christopher Davis, Transcript of Hearing 16 May 2008, p. 42

[183] Mr Christopher Davis, Transcript of Hearing 16 May 2008, p. 43

- the CPRS emissions cap and trajectories;
- the availability and cost of abatement measures; and
- transaction costs such as measurement and verification of emissions and/or sequestration, reporting costs and costs of buying and selling permits or credits.[184]

4.11 In general, the price of carbon is greater under a tight emissions cap and stringent emissions trajectories, which would make natural resource offsets more financially viable.[185] Dr David Butcher from Greening Australia explained about the viability of forest revegetation offsets:

> The critical or the break even point is about $30 per tonne of carbon. $30 and above revegetation starts to become a viable entity…So when you are talking about $60 or $70 a tonne for sequestration and so forth, then this becomes a very reasonable option.[186]

4.12 However, if the carbon price is too high there is a risk that negative outcomes may result from either the excessive use of offsets or will change management of natural resources for offset. Mr Russell Ainley, a member of NRAC explained to the Committee the importance of the economic value of carbon:

> There is a very high risk of perverse outcomes if we do not get the rules and values tuned correctly. We currently grow forests for an economic product that has downstream value. If carbon values increased beyond that value, that will change the management strategies of those forests to produce carbon value at the expense of production value that can have value added downstream through the communities.[187]

4.13 The viability of natural resource managers participation in generating offsets is also strongly influenced by transaction costs. If overly onerous assessment, monitoring and reporting requirements are imposed these costs would be greater than the financial return for offset credits, particularly for individuals or small operators.[188] Issues surrounding the difficulty for small entities to participate in an emissions trading scheme were discussed in paragraph 3.26 above. Issues surrounding the level of reporting required were discussed in paragraph 3.33 above.

Voluntary carbon offset market

4.14 The Committee understands that carbon offsets can be generated for trade in either the compliance offset market (i.e. within the CPRS) or the voluntary offset market. The voluntary carbon market is concerned with the generation and sale of carbon credits to individuals and entities that choose to reduce their environmental impact on the environment by offsetting their carbon emissions, rather than acquitting a mandatory obligation under an emissions trading scheme.[189]

4.15 The voluntary carbon market is relatively small. In 2007, 7% of the global voluntary carbon market was bought by Australia and New Zealand (2.9 million tonnes CO_2-e), which represents around 0.5% of Australia's total emissions.[190] Buyers of carbon

[184] Submission 9, DECC and DPI, pp. 8–9
[185] *ibid.*, p. 13
[186] Dr David Butcher, Transcript of Hearing 11 April 2008, p. 4
[187] Mr Russell Ainley, Transcript of Hearing 31 October 2008, p. 2
[188] Submission 12, NRAC, p.5
[189] DCC, *National Carbon Offset Standard Discussion Paper*, Canberra, 2008, pp. 2–3
[190] *ibid.*, p. 3

credits generally include individuals (5% of the global voluntary carbon market), non-government organisations (13% of the global voluntary carbon market), businesses that purchase for investment or resale (29% of the global voluntary carbon market) and businesses that are final buyers (50% of the global voluntary carbon market).[191]

4.16 The advantage of the voluntary carbon market for natural resource managers is that it allows trade in offsets that are not recognised under the CPRS, such as agriculture offsets.

4.17 In December 2008 the Commonwealth Government released the *National Carbon Offset Standard Discussion Paper* which seeks to provide national consistency and give consumers confidence in the voluntary carbon offset market. When finalised, the Standard will provide guidance on what constitutes a genuine, additional voluntary offset credit, establish requirements for the verification and retirement of such credits, and develop standards for calculating the emissions of a product or service.[192] Submissions on the discussion paper were open until 27 February 2009 with the final Standard to be released in due course.

Overall economic implications of offsets

4.18 Natural resource offsets are beneficial to the economy because they reduce the overall costs of meeting the CPRS cap.[193] Allowing offsets as part of an emissions trading scheme provides a longer period of time for emitters to adjust to carbon constraints as low-cost fossil fuel energy can be used for longer whilst emission reduction targets are still adhered to.[194]

4.19 As discussed in paragraph 3.8 above offsets have the potential to provide natural resource managers with an additional income stream. There is significant potential for offset credits to be generated by natural resource managers without diminishing productivity and in some cases the generation of offsets, such as soil carbon offsets, can actually enhance productivity (as discussed in paragraph 4.54 below).

4.20 As the generation of offsets effectively buys time for a cheaper transition to a low-emissions economy, this may delay action on emissions reduction and diminish incentives for developing and implementing low-emissions technologies. The use of natural resource offsets may mean there is little incentive for investment in low-emission technologies, including renewable energy.[195]

Overall environmental implications of offsets

4.21 The use of some natural resource offsets is likely to produce spillover benefits, where other incidental environmental benefits results from the use of the offset. Some spillover benefits include:

- increased on-farm vegetation could provide shelter for livestock, reduce salinity, increase water vapour flow in the atmosphere and conserve biodiversity;[196]

[191] DCC, *National Carbon Offset Standard Discussion Paper*, Canberra, 2008, p. 3

[192] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 19-7

[193] Submission 9, DECC and DPI, p. 13

[194] Submission 6, Dr David Pepper, p. 4

[195] *ibid.*, p. 6

[196] *ibid.*, p. 6; Submission 9, DECC and DPI, p. 14

- forest sinks created through afforestation can provide a range of environmental services including filtering water, pumping water vapour into the atmosphere and affecting the distribution of precipitation, producing oxygen, producing feedstock for honey and wildlife which return nutrients to vegetation, enhancing biological diversity and moderating soil temperature and respiration;[197] and
- increased carbon in soil can result in decreased erosion, improved soil structure, improved hydrology, reduced salinity, improved fertility and increased biodiversity.[198]

4.22 A key concern with natural resource offsets is that there is a significant risk that they can stop acting as a carbon sink, either temporarily (such as during a time of drought) or permanently (such as through desertification from climate change impacts).[199] For example, Dr David Pepper explained in his submission that:

> In a good year plant growth will result in a net uptake of CO_2 and thus will be a sink. In a poor year, there is will a net emission of CO_2 and it will thus be a source.[200]

4.23 If a reversal of carbon sequestration occurred then the sequestration quantity would either need to be replaced by an alternative measure or any environmental benefit achieved from reducing the concentration of greenhouse gases would be lost. This would effectively negate any emissions reduction benefits achieved from the offset.

4.24 Many natural resource offsets, particularly biosequestration, do not reach their full potential to sequester carbon for many years. Some environmental stakeholders are concerned that that this sequestration will not take place quickly enough to respond to increasing emissions and reduce the concentration of greenhouse gases in the atmosphere in time to prevent the dangerous impacts of climate change.[201]

4.25 Some environmental stakeholders have raised concerns that the use of offsets in an emissions trading scheme does not reduce the amount of greenhouse gases being emitted by entities, but rather provides an alternative means for entities to meet their obligations.[202] This may act to legitimise and reinforce current emitting behaviour and consumer patterns and does not result in a reduction in greenhouse gas emissions.[203]

4.26 The Committee was advised that the use of natural resource offsets, which increase the amount of carbon stored in the landscape, may have negative effects on ecosystems as native plants and animals have evolved to tolerate relatively low carbon conditions.[204] Such an issue requires further investigation and to ensure that increasing carbon levels do not endanger native ecosystems.

197 Submission 6, Dr David Pepper, p. 5
198 Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 23
199 Submission 6, Dr David Pepper, p. 6
200 *ibid.*, p. 6
201 Submission 4, Climate Action Newcastle, p. 2
202 Submission 3, EDO, Attachment B, p. 12; Submission 4, Climate Action Newcastle, p. 5
203 Submission 4, Climate Action Newcastle, p. 5
204 Submission 12, NRAC, p. 4

RECOMMENDATION 6: That the New South Wales Government, in conjunction with the Commonwealth Government, conducts further research into and monitors any environmental impacts of natural resource offsets and that these findings are incorporated into offset standards and guidelines for approving offsets.

Consideration of environmental sustainability

4.27 The Committee heard from a number of stakeholders concerned about the potential for offset projects to be environmentally unsustainable if offset activities have a positive carbon impact but impact negatively on other aspects of the environment such as biodiversity values, water flow, ecosystem services, fire vulnerability and pollution.[205] The submission from NRAC provided an example of this:

> silviculture for fast growing trees that are cropped for timber products may be the best management tactic to maximise carbon sequestration within an [emissions trading scheme], however, this tactic, in many cases, will decrease overall environmental values. Equally, a mature forest stand is likely to be carbon neutral and have little potential within a carbon market but has high environmental value.[206]

4.28 To ensure offset activities do not have detrimental environmental impacts the overall environmental sustainability of offset activities should be evaluated, rather than solely considering the carbon benefit of an offset activity.[207] Ms Rachel Walmsley from the EDO explained this further to the Committee:

> We are saying that you need to think not only about sequestration but about the health and sustainability of the whole catchment. The best projects that New South Wales should be working for is where there is a co-benefit, so you get your carbon sequestration benefit and also biodiversity benefit and there are not the adverse outcomes such as with water.[208]

4.29 In facilitating an assessment of the ecological sustainability of a project, some stakeholders called for the development of an environmental benefit index to provide an overall assessment of all the environmental impacts of an offset project including any impacts on biodiversity, water quality, water quantity, salinity and soil erosion.[209] Mr Timothy Beshara from Greening Australia explained:

> There are a whole lot of negative impacts you need to be careful of and we will be looking to work with the scientists to work out where we should be planting the trees and what are the potential positive and negative impacts, but if you had an environmental benefit index that looked at biodiversity, water, soil health, all those sorts of things, on the tree part of emissions trading system, then you would make sure you had much better outcomes.[210]

[205] Submission 3, EDO, Attachment B, p. 12; Submission 4, Climate Action Newcastle, p. 1; Submission 8, WSROC, p. 3; Submission 12, NRAC, p. 4; Ms Caroline Palmer, Transcript of Hearing 16 May 2008, p. 43

[206] Submission 12, NRAC, p. 5

[207] Submission 3, EDO, Attachment B, p. 13; Submission 4, Climate Action Newcastle, p. 3; Ms Rachel Walmsley, Transcript of Hearing 16 May 2008, p. 14

[208] Ms Rachel Walmsley, Transcript of Hearing 16 May 2008, p. 15

[209] Submission 7, Greening Australia, p. 3

[210] Mr Timothy Beshara, Transcript of Hearing 11 April 2008, p. 4

Implications of forestry offsets

Water use and availability

4.30 The most common concern the Committee heard from stakeholders regarding forestry offsets was that increased reforestation activity would have a negative impact on the movement, storage and availability of water.[211] Forest plantations are significant consumers of water and at the local level are responsible for preventing runoff from reaching storages, creeks and rivers.[212] The submission from DECC and DPI states:

> At a local level, the effect of plantations on creek water flows will often be more immediate and evident than at the broad catchment level. Creeks fed by areas on which plantations are established will have reduced water flows and may completely dry out in drier periods.[213]

4.31 The Committee heard that this could have negative impacts on the environment and other users in the catchment.[214] Ms Rachel Walmsley of the EDO told the Committee:

> if you put a plantation in an upper reach of the catchment it can have huge implications for water diversion in that catchment and that will affect the environment and other water users within the catchment.[215]

4.32 To ensure that plantations do not have negative impacts on water availability Greening Australia have suggested that catchment-scale hydrological assessments should be undertaken to set acceptable levels of runoff capture from plantations.[216]

4.33 The issue of how forestry activities influence water use and availability is discussed in the White Paper and the Commonwealth Government has stated:

> The National Water Initiative recognises the impact of forest planting, and Australian governments have agreed to assess the significance of water interceptions on catchments and aquifers by no later than 2011 and to apply appropriate planning management and regulatory measures where necessary. Governments have agreed to accelerate work including the development of best practice national approaches to manage specific forms of interception such as plantations.[217]

4.34 However, the Commonwealth Government has advised that the CPRS regulator will not consider the implications of forestry on water use and availability when assessing whether forests should receive permits under the Scheme.[218]

---

[211] Submission 3, EDO, Attachment B, p. 13; Submission 5, NSW Irrigators' Council, p. 2; Submission 7, Greening Australia, p. 2; Submission 9, DECC and DPI, p. 14; Submission 12, NRAC, p. 4; Mr James McDonald, Transcript of Hearing 11 April 2008 p. 12; Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 32

[212] Submission 5, NSW Irrigators' Council, p. 5; Submission 7, Greening Australia, p.2; Submission 9, DECC and DPI, p. 14; Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 32

[213] Submission 9, DECC and DPI, p. 14

[214] Mr James McDonald, Transcript of Hearing 11 April 2008 p. 14

[215] Ms Rachel Walmsley, Transcript of Hearing 16 May 2008, p. 15

[216] Submission 7, Greening Australia, p.3

[217] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-49

[218] *ibid.*, p. 6-49

Potential loss of agricultural land

4.35 The Committee heard that some stakeholders are concerned that greater incentives for forestry activities could result in a change of land use from agriculture to forestry.[219] Stakeholders have expressed concerns not only about the potential for land use change but the socio-economic consequences that this would have. Ms Pamela Green of NRAC explained:

> The other thing, from experience, is looking at the impacts particularly of changing landscape use. In my region on the Monaro high country timber has been introduced into the landscape where there has been no timber before. That has caused quite a deal of community dislocation. I can see that the emissions trading scheme probably will exacerbate those sort of perverse outcomes.[220]

4.36 However, when the Committee heard from the AFG they stated that it is unlikely that forests will ever replace agricultural land. Mr Warwick Ragg told the Committee:

> We cannot see where the economic value is in carbon-only plantings, unless it is in very low rainfall areas and very low land cost. Arable land in Australia is a finite resource. I would have thought, without being a market or an analyst, that it is unlikely that there is going to be sufficient economic value in a carbon-only crop to sustain large tracts of land being taken out of agricultural production.[221]

Potential loss of native forests

4.37 The Committee heard from stakeholders concerned that incentives for forestry offsets would result in the clearing of mature native vegetation (that is carbon neutral) to plant fast growing plantations (that can generate carbon credits).[222]

4.38 The Commonwealth Government addressed this issue in the White Paper which stated that they expected that most forests established as a result of the CPRS would be not-for-harvest forests as these would provide the greatest financial benefit, which would reduce the risk that plantation forests would be maintained for carbon while native forests were subject to additional harvesting.[223] Additionally, the White Paper states:

> the Scheme will not provide incentives to clear native forests in order to re-establish forests that are eligible to receive Scheme permits: such forests would not meet the Kyoto Protocol definition of reforestation and would therefore be ineligible to receive Scheme permits.[224]

Monoculture forest plantations versus biodiverse revegetation

4.39 The Committee heard from a number of stakeholders concerned that the design of an emissions trading scheme may favour monoculture forest plantations rather than biodiverse revegetation.[225]

---

[219] Submission 9, DECC and DPI, p. 14; Mr David Eyre, Transcript of Hearing 11 April 2008, p. 32

[220] Ms Pamela Green, Transcript of Hearing 31 October 2008, p. 3

[221] Mr Warwick Ragg, Transcript of Hearing 16 May 2008, p. 33

[222] Submission 4, Climate Action Newcastle, p. 2; Submission 12, NRAC, p. 4; Dr David Butcher, Transcript of Hearing 11 April 2008, p. 8

[223] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-48

[224] *ibid.*, p. 6-48

[225] Submission 7, Greening Australia, p. 2; Submission 8, WSROC, p. 3; Submission 12, NRAC, p. 4; Mr Daniel Williams, Transcript of Hearing 18 June 2008, p. 10

4.40 Monoculture forests are often exotic species plantations that reduce biodiversity, inhibit the natural cycles of fauna and lead to greater soil erosion, increased water demand, increased use of chemical pesticides and fertilisers and reduction in soil quality.[226] In contrast native biodiverse revegetation has many environmental benefits including improved nutrient cycling, improved hydrology, reduced salinity and improved fauna habitat and connectivity.[227] Dr David Butcher of Greening Australia told the Committee:

> The natural bush is the greatest asset in terms of both water balance and carbon sequestration, so rehabilitation is unlikely to have a perverse effect.[228]

4.41 The Committee was advised that current policies concerning carbon sequestration projects skew the market towards single species plantations, in part because other ecosystem services (such as biodiversity benefits, salinity remediation and water usage) are not considered.[229] The Committee heard from Mr Timothy Beshara from Greening Australia that:

> But with the right framework of an emissions trading system, that could fund trees in the ground, and what we are looking at doing is re-establishing native vegetation, so trees and shrubs that are native to the area, paid for under an emissions trading system so that you could restore biodiversity and landscape health.[230]

4.42 The Committee understands that the White Paper has stated that the CPRS regulator will not consider biodiversity implications when making a decision about forest permits under the CPRS.[231]

Fire hazard potential

4.43 The Committee heard about the potential fire hazard of greater numbers of plantations. The NSW Rural Fire Service (RFS) stated:

> Establishing plantations or significant regeneration may create an increased amount of fuel hazard and potential fire paths as well as an increased intensity of the impact of fires on assets.[232]

4.44 As previously discussed in paragraph 3.51 above an increased fire risk has the potential to release the carbon dioxide already sequestered. An increased fire risk may also increase the potential for loss of life or assets from bush fires. In addition the NSW RFS has advised:

> Changes in the distribution of bush fire hazard around the state may also require changes in the location and type of fire appliances, fire stations and other fire fighting resources. There may also be an increased need for volunteer fire fighters' time for prescribed burning and fire suppression.[233]

---

[226] Submission 3, EDO, Attachment B, p. 13; Submission 4, Climate Action Newcastle, p. 2; Submission 7, Greening Australia, p. 2

[227] Submission 7, Greening Australia, p. 1

[228] Ms Caroline Palmer, Transcript of Hearing 16 May 2008, p. 43

[229] Submission 7, Greening Australia, pp. 2–3

[230] Mr Timothy Beshara, Transcript of Hearing 11 April 2008, p. 2

[231] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-49

[232] Submission 13, NSW Rural Fire Service, p. 1

[233] *ibid.*, p. 1

4.45 To minimise these risks plantation establishment should give appropriate consideration to the proximity of plantations to assets and ensure that fire trails and buffer zones are incorporated in plantation structures.[234]

RECOMMENDATION 7: That the New South Wales Government considers all environmental impacts (including water use, biodiversity and fire hazard) and the environmental sustainability of any new or expanded forestry plantations proposals.

Implications of soil carbon offsets

4.46 The Committee heard from a number of stakeholders about the potential of soil carbon sequestration as an offset.[235] Additionally, as discussed in paragraph 1.6 above a delegation of the Committee visited a farm in Cumnock in central west New South Wales to see carbon farming practices first hand. The Committee also discussed many issues relating to soil carbon sequestration in its previous report *Climate Change and Natural Resource Management in New South Wales*.[236]

4.47 The Committee heard that soil carbon sequestration works by retaining the carbon created through the plant into the soil structure.[237] The amount of carbon sequestered in soil could be increased through modified management practices such as zero tilling, mulching, cover cropping, controlled grazing, modification of machinery to reduce soil compaction, complex rotations, water conservation, integrated pest management, contour hedges, planting deep rooted perennials and agroforestry.[238]

Capacity of Australia's soils to sequester carbon

4.48 The Committee heard that soil carbon sequestration is a challenging issue for Australia because of the nature of Australia's soils. Dr Mark Dangerfield of NRAC explained:

> The soils issue, from a scientific point of view, is challenging because it relates very much to the fact that Australia has very old soils that generally were very degraded even before we started to do agriculture on them. They have relatively low carbon content, maybe 3 per cent. Our agricultural practices have kicked that carbon content back to maybe 1 or 1½ per cent. So there is, therefore, this potential for a 1½ return before we get back to where we were, and that is a lot of carbon over the landscape that we have.[239]

[234] Submission 13, NSW Rural Fire Service, p. 1

[235] Submission 12, NRAC, p. 4; Mr David Eyre, Transcript of Hearing 11 April 2008, p. 32; Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 23; Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

[236] Standing Committee on Natural Resource Management (Climate Change), *Climate Change and Natural Resource Management in New South Wales*, New South Wales Parliament Legislative Assembly, Sydney, 2008, pp. 50–54

[237] Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

[238] Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 33; Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 24; Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3; R Lal, *The Global Food Crisis and Soil Carbon*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[239] Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3

4.49 Mr Michael Kiely of the Carbon Coalition Against Global Warming believes that there is significant scope for globally for agricultural soils to sequester carbon. He told the Committee:

> We have 5.5 billion hectares of agricultural soil. With the vegetation that grows out of it, which we can sock away, even small amounts per hectare, like half a tonne of carbon per hectare, would result in 10 gigatonnes being removed from the atmosphere each year. We are currently pumping out 8 gigatonnes more than we should. Eight gigatonnes is a lot, but 10 gigatonnes is a lot more.[240]

4.50 The Garnaut Climate Change Review Final Report noted that soil carbon sequestration in Australia could potentially store 68 Mt CO_2-e for 20-50 years from cropped land and a further 286 Mt CO_2-e for 20-50 years from grazing land.[241]

4.51 The Committee heard that there is considerable variability in the level of carbon in different soils and that the rate of sequestration varies across different locations, using different management practices and in different environments.[242] Generally sequestration rates are higher in cool and humid environments than in warm and arid environments. Mr Jock Laurie of the NSW Farmers' Association told the Committee:

> in the western division for instance the soils are dryer and so therefore the soils will not hold carbon as well in the dry country as they do in high rainfall areas.[243]

4.52 The Committee also heard that there are different views on how long it would take to sequester carbon into soil. At the Carbon Farming Conference and Expo in November 2008, some presenters claimed soil carbon levels can be significantly increased in as little as two years,[244] while others maintained that it would take five to ten years to sequester carbon into soil.[245]

Fire management issues

4.53 The NSW RFS advised the Committee that increasing soil carbon levels could increase the fire hazard potential. They explained:

> Historically much of the cropping landscape in NSW was managed by stubble burning. This is increasingly being overtaken by alternative approaches such as direct drilling. This leaves much of the biomass on the ground, which may have benefits for water use and soil quality as well as carbon emissions but it does leave a significant fire hazard. Appropriate fire management strategies will need to be considered for these areas.[246]

Benefits of soil carbon sequestration

4.54 There is wide spread agreement that sequestering more carbon in soil markedly improves soil health and ecosystem function. Some of the benefits of carbon farming

---

[240] Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 25

[241] R Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, Melbourne, 2008, p. 24

[242] Mr Simon Smith, Transcript of Hearing 11 April 2008, p. 21; R Lal, *The Global Food Crisis and Soil Carbon*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[243] Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 34

[244] K Bellamy, *Probiotics*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008; C McKeller, *The Year That Was – Spring Ridge*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[245] Dr Mark Dangerfield, Transcript of Hearing 31 October 2008, p. 3; A McBratney, *Reducing the Cost of Measurement*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[246] Submission 13, NSW Rural Fire Service, p. 2

include: better soil moisture; increased yields; increased drought tolerance; decreased erosion; decreased inputs (including fertilisers, fungicides and insecticides); increased resilience; and increased biodiversity.[247]

4.55 The Committee heard substantial evidence that the benefits of increasing soil carbon are greater than any potential income that may arise from being able to trade carbon credits either in the voluntary carbon market or potentially in the compliance market under the CPRS.[248] However, there are still some concerns that the uptake of carbon farming practices may be delayed because there would be no recognition or incentives for farmers who have already increased their carbon levels if soil carbon offsets were to be included in the CPRS at a later date. Mr Jock Laurie of the NSW Farmers' Association explained:

> One of the problems with the timeframes we have got at the moment is that the early innovators of changing farming techniques for instance we get virtually no benefit out of measuring carbon at whatever the date will be because they have already increased the carbon anyway.[249]

4.56 Given the overwhelming benefits of increasing soil carbon and the uncertainty around whether it would ever be an approved CPRS offset, the Committee believes that carbon farming practices should be immediately encouraged across New South Wales because of their value to increase productivity, reduce the costs of inputs and enhance ecological function of agricultural areas.

RECOMMENDATION 8: That the New South Wales Government develops a program to inform farmers of the benefits of carbon farming and encourages carbon farming practices to increase agricultural productivity, decrease the cost of agriculture inputs and increase ecosystem health.

Conclusion

4.57 The Committee notes that because of the design of the CPRS there is very little scope for natural resource offsets to be included, particularly agriculture offsets. However, the productivity benefits for improving the level of carbon in soil warrant encouraging such techniques regardless of the possibility of soil carbon credits.

[247] Mr David Eyre, Transcript of Hearing 11 April 2008, p. 34; Mr Michael Kiely, Transcript of Hearing 16 May 2008, p. 23; E Harvey, *The Biological Farmer with Data*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008; S MacCalman, *The Carbon Farmer's Experience*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[248] Mr David Eyre, Transcript of Hearing 11 April 2008, p. 34; K Bellamy, *Probiotics*, paper presented at the Carbon Farming Expo and Conference, Orange, 18-19 November 2008

[249] Mr Jock Laurie, Transcript of Hearing 11 April 2008, p. 35

Chapter Five - Transitional arrangements for the Greenhouse Gas Reduction Scheme

5.1 This chapter describes the existing New South Wales emissions trading scheme, the Greenhouse Gas Reduction Scheme (GGAS) and how GGAS participants will be affected by the introduction of the CPRS. As the details surrounding the CPRS are currently still being finalised by the Commonwealth Government and the negotiations are still ongoing between the New South Wales and Commonwealth Governments, it is not the intention of the Committee to comment on how sufficiently the issues raised have been resolved. Rather it is the intention of the Committee to flag issues that the New South Wales Government must ensure are addressed.

Overview of the New South Wales Greenhouse Gas Reduction Scheme

5.2 GGAS is an emissions trading scheme that commenced operation in New South Wales on 1 January 2003. GGAS was established under the *Electricity Supply Act 1995* and is focussed on the electricity sector. The aims of GGAS are to reduce greenhouse gas emissions associated with the production and use of electricity and to develop and encourage participation in activities to offset the production of greenhouse gas emissions.[250]

5.3 GGAS requires all New South Wales electricity retailers and some generators and large electricity users (collectively known as benchmark participants) to meet mandatory greenhouse gas emission limits. The emissions target has progressively tightened since GGAS commenced from 8.65 tonnes CO_2-e per capita in 2003 to 7.27 tonnes CO_2-e in 2007. Then the per capita amount will continue at this level until the cessation of the scheme.[251] GGAS then converts this electricity sector benchmark into individual greenhouse gas benchmarks for each benchmark participant.[252] Liable parties can meet their targets by creating or purchasing abatement certificates, known as New South Wales Greenhouse Abatement Certificates (NGACs), to offset emissions in excess of their benchmark.[253]

5.4 Each NGAC represents one tonne of CO_2-e that has been abated.[254] Certificates can be created under four different rules:

- The **generation rule** allows an electricity generator to create NGACs where it generates electricity at a lower emissions intensity (for example, through the use of renewable or gas-fired generation) than the New South Wales pool average.
- The **demand side abatement rule** rewards projects for more efficient use of energy by consumers (for example, projects that install compact fluorescent light bulbs or replace electricity with gas), where that will result in lower greenhouse gas emissions.

[250] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, pp. 2–3

[251] IPART, *Review of NSW Climate Change Mitigation Measures: Other Industries – Issues Paper*, Sydney, 2008, p. 43

[252] IPART, *Greenhouse Gas Reduction Scheme Fact Sheet – Summary of the Scheme*, Sydney, 2007, p. 1

[253] Submission 9, DECC and DPI, p. 10

[254] IPART, *Review of NSW Climate Change Mitigation Measures: Other Industries – Issues Paper*, Sydney, 2008, p. 43

- The **sequestration rule** credits the estimated net increase in carbon stored in eligible forests.
- The **large user abatement rule** allows large electricity users to generate Large User Abatement Certificates (LUACs) through abatement activities not directly related to electricity production or consumption, such as reductions in industrial process emissions or energy-efficiency measures that improve the efficiency of gas use.[255]

5.5 GGAS differs to the CPRS in four key areas:

- Most obviously, GGAS applies only in New South Wales and the Australian Capital Territory, whereas the CPRS applies to all of Australia.
- GGAS covers only the electricity sector, whereas the CPRS covers five of the seven sectors under the Kyoto Protocol.
- GGAS covers only carbon dioxide emissions, whereas the CPRS covers all six Kyoto Protocol greenhouse gases.[256]
- GGAS is a baseline and credit emissions trading scheme, whereas the CPRS is a cap and trade emissions trading scheme. In a baseline and credit scheme abatement certificate providers create certificates or credits for actions that reduce or abate emissions compared to prior practice, business as usual or current industry practice.[257]

Cessation of the New South Wales Greenhouse Gas Reduction Scheme

5.6 The New South Wales Government has indicated that GGAS cannot operate concurrently with a national emissions trading scheme as this would apply multiple price signals to greenhouse gas emissions.[258]

5.7 GGAS was originally established to operate until 2012, however, on 8 November 2006 the *Electricity Supply Amendment (Greenhouse Gas Abatement Scheme) Act 2006* came into effect which extended GGAS until 2021 unless a national emissions trading scheme was implemented. These amendments provided a legislative trigger for GGAS to be terminated if New South Wales participated in a national emissions trading scheme that would achieve similar greenhouse outcomes to GGAS.[259] Dr David Hemming from the Department of Water and Energy (DWE) explained to the Committee:

> The purpose of the New South Wales Government in extending GGAS was to provide greater investment certainty by ensuring that greenhouse gas abatement projects continue to be encouraged through a price signal either through the New South Wales emission scheme or through a national scheme.[260]

5.8 The Commonwealth Government has also indicated that GGAS should cease to operate when the CPRS commences. The White Paper states:

[255] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 2

[256] Submission 9, DECC and DPI, p. 10

[257] Dr David Hemming, Transcript of Hearing 16 May 2008, pp. 55–56

[258] DWE, *op. cit.*, p. 1

[259] *ibid.*, p. 2

[260] Dr David Hemming, Transcript of Hearing 16 May 2008, p. 55

> The Australian Government considers that GGAS and the Queensland Gas Scheme are not complementary to the Scheme and that their continued operation would result in an increased compliance burden on business and increased costs to the economy. In the interests of economic efficiency, and to reduce the number of schemes in operation in Australia, the Government supports termination of those schemes. However, the Government also recognises that it is the responsibility of the relevant jurisdictions to make decisions about the operation, and eventual termination, of those schemes.[261]

Transitional arrangements and processes

5.9 To work towards the cessation of GGAS and commencement of the CPRS, the New South Wales Government released a consultation paper for stakeholder feedback in April 2008: *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme*. The Consultation Paper outlined a number of transitional issues and potential options to address these options.

5.10 As part of the consultation process the New South Wales Government created two consultation working groups: Demand Side Abatement Transition Working Group, which examined transitional arrangements specifically for the Demand Side Abatement elements of GGAS; and the GGAS-National Emissions Trading Scheme Transition Working Group, which examined all remaining transitional issues.[262] Both Working Groups included a broad range of stakeholders representing a range of industry, environmental and government agencies.[263]

5.11 The Consultation Paper outlined that the objectives of the transitional plan are to ensure:

- the effectiveness in reducing greenhouse gas emissions is maintained;
- that transitional arrangements do not detract from overall economic efficiency of GGAS and the CPRS;
- that legitimate business interests that have responded to the investment incentives created by GGAS are protected; and
- that avoidable impacts on the carbon markets are minimised.[264]

5.12 Ms Leisl Baumgarten of DWE summarised this as:

> For us it is about ensuring that the transition process continues to ensure that we have the right investment signals for the right kind of investment.[265]

5.13 This Committee heard from stakeholders with an interest in the transitional arrangements for GGAS. The New South Wales Minerals Council informed the Committee that they were concerned that the arrangements ensured that there was no net loss for GGAS participants, especially in light of the environmental benefits gained from participation in GGAS. The Council also identified the importance of transitional arrangements being easy to understand given the complexities of the

[261] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, pp. 15-2–15-3

[262] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 1

[263] Dr David Hemming, Transcript of Hearing 16 May 2008, p. 57

[264] DWE, *op. cit.*, p. 3

[265] Ms Leisl Baumgarten, Transcript of Hearing 16 May 2008, p. 56

GGAS administration and uncertainties that surrounded the national emissions trading scheme at the time the transitional arrangement negotiations commenced.[266]

5.14 The closing date for submissions on the Consultation Paper was 28 April 2008. The Committee was subsequently advised by DWE that the Working Group would be preparing a report for the Minister for Energy.[267] The Committee understands that this report was completed and assisted to inform the New South Wales Government in its discussions with the Commonwealth Government regarding the transitional arrangements for GGAS.

5.15 The New South Wales Government has advised that the finalisation of the transitional arrangements will require considerable negotiation with the Commonwealth Government and is not something that can be determined by the New South Wales Government alone.[268] Ms Leisl Baumgarten of DWE advised the Committee:

> It is a process that requires a fair amount of close cooperation between New South Wales and the Commonwealth and we are working through that process at the moment. Until we have a clearer understanding of what [the CPRS] will look like, that transition process cannot be finalised. It will take some time.[269]

5.16 The Commonwealth Government has acknowledged their role in finalising the transitional arrangements. The White Paper states:

> the Australian Government also has an interest in ensuring that adequate arrangements are made to reduce compliance costs and increase efficiency. The Government will continue to work with the NSW and ACT governments to help them develop appropriate transitional arrangements, including by contributing to a financial package for the transition of GGAS.[270]

5.17 The Committee understands that the New South Wales Government is continuing to negotiate with the Commonwealth Government about the transitional arrangements and has seen no evidence to suggest they are doing otherwise.

RECOMMENDATION 9: The Committee notes that the New South Wales Government is continuing to negotiate with the Commonwealth Government about the transitional arrangements from GGAS to the CPRS and encourages the New South Wales Government to keep stakeholders informed of the status and outcomes of ongoing negotiations.

Issues associated with transitional arrangements

5.18 A number of transitional issues for GGAS participants have been identified by DWE in the Consultation Paper. These include:

- the transition timeframe;
- treatment of accredited abatement certificate providers, including:
  - generators creating certificates from fossil fuel generation;

[266] Submission 11, New South Wales Minerals Council, p. 2

[267] Dr David Hemming, Transcript of Hearing 16 May 2008, p. 57

[268] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 1

[269] Ms Leisl Baumgarten, Transcript of Hearing 16 May 2008, p. 56

[270] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 15-8

  - generators creating certificates from burning landfill gas or other waste gases;
  - category A generators and deemed retailers;
  - forestry carbon sequestration providers;
  - firms undertaking large user abatement activities;
- unused NGACs and LUACs at the cessation of GGAS; and
- the treatment of new abatement certificate providers in the transitional period.[271]

5.19 The Consultation Paper outlines the potential implications of transitional issues for each of the categories of GGAS participants as well as options for dealing with each issue. In addition, the Commonwealth Government has considered transitional issues and commented on which GGAS participants they feel may be adversely affected by the termination of GGAS.[272]

5.20 It is not the intention of the Committee to review or comment on transitional arrangements that are not within the scope of the Committee's terms of reference, that is, unrelated to natural resource management in New South Wales. As such, the key transitional issues addressed in this report are the treatment of forestry carbon sequestration projects and unused NGACs at the cessation of GGAS.

Forestry sequestration projects

5.21 To date, forestry carbon sequestration projects have accounted for around 2% or 1.3 million abatement certificates created under GGAS.[273] Under the sequestration rule in GGAS, forest carbon sequestration projects can generate credits for the estimated net increase in carbon stored in a forest each year.[274]

5.22 The Committee understands that initial advice from the Commonwealth Government was that the forestry offset provisions under a national emissions trading scheme would be based on the Greenhouse Friendly scheme.[275] As such, submissions to the Committee used the provisions in the Greenhouse Friendly scheme as the basis of comparison to GGAS provisions and flagged the following issues.

Reaccreditation

5.23 In forestry carbon sequestration projects the generation of credits does not occur initially when the project is established, but over a number of years, sometimes decades. Providers of forestry carbon sequestration projects therefore participated in GGAS under the reasonable expectation that they would be able to generate credits for the life of the project.[276]

5.24 To ensure that such investments are not disadvantaged by the cessation of GGAS, the transfer of accreditation or reaccreditation of these projects under the CPRS

[271] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 4
[272] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, pp. 15-5–15-6
[273] Dr David Hemming, Transcript of Hearing 16 May 2008, p. 58
[274] DWE, *op. cit.*, p. 9
[275] *ibid.*, p. 9
[276] *ibid.*, p. 9

would be necessary to allow providers to continue to generate credits for the life of the forest project.[277]

Differing permanence requirements

5.25 To be eligible to generate carbon sequestration credits, a provider must demonstrate that the carbon is sequestered for a certain number of years, referred to as the permanence requirement. The Committee heard from Mr Rick Fowler from DPI that there are differences in permanence requirements between GGAS and the Commonwealth's Greenhouse Friendly scheme:

> The GGAS requirement is for permanence for 100 years. That carbon has to be sequestered and stored for 100 years. That matches the theory that carbon dioxide released into the atmosphere is there for 100 years before it dissipates. That is where that 100 years comes in. The greenhouse friendly system at the Commonwealth level has a permanency requirement of 70 years, which they consider to be two rotations.[278]

5.26 In addressing the issue of permanence obligations, the Commonwealth Government's White Paper states:

> Once GGAS ends, forestry projects will still retain permanence obligations (there is a one hundred year minimum level of permanency required for continued storage of carbon). The NSW and ACT governments will allow these participants to either buy back NGACs and acquit any liability for permanence or to opt in to the Scheme with a corresponding liability if sequestration is not maintained.[279]

Uncertainty about amount of carbon sequestered

5.27 The Consultation Paper identified that the treatment of uncertainty was another issue for the transition of forestry carbon sequestration projects. The GGAS requirements state that that there be at least a 70% chance that the claimed carbon is actually in the stock, to address the issue of uncertainty caused by the use of estimation of sequestration amounts.[280]

5.28 The White Paper states that all emissions and removals for forestry will be estimated using a prescribed methodology, most likely a revised National Carbon Accounting Toolbox.[281]

5.29 The Committee has not heard specifically from stakeholders whether this estimation methodology represents a significant difference to the GGAS arrangements. Should there be differences which disadvantage GGAS participants, the Committee trusts that the New South Wales Government will continue to negotiate with the Commonwealth Government on the matter.

Liability

5.30 The Consultation Paper identified that the issue of liability rules need to be resolved as part of the transitional arrangements. Under GGAS, in the event of a shortfall or

---

[277] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, pp. 9–10; R Garnaut, *The Garnaut Climate Change Review: Draft Report*, The Garnaut Climate Change Review, Canberra, 2008, p. 353

[278] Mr Rick Fowler, Transcript of Hearing 11 April 2008, p. 47

[279] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, pp. 15-5–15-6

[280] DWE, *op. cit.*, p. 9

[281] DCC, *op. cit.*, p. 6-53

reversal in sequestration, the seller of the abatement certificate is able to make good this abatement.[282]

5.31 The White Paper states that the Commonwealth Government will apply an averaging crediting approach for forestry credits, rather than issuing or requiring the surrender of permits to reflect annual changes in greenhouse gas emissions and removals. Such an approach would not require forest entities to surrender permits on harvest or following fire or require permits to be reissued when the forest is re-established.[283]

5.32 To address issues of potential reversal in sequestration, the averaging crediting approach incorporates a risk of reversal buffer, which creates a reserve to help protect forests against the possibility of emissions from natural events such as fire, insect attack, storm or severe drought. The risk of reversal buffer deducts a small amount of permits each time they are issued.[284]

Commonwealth Government assistance

5.33 The Commonwealth Government stated in the White Paper that it considers that forestry carbon sequestration projects will not be adversely affected by the cessation of GGAS and considers there is no case for providing any assistance for the providers of these projects. The Commonwealth Government believes that GGAS forestry carbon sequestration providers are likely to be able to opt into the CPRS and thus continue to earn permits for net increases in carbon stocks.[285]

Unused abatement certificates

5.34 When GGAS ceases to operate there may be a number of providers, intermediaries or obligated parties that have unused NGACs. A number of issues have been raised regarding the treatment of these unused abatement certificates.

5.35 Both the Garnaut Climate Change Review's Draft Report and DWE's Consultation Paper have identified that transitional arrangements need to ensure that inappropriate incentives are not created that may result in:

- the creation of more abatement certificates than would otherwise have been supplied, in order to take advantages of transition options;
- the supply of abatement certificates being restricted to liable parties in the lead up to the commencement of the CPRS; and
- liable parties holding on to abatement certificates (and hence failing to comply with GGAS and instead paying the GGAS penalty) in the hope of a obtaining a higher price under the CPRS.[286]

5.36 When considered how GGAS credits might be transferred to CPRS, a key consideration is whether credit is transferred on the basis of the actual tonnes of CO_2-e of abatement, or on the monetary value of the permit.

---

[282] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 9

[283] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 6-55

[284] *ibid.*, p. 6-56

[285] *ibid.*, pp. 15-5–15-6

[286] DWE, *op. cit.*, p. 12; R Garnaut, *The Garnaut Climate Change Review: Draft Report*, The Garnaut Climate Change Review, Canberra, 2008, p. 353

5.37 The Committee received a submission from the New South Wales Mineral Council advocating for the exchange of credits to be determined by the actual tonnes of abatement.[287] In the Consultation Paper, DWE outlines that if these permits came from the Scheme cap, then this approach would result in no environmental disadvantage.[288] However, this may introduce inequities if there is a significant price difference between the cost of a NGAC and the cost of a CPRS permit. The Consultation Paper explains:

> If there is likely to be a very large divergence between the value of NGACs at the start of the scheme and the value of [CPRS] permits, then a tonne-for-tonne conversion may prove overly generous. In this case, incentives for banking and non-compliance would be magnified.[289]

5.38 The alternative approach would be to convert permits based on the estimated values of the two types of certificates. That is, holders of unused NGACs would receive an equivalent monetary value of CPRS permits, based on the value of CPRS permits at the commencement of the Scheme.[290]

5.39 The Commonwealth Government stated in the White Paper that it considers holders of unused NGACs are likely to be adversely affected by the termination of GGAS as NGACs will become worthless, unless they would have value in the voluntary market.[291] The Commonwealth Government has advised that if agreement is not reached with the New South Wales Government on transitional arrangements, the Commonwealth Government would consider providing limited assistance for holders of unused certificates, although they have already been flagged as a lesser priority to other categories of participants affected by the cessation of GGAS.[292]

Finalisation of transitional arrangements

5.40 The Committee has been advised that the New South Wales Government is continuing to negotiate with the Commonwealth Government to address these, and other, transitional issues to ensure a smooth transition between GGAS and the CPRS so that GGAS participants are not disadvantaged by the cessation of GGAS.

5.41 The Committee believes that it is vital that the New South Wales Government keeps GGAS participants informed of the progress in relation to the negotiations with the Commonwealth Government and advises GGAS participants of likely changes to the arrangements as soon as the information is available. Such early notice would allow participants to make the necessary arrangements concerning their investments.

[287] Submission 11, New South Wales Minerals Council, p. 2

[288] DWE, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, Sydney, 2008, p. 12

[289] *ibid.*, p. 13

[290] *ibid.*, p. 13

[291] DCC, *Carbon Pollution Reduction Scheme – Australia's Low Pollution Future: White Paper*, Canberra, 2008, p. 15-6

[292] *ibid.*, p. 15-9

RECOMMENDATION 10: That the New South Wales Government keeps affected GGAS participants informed and up to date on the progress of negotiations with the Commonwealth Government about transitional arrangements from GGAS to the CPRS and provide as much notice as possible so that participants can make the necessary arrangements concerning their investments.

IPART review of New South Wales's mitigation measures

5.42 At the meeting on 20 December 2007 the Council of Australian Governments (COAG) agreed to review existing climate change mitigation measures to ensure that the CPRS is supported by a coherent and streamlined set of policies across all jurisdictions.[293] At the 29 November 2008 meeting COAG endorsed a set of principles and a process for jurisdictions to review and streamline their existing climate change mitigation measures, with the aim of achieving a coherent and streamlined set of climate change measures across Australia in 2009.[294]

5.43 In response to this the New South Wales Government asked IPART to conduct a review of existing climate change mitigation measures within New South Wales. The review will assess policy measures that have as their objective, or as one of their objectives, the reduction of greenhouse gas emissions. Based on its assessment IPART will then make recommendations about continuing, re-designing or terminating these measures.[295]

5.44 In December 2008 IPART released an issues paper for public consultation outlining the terms of reference of the review, the proposed analytical approach for assessing measures and the list of climate change mitigation measures that will be assessed. The measures are:

- the Greenhouse Gas Reduction Scheme (GGAS);
- the Climate Change Fund;
- the New South Wales Energy Efficiency Strategy;
- the Building Sustainability Index;
- the *Biofuel (Ethanol Content) Act 2007*;
- the FleetWise Partnership;
- the Clean Coal Fund;
- gas and electricity licence conditions; and
- energy efficiency programs directed at New South Wales Government operations.[296]

5.45 The Committee understands that IPART is due to finalise its review by 30 May 2009, after the Committee has finalised its report. The IPART review will form part of the

[293] Council of Australian Governments, *Communiqué 20 December 2007*, p. 7

[294] Council of Australian Governments, *Communiqué 29 November 2008*, p. 11

[295] IPART, *Review of NSW Climate Change Mitigation Measures: Other Industries – Issues Paper*, Sydney, 2008, pp. 1–3

[296] *ibid.*, p. 42

New South Wales Government's consolidated report to COAG in June 2009 on the streamlining of actions to be taken by all jurisdictions.[297]

Conclusion

5.46 The Committee notes that there will be significant challenges for some participants in the transition from GGAS to the CPRS. The Committee notes that the New South Wales Government is working with GGAS participants to identify key issues and to negotiate arrangements the Commonwealth Government.

[297] IPART, *Review of NSW Climate Change Mitigation Measures: Other Industries – Issues Paper*, Sydney, 2008, p. 1

Appendix One - Submissions

1 Ms Carol O'Donnell

2 ExxonMobil Australia

3 Environmental Defender's Office

4 Climate Action Newcastle

5 NSW Irrigators' Council

6 Dr David Pepper

7 Greening Australia

8 Western Sydney Regional Organisation of Councils

9 Department and Environment and Climate Change and Department of Primary Industries

10 The Law Society of New South Wales

11 New South Wales Minerals Council

12 Natural Resources Advisory Council

13 NSW Rural Fire Service

Appendix Two - List of witnesses

Friday 11 April 2008

Witness	***Organisation***
Dr David Butcher, President Mr Tim Beshara, Science Manager	Greening Australia
Mr James McDonald, Chairman Namoi Council Catchment Management Authority Ms Kerryn Richardson, Manager Strategic Services	Catchment Management Authority Chair's Council
Mr Simon Smith, Deputy Director General	Department of Environment and Climate Change
Mr Jock Laurie, President Mr David Eyre, Senior Policy Manager	NSW Farmers' Association
Mr Austin Whitehead, Director Water and Resources Policy Mr Rick Fowler, Policy Manager	Department of Primary Industries
Ms Sue-Ern Tan, Director Policy and Strategy	New South Wales Minerals Council
Councillor George Campbell, Spokesperson on the Natural Environment and Resources Mr Colin Berryman, Program Coordinator for the Natural Environment	Western Sydney Regional Organisation of Councils

Friday 16 May 2008

Witness	***Organisation***
Professor Andy Pitman	Climate Change Research Centre, University of New South Wales
Ms Rachel Walmsley, Policy Director Mr Robert Ghanem, Policy Officer	Environmental Defender's Office
Mr Michael Kiely	Carbon Coalition Against Global Warming
Mr Warwick Ragg	Australian Forest Growers
Mr Geoff Withycombe, Executive Officer	Sydney Coastal Councils Group
Mr Christopher Davis, Sustainability Business Manager Ms Caroline Palmer, Director, Institute for Water and Environmental Resource Management	University of Technology, Sydney

Professor Colin Woodroffe, Coordinator Professor Ross Bradstock, Director Centre for Environmental Risk Management of Bushfires	GeoQuest Research Centre, University of Wollongong
Ms Leisl Baumgartner, Deputy Director General Dr David Hemming, Manager Sustainable Energy	Department of Water and Energy

Wednesday 18 June 2008

Witness	***Organisation***
Mr Daniel Williams, Principal Environmental Scientist Ms Michelle Larkin, Senior Environmental Scientist	GHD

Friday 31 October 2008

Witness	***Organisation***
Mr Russell Ainley Ms Pamela Green Dr Mark Dangerfield	Natural Resources Advisory Council

Appendix Three - Visit of inspection

From 17 to 19 November 2008 a delegation of the Committee travelled to the Central West of NSW to learn about innovative land management practices to increase the amount of carbon in soil.

Central West Catchment Management Authority
On 17 November three Committee members (Mr David Harris MP, Mr Gerard Martin MP and Mr Ray Williams MP) and the Senior Committee Officer Dr Carolyn Littlefair travelled to Orange to meet with the Central West Catchment Management Authority (CWCMA). They met Mr Tom Gavel (Chairman, CWCMA), Mr Tim Ferraro (General Manager, CWCMA), Mr Tim Gardiner (Catchment Coordinator, CWCMA) and Mr John Davis (Board Member, CWCMA).

Mr Ferraro provided an overview of the work of Catchment Management Authorities in general and some of the challenges ahead for the CWCMA. Mr Gardiner gave an overview of some of the projects that have been undertaken by the CWCMA to improve water and river health, soil management and native vegetation in the catchment.

Little River Landcare Group
Mr Harris, Mr Martin, Mr Williams and Dr Littlefair then travelled to Cumnock to the property of Mr Scott and Mrs Belinda Reynolds to meet with the Little River Landcare Group (LRLG) and inspect modified farming practices. They met Mr Fergus Job (LRLG Catchment Manager), Mr Scott and Mrs Belinda Reynolds (property owners), Mr Don Bruce (LRLG Board Member), Mr Robert Armstrong (LRLG Board Member) and Graham Blatch (NSW Farmers' Association). Also visiting the property that day were Mr David Hewson (Canterbury Provincial Government, New Zealand) and Mr Hugh Stringleman (New Zealand journalist).

Members of the LRLG explained how the LRLG was assisting landowners through ongoing education and encouraging them to change their farming and grazing practices to enhance natural resource management. Mr and Mrs Reynolds showed the group around their property and explained how the low cost changes they had made to their grazing practices had made their property more resilient to climate change and improved natural resource management.

Carbon Farming Expo and Conference
On the following two days Mr Harris, Mr Martin, Mr Williams and Dr Littlefair attended the Carbon Farming Expo and Conference, organised by Mr Michael and Mrs Louisa Kiely. Conference speakers included a variety of farmers and graziers, academics, carbon trading businesses and Federal and State Government representatives.

Appendix Four - Extracts from minutes

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 5)

10.10 am Thursday 28 February 2008
Room 1043 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr Daley, MP — Mr Martin, MP
Mr Oakeshott, MP — Mr Williams, MP

Apology

An apology was received from Mr George.

Deliberation

The Chair raised with the Committee possible future inquires and work programs. It was suggested that the Committee look into having two inquiries. The Committee agreed to have its first inquiry on carbon emissions trading schemes. The Committee also agreed to look at the Federal Government policy on climate change and carbon emissions. The Committee agreed to have the inquiries terms of reference established by the next meeting.

The Committee adjourned at 10.30 am until 11.00 am on 5 March 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 6)

11.10 am Wednesday 5 March 2008
Room 1254 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr Daley, MP — Mr Martin, MP

Apologies

Apologies were received from Mr George, Mr Oakeshott and Mr Williams.

Minutes

Resolved, on the motion of Mr Martin, seconded by Mr Daley:
That the minutes of the meeting on 28 February 2008 be confirmed.

Inquiry into emissions trading schemes

Resolved, on the motion of Mr Daley, seconded by Mr Martin:
That the Terms of Reference for the inquiry into Emissions Trading Schemes be adopted and published.

The Committee adjourned at 11.22 am until 11.00 am on 2 April 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 7)

11.00 am Wednesday 2 April 2008
Room 1254 Parliament House

Members present
Mrs Paluzzano, MP (Chair)
Mr Daley, MP
Mr Martin, MP
Mr Williams, MP

Apologies
Apologies were received from Mr Oakeshott and Mr George.

Minutes
Resolved, on the motion of Mr Martin, seconded by Mr Daley:
That the minutes of the meeting on 5 March 2008 be confirmed and published, subject to an amendment that Mr Williams was an apology.

Inquiry into emissions trading schemes
The Committee was provided with further information as background to the inquiry, including:

- Garnaut Review Emissions Trading Scheme Discussion Paper, Executive Summary
- Media release from Federal Minister Wong on timetable for emissions trading

Deliberation
The Chair discussed with the Committee the upcoming hearings on 11 April and proposed 16 May.

The Committee adjourned at 11.26 am until 9.30 am on 11 April 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 8)

9.15 am Friday 11 April 2008
Jubilee Room Parliament House

Members present
Mrs Paluzzano, MP (Chair)
Mr Daley, MP
Mr Martin, MP
Mr Oakeshott, MP

Apologies
Apologies were received from Mr Williams and Mr George.

Minutes
Resolved, on the motion of Mr Daley, seconded by Mr Martin:
That the minutes of the meeting on 2 April 2008 be confirmed.

Inquiry into emissions trading schemes
The Committee was provided with further information as background to the inquiry, including:

- Department of Water and Energy Consultation Paper: Transitional arrangements for the NSW Greenhouse Gas Reduction Scheme

Public hearing
The Chair opened the public hearing.

Dr David Butcher, Chief Executive Officer, and Mr Tim Beshara, Science Manager, of Greening Australia were sworn and examined.
Mr Beshara tabled aerial photographs to be included as part of his evidence.
Evidence completed, the witnesses withdrew.

Mr James McDonald, Chairman of Namoi Council Catchment Management Committee and incumbent of Catchment Management Authority Chair's Council was affirmed and examined.
Ms Kerryn Richardson, Manager of Strategic Services, Chair's Council was sworn and examined.
Ms Richardson tabled brochures on the impact of climate change on each catchment in New South Wales as part of her evidence.
Evidence completed, the witnesses withdrew.

At 11.00 am the Committee took a short adjournment and the public hearing resumed at 11.15 am.

Mr Simon Smith, Deputy Director General, New South Wales Department of Environment and Climate Change, was affirmed and examined.
Mr Smith tabled his presentation to be included as part of his evidence.
Evidence completed, the witness withdrew.

Mr Jock Laurie, President, NSW Farmers' Association was sworn and examined.
Mr David Eyre, Senior Policy Manager, of NSW Farmers' Association was affirmed and examined.
Evidence completed, the witnesses withdrew.

At 1.00 pm the Committee adjourned for lunch and the public hearing resumed at 2.00 pm.

Mr Austin Whitehead, Director, Water and Resources Policy, of New South Wales Department of Primary Industries was sworn and examined.
Mr Fowler, Policy Manager, New South Wales Department of Primary Industries was affirmed and examined.
Mr Whitehead tabled some documents from his presentation to be included as part of his evidence.
Evidence completed, the witnesses withdrew.

Ms Sue-Ern Tan, Director Policy and Strategy, New South Wales Minerals Council was affirmed and examined.
Evidence completed, the witness withdrew.

Councillor George Campbell, Spokesperson on the Natural Environment and Resources, and Mr Colin Berryman, Program Coordinator for the Natural Environment, Western Sydney Regional Organisation of Councils were affirmed and examined.
Evidence completed, the witnesses withdrew.

The Committee adjourned at 3.50 pm until 11.00 am on 7 May 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 9)

11.00 am Wednesday 7 May 2008
Room 1043 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr Daley, MP
Mr Martin, MP
Mr Oakeshott, MP
Mr Williams, MP

Apology

An apology was received from Mr George.

Minutes

Resolved, on the motion of Mr Daley, seconded by Mr Martin:
That the minutes of the meeting on 11 April 2008 be confirmed.

Public hearing of 11 April 2008

Resolved, on the motion of Mr Daley, seconded by Mr Martin:
That the transcript of 11 April 2008 public hearing be published.

Documents related to 11 April 2008 Hearing
The members were provided with the following material from hearing witnesses, for members to note:

- Slides tabled by Department of Primary Industries;
- Presentation made by Department of Environment and Climate Change;
- Further information on carbon pooling provided by the Catchment Management Authority Chair's Council; and
- Brochures on local impacts of climate change tabled by Catchment Management Authority Chair's Council.

Submissions to inquiry into emissions trading scheme

Resolved, on the motion of Mr Daley, seconded by Mr Oakeshott:
That submission 1 by Ms Carol O'Donnell be published.

Deliberation

The Chair discussed with the Committee the upcoming hearing on 16 May 2008.

The Committee adjourned at 11.18 am until 9.15 am on 16 May 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 10)

9.15 am Friday 16 May 2008
Jubilee Room Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr Daley, MP
Mr Martin, MP
Mr Oakeshott, MP
Mr Williams, MP

Apology

An apology was received from Mr George.

Minutes

Resolved, on the motion of Mr Daley, seconded by Mr Oakeshott:
That the minutes of the meeting on 7 May 2008 be confirmed.

Submissions to inquiry into emissions trading scheme

Resolved, on the motion of Mr Martin, seconded by Mr Daley:
That submissions 2 to 6 be accepted and published.

Public hearing

The Chair opened the public hearing.

Professor Andy Pitman, Co-director, Climate Change Research Centre, University of New South Wales was affirmed and examined.
Evidence completed, the witness withdrew.

Ms Rachel Walmsley, Policy Director, Environmental Defenders Office, was affirmed and examined. Mr Robert Ghanem, Policy Officer, Environmental Defenders Office was sworn and examined.
Mr Ghanem undertook to provide the Committee with some further information in response to questions.
Evidence completed, the witnesses withdrew.

At 11.00 am the Committee took a short adjournment and the public hearing resumed at 11.15 am.

Mr Michael Kiely of the Carbon Coalition Against Global Warming was sworn and examined.
Mr Kiely tabled a presentation on soil carbon in support of his evidence.
Evidence completed, the witness withdrew.

Mr Warwick Ragg, Chief Executive, Australian Forest Growers was sworn and examined.
Evidence completed, the witness withdrew.

Mr Geoff Withycombe Executive Officer, Sydney Coastal Councils group was sworn and examined.
In support of his evidence, Mr Withycombe tabled:

- A report entitled ‘A systems approach to regional climate change adaptation and strategy in a metropolis’;

- A facts sheet on valuing Sydney's beaches; and
- A report entitled 'Coastal Council and Planning for Climate Change: An assessment of Australian and NSW legislation and government policy provisions relating to climate change relevant to regional and metropolitan coastal councils.'

Evidence completed, the witness withdrew.

At 1.00 pm the Committee adjourned for lunch and the public hearing resumed at 1.15 pm.

Mr Christopher Davis, Sustainability Business Manager, University of Technology, Sydney and Ms Caroline Palmer, Director, Institute for Water and Environmental Resource Management, University of Technology, Sydney were sworn and examined.
Mr Davis undertook to provide the Committee with some further information in response to questions.
Evidence completed, the witnesses withdrew.

Professor Colin Woodroffe, Coordinator, GeoQuest Research Centre, School of Earth and Environmental Sciences, University of Wollongong, was sworn and examined.
Professor Ross Bradstock, Director, Centre for Environmental Risk Management of Bushfires, University of Wollongong, was affirmed and examined.
Evidence completed, the witnesses withdrew.

Ms Leisl Baumgartner, Deputy Director General, Department of Water and Energy, Dr David Hemming, Manager, Sustainable Energy, Department of Water and Energy were affirmed and examined.

The Chair departed the hearing and asked Mr Daley to act as Chair.

Evidence completed, the witnesses withdrew.

The Acting Chair closed the hearing at 2.45 pm.

The Committee adjourned until 11.00 am on 4 June 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 11)

11.00 am Wednesday 4 June 2008
Room 1254 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr George, MP — Mr Martin, MP
Mr Oakeshott, MP — Mr Williams, MP

Apology

An apology was received from Mr Daley.

Minutes

Resolved, on the motion of Mr Oakeshott, seconded by Mr Williams:
That the minutes of the meeting on 16 May 2008 be confirmed.

Public hearing of 16 May 2008
Resolved, on the motion of Mr Williams, seconded by Mr Oakeshott:
That members agree to publish the corrected transcript.

The Committee noted copies of information provided by witnesses at the hearing and further information provided by witnesses from the University of Technology, Sydney.

Submissions to inquiry into emissions trading scheme
Resolved, on the motion of Mr George, seconded by Mr Oakeshott:
That submissions 7 to 10 be accepted and published.

Deliberation
The Committee noted recent developments in climate change research, policies and programs.

The Committee adjourned at 11.15 am until 11.00 am on 18 June 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 12)

11.00 am Wednesday 18 June 2008
Room 1043 Parliament House

Members present
Mrs Paluzzano, MP (Chair)
Mr George, MP — Mr Martin, MP
Mr Oakeshott, MP

Apologies
Apologies were received from Mr Daley and Mr Williams.

Minutes
Resolved, on the motion of Mr George, seconded by Mr Martin:
That the minutes of the meeting on 4 June 2008 be confirmed.

Submission to inquiry into emissions trading scheme
Resolved, on the motion of Mr Oakeshott, seconded by Mr Martin:
That submission 11 be accepted and published.

Deliberation
The Committee noted recent developments in climate change research, policies and programs

Public hearing
The Chair opened the public hearing.
Mr Daniel Williams, Principal Environmental Scientist, GHD, and Ms Michelle Larkin, Senior Environmental Scientist, GHD were affirmed and examined.

Mr Williams tabled two background briefing documents, a brochure about the development of a new suburb in the ACT called Crace and a publication entitled “Zero” in support of his evidence.
Evidence completed, the witnesses withdrew.

The Committee adjourned at 1.00 pm until 11.00 am on 25 June 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 13)

11.00 am Wednesday 25 June 2008
Room 1254 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr Daley, MP
Mr George, MP
Mr Martin, MP
Mr Oakeshott, MP
Mr Williams, MP

Minutes

Resolved, on the motion of Mr Martin, seconded by Oakeshott:
That the minutes of the meeting on 18 June 2008 be confirmed.

Public hearing of 18 June 2008

Resolved, on the motion of Mr Oakeshott, seconded by Mr Martin:
That members agree to publish the corrected transcript.

Deliberation

The Committee noted recent developments in climate change research, policies and programs

The Committee adjourned at 1.00 pm until 11.00 am on 24 September 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 14)

11.00 am Wednesday 24 September 2008
Room 1254 Parliament House

Members present

Mrs Paluzzano, MP (Chair)
Mr George, MP
Mr Harris, MP
Mr Martin, MP
Mr Piper, MP
Mr Williams, MP

Welcome to new members

The Chair welcomed the new members of the Committee, Mr Harris and Mr Piper who were appointed that morning. Mr Harris was appointed to the Committee in place of Mr Daley. Mr Piper was nominated for the Committee in place of Mr Oakeshott.

Minutes
Resolved, on the motion of Mr George, seconded by Mr Martin:
That the minutes of the meeting on 25 June 2008 be confirmed.

Deliberation
The Committee noted the recent developments in climate change research, policies and programs since the last Committee meeting and the summary of 'A Green Carbon Account for Australia's South-Eastern Eucalypt Forests, and Policy Implications'.

The Committee noted the consultation being undertaken by the Department of Environment and Climate Change on the Climate Change Action Plan across New South Wales.

Submission to inquiry into emissions trading scheme
Resolved on the motion of Mr Harris, seconded by Mr Piper:
That submission 12 be accepted and published.

Visit of inspection
The Committee discussed the invitations from the Central West Catchment Management Authority (CWCMA) and Mr Michael Kiely to examine carbon farming activities and attend the Carbon Farming Expo and Conference in Orange on 18-19 November 2008.

The Committee agreed as many members as wished should attend the conference and try and meet with the CWCMA and visit carbon farming activities over 2 days within the period of 17-20 November 2008.

The Committee adjourned at 11.35 am until 11.00 am on 22 October 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 15)

11.00 am Wednesday 22 October 2008
Room 1254 Parliament House

Members present
Mr Harris, MP (Chair)
Mr Martin, MP
Mr Piper, MP
Mrs Paluzzano, MP
Mr Williams, MP

Apology
An apology was received from Mr George.

Minutes
Resolved, on the motion of Mr Martin, seconded by Mr Piper:
That the minutes of the meeting on 24 September 2008 be confirmed.

Deliberation
The Committee noted the upcoming public hearings on 31 October and 10 November.

The Committee discussed the upcoming visit of inspection to examine carbon farming activities and attend the Carbon Farming Expo and Conference in Orange from 17-19 November 2008.

Resolved, on the motion of Mr Piper, seconded by Mrs Paluzzano:
That the Committee note recent developments in climate change research, policies and programs.

Briefing
Ms Jenny McAllister, Director of the Climate Change, Policy and Programs Group in the Department of Environment and Climate Change, provided a briefing to the Committee on the development of the NSW Climate Change Action Plan.

The Committee adjourned at 11.55 am until 10.00 am on 31 October 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 16)

9.55 am Friday 31 October 2008
Jubilee Room Parliament House

Members present
Mr Harris, MP (Chair)
Mr Martin, MP Mr Williams, MP

Apologies
Apologies were received from Mrs Paluzzano, Mr Piper and Mr George.

Minutes
Resolved, on the motion of Mr Martin, seconded by Mr Williams:
That the minutes of the meeting on 22 October 2008 be confirmed.

Deliberation
The Chair updated the Committee on the arrangements for the upcoming site visit to Orange from 17 to 19 November 2008.

The Committee noted that the proposed public hearing on 10 November was cancelled.

Public hearing
The Chair opened the public hearing.

Mr Russell Ainley, and Ms Pamela Green of the Natural Resources Advisory Council were sworn and examined. Dr Mark Dangerfield of the Natural Resources Advisory Council was affirmed and examined.

Dr Mark Dangerfield tabled two background briefing documents is support of the Natural Resources Advisory Council's evidence: a brochure titled 'Forests, Wood and Australia's Carbon Balance' which outlines the extent to which plantations and other wood products contribute to Australia's carbon balance; and a brief on the membership of the Natural Resources Advisory Council.

Evidence completed, the witnesses withdrew.

The Committee adjourned at 10.36 am until 11.00 am on 12 November 2008.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 17)

11.09 am Wednesday 3 December 2008
Room 1043 Parliament House

Members Present

Mr Harris, MP (Chair)
Mr Martin, MP — Mrs Paluzzano, MP
Mr Piper, MP — Mr Williams, MP

Apology

An apology was received from Mr George.

Minutes

Resolved, on the motion of Mr Martin, seconded by Mr Williams:
That the minutes of the meeting on 31 October 2008 be confirmed.

Public hearing of 31 October 2008

Resolved, on the motion of Mr Piper, seconded by Mr Martin:
That the documents tabled by the Natural Resources Advisory Council on 31 October 2008 be noted.

Resolved, on the motion of Mrs Paluzzano, seconded by Mr Piper:
That the transcript of the public hearing on 31 October 2008 be published.

Recent developments in climate change research, policies and programs

The Committee noted the recent developments in climate change research, policies and programs since the last Committee meeting.

Visit of inspection

The Committee noted the report on the visit of inspection to Orange by a delegation of the Committee.

Resolved, on the motion of Mr Williams, seconded by Mr Martin:
That a copy of the DVD of the Carbon Farming Expo and Conference be purchased.

Deliberation

The Committee discussed that the report on the impact of emissions trading schemes on natural resource management would be finalised after the Federal Government's White Paper on the Carbon Pollution Reduction Scheme was released.

Briefing

Three representatives from the Independent Pricing and Regulatory Tribunal briefed the Committee on the Review of climate change mitigation measures currently being

undertaken by the organisation. The representatives were: Mr James Cox, Chief Executive Officer; Ms Angela Woo, Program Manager, Analysis and Policy Development; and Mr Eric Groom, Principal Advisor.

The Committee adjourned at 12.18 pm until 11.00 am on 4 March 2009.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 1)

11.05 am Wednesday 4 March 2009
Room 1254 Parliament House

Members present

Mr Harris, MP (Chair)
Mr George, MP
Mrs Paluzzano, MP
Mr Williams, MP
Mr Martin, MP
Mr Piper, MP

Minutes

Resolved, on the motion of Mr Piper, seconded by Mr Martin:
That the minutes of the meeting on 3 December 2008 be confirmed and published.

Recent developments in climate change research, policies and programs

The Committee noted the recent developments in climate change research, policies and programs since the last Committee meeting.

Slides from the National Carbon Offset Standard public consultation forum

The Committee noted the slides from the National Carbon Offset Standard public consultation forum.

The Committee adjourned at 12.05 pm until 11.00 am on 25 March 2009.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 2)

11.00 am Wednesday 1 April 2009
Waratah Room Parliament House

Members present

Mr Harris, MP (Chair)
Mr George, MP
Mr Piper, MP
Mr Martin, MP
Mr Williams, MP

Apology

An apology was received from Mrs Paluzzano.

Minutes

Resolved, on the motion of Mr Martin, seconded by Mr Piper:
That the minutes of the meeting on 4 March 2009 be confirmed and published.

Inquiry into emissions trading schemes
Resolved, on the motion of Mr Piper, seconded by Mr Martin:
That submission 13 be accepted and published.

Resolved, on the motion of Mr Piper, seconded by Mr George:
That the Committee defer consideration of the Chair's draft of the report entitled *Impacts of Emissions Trading Schemes on Natural Resource Management* until the next meeting.

Recent developments in climate change research, policies and programs
Resolved on the motion of Mr Martin and seconded by Mr Piper:
That the Committee note the recent developments in climate change research, policies and programs since the last Committee meeting.

The Committee adjourned at 11.35 am until 9.00 am on 4 May 2009.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 3)

9.57 am Monday 4 May 2009
Room 814/815 Parliament House

Members present
Mr Harris, MP (Chair)
Mr George, MP — Mrs Paluzzano, MP
Mr Williams, MP

Apologies
Apologies were received from Mr Martin and Mr Piper.

Minutes
Resolved, on the motion of Mr Williams, seconded by Mr George:
That the minutes of the meeting on 1 April 2009 be confirmed.

Recent developments in climate change research, policies and programs
The Committee noted the recent developments in climate change research, policies and programs since the last Committee meeting.

The Committee adjourned at 2.54 pm until 11.00 am on 6 May 2009.

Minutes of Proceedings of the Standing Committee on Natural Resource Management (Climate Change) (No. 4)

11.12 am Wednesday 6 May 2009
Room 1254 Parliament House

Members present
Mr Harris, MP (Chair)
Mr Piper, MP — Mr Williams, MP

Apologies
Apologies were received from Mr George, Mr Martin and Mrs Paluzzano.

Minutes
Resolved, on the motion of Mr Williams:
That the minutes of the meeting on 4 May 2009 be confirmed.

Recent developments in climate change policies
The Committee noted the recent developments in the proposed Carbon Pollution Reduction Scheme since its last meeting.

Emissions trading scheme draft report
The Committee considered the Chair's draft report entitled *Impacts of Emissions Trading Schemes on Natural Resource Management* circulated prior to its meeting on 1 April 2009 and new proposed amendments to update the report in light of recent developments in climate change policies.

Resolved on the motion of Mr Williams, seconded by Mr Piper:
That the Committee adopt the report with the proposed amendments and it be tabled in the House.

The Chair and Committee acknowledged and thanked the secretariat for their efforts in preparing the report under difficult circumstances.

The Committee adjourned at 11.24 am until 11.00 am on 3 June 2009.