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Framework Convention on Climate Change

Report of the in-depth review of the fifth national communication of Australia

Parties included in Annex I to the Convention are requested, in accordance with decision 10/CP.13, to submit a fifth national communication to the secretariat by 1 January 2010. In accordance with decision 8/CMP.3, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their fifth national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. This report presents the results of the in-depth review of the fifth national communication of Australia conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

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I. Introduction and summary

A. Introduction

1. For Australia, the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 11 March 2008. Under the Kyoto Protocol, Australia committed itself to limiting the growth of its greenhouse gas (GHG) emissions to 8 per cent relative to the base year[1] level during the first commitment period from 2008 to 2012.

2. This report covers the in-country in-depth review (IDR) of the fifth national communication (NC5) of Australia, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 20 to 25 February 2012 in Canberra, Australia, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Agnieszka Janowska (European Union), Mr. Christopher Lamport (Austria), Ms. Nur Masripatin (Indonesia) and Ms. Tatiana Tugui (Republic of Moldova). Mr. Lamport and Ms. Tugui were the lead reviewers. The review was coordinated by Ms. Sylvie Marchand and Ms. Barbara Muik (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by Australia as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Australia in its 2011 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

4. In accordance with decision 22/CMP.1, a draft version of this report was communicated to the Government of Australia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Summary

5. The ERT noted that Australia's NC5 complies mostly with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol[2] is provided in the NC5. Australia considered most of the recommendations provided in the report of the in-depth review of the fourth national communication of Australia.[3] The ERT commends Australia for its improved reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above is complete and transparent and was provided on time. During the review, Australia provided further relevant information.

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol. As the land use, land-use change and forestry (LULUCF) sector is a net source of emissions for Australia in the base year, the total base year emissions for the purpose of the calculation of the assigned amount under the Kyoto Protocol include GHG emissions from the conversion of forest land (deforestation) in accordance with decision 13/CMP.1.

[2] Decision 15/CMP.1, annex, chapter II.

[3] FCCC/IDR.4/AUS.

1. Completeness

7. The NC5 covers all of the sections required by the UNFCCC reporting guidelines, and most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, except for information on policies and measures (PaMs) in accordance with Article 2, paragraph 3, of the Kyoto protocol (see para. 85 below); and a description of any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources (see para. 21 below). The NC5 does not include some of the information required by the UNFCCC reporting guidelines on: the status of implementation and implementing entity for some PaMs (see para. 30 below); the types of PaMs and the gases affected, which are not clearly identified for some PaMs (see para. 30 below); the total effect of PaMs, subdivided by gas, for historic years in accordance with the UNFCCC reporting guidelines (see para. 105 below); a clarification of how the financial resources provided pursuant to Article 4, paragraph 3, of the Convention have been determined as being "new and additional" (see para. 115 below); and a clear distinction between activities related to technology transfer undertaken by the public sector and those undertaken by the private sector (see para. 122 below). Further relevant information on these elements was provided by the Party during the review. The ERT recommends that Australia enhance the completeness of its reporting by providing this information in its next national communication.

2. Transparency

8. The ERT acknowledged that Australia's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is generally comprehensive and transparent. The NC5 provides clear information on all aspects of the implementation of the Convention and its Kyoto Protocol. The NC5 is mostly structured following the outline contained in the annex to the UNFCCC reporting guidelines and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is identifiable. In the course of the review, the ERT formulated a number of recommendations that could help Australia to further increase the transparency of its reporting with regard to: PaMs, by organizing the reporting of all PaMs by sector further subdivided by gas (see para. 30 below); technology transfer, by further elaborating on the information regarding the success or failure of activities related to technology transfer and that regarding the support for the development and enhancement of the endogenous capacities and technologies of developing countries (see para. 122 below); research and systematic observation, by further elaborating on the action taken to support related capacity-building in developing countries (see para. 126 below); and supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, by including more explicit information on supplementarity pursuant to Articles 6, 12 and 17 of the Kyoto Protocol (see para. 107 below).

3. Timeliness

9. The NC5 was submitted on 12 February 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. Australia informed the secretariat about its difficulties with the timeliness of its national communication submission on 24 December 2009 in accordance with paragraph 139 of decision 22/CMP.1. The ERT noted with concern the delay in the submission of the NC5.

II. Technical assessment of the reviewed elements

A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures

10. In its NC5, Australia has provided a concise description of the national circumstances and has elaborated on the framework legislation and key policy documents on climate change. The NC5 also describes the main components of the national GHG inventory system and refers to the national inventory report (NIR) of the 2009 annual submission for a more technical description of the national system. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B.1 of this report.

1. National circumstances

11. In its NC5, Australia has provided a description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals and how changes in the national circumstances affect the trends in GHG emissions and removals over time. Information was provided on the government structure, demographic profile, geography, climate and landscape, economy, energy production and consumption profiles, industries, transport, urban structure and waste.

12. The ERT noted that the main drivers of emission trends in Australia include the high population growth (about 26 per cent from 1990 to 2009), the strong economic growth, with an average annual growth rate of gross domestic product (GDP) of 3.2 per cent between 1990 and 2009, as well as the strong growth in energy production, road transportation and growing commodity exports. The economy of Australia is mainly defined by its extensive reserves of natural resources, especially fossil fuels. The availability of coal in particular has led to a dominance of coal-fired electricity generation and energy-intensive industries. Also, Australia is a major exporter of natural resource and agricultural products to overseas markets, and industry and consumers depend heavily on long-haul transport. As a result, Australia has a very high per capita GHG emissions rate and thus ranks near the top of Annex I Parties in terms of this indicator. Table 1 illustrates the national circumstances of Australia by providing some indicators relevant to GHG emissions and removals.

13. Australia is a large country situated in the southern hemisphere and is the driest inhabited continent on Earth, although the climate is highly diverse across the country. The climate is heavily influenced by the oceans and is temperate in the south, subtropical and tropical in the north, and hot and dry inland. Most of the population is concentrated along the coastal areas in the east and south-east and to some extent in the south-west; the rest of the country is sparsely populated. More than half of Australia's total land area is used for agriculture, which explains the relatively high share (15.5 per cent) of GHG emissions from the agriculture sector in the Party's total GHG emissions compared to other Annex I Parties.

14. The Commonwealth of Australia is a democratic federation which consists of a national Government and eight self-governing states and territories: the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, Victoria and Western Australia. Within the states and territories, there are also local governments. All three levels of government share responsibility for reducing GHG emissions and enhancing sinks, as well as for action relating to vulnerability and adaptation. At the federal level, overall responsibility for climate change policymaking lies

with the federal Department of Climate Change and Energy Efficiency (DCCEE) and a number of national institutions are involved in the implementation of climate change policies. The implementation of the Kyoto Protocol is underpinned by the three-pillar Climate Change Strategy (2008) complemented by several legislative acts. Further legislative arrangements and administrative procedures, including those for the national system and the national registry, are presented in sections II.A.2 and II.A.3 and chapter II.B of this report.

Table 1
Indicators relevant to greenhouse gas emissions and removals for Australia

Indicator	*1990*	*1995*	*2000*	*2005*	*2009*	*Change 1990–2000 (%)*	*Change 2000–2009 (%)*	*Change 1990–2009 (%)*
Population (million)	17.17	18.19	19.27	20.52	21.63	12.2	12.2	26.0
GDP (2000 USD billion using PPP)	370.03	434.06	525.42	619.79	698.80	42.0	33.0	88.8
TPES (Mtoe)	86.23	92.56	108.11	119.59	131.16	25.4	21.3	52.1
GDP per capita (2000 USD thousand using PPP)	21.55	23.86	27.27	30.20	32.31	26.5	18.5	49.9
TPES per capita (toe)	5.02	5.09	5.61	5.83	6.06	11.8	8.0	20.7
GHG emissions without LULUCF (Tg CO_2 eq)	418.47	440.96	496.25	527.85	545.86	18.6	10.0	30.4
GHG emissions with LULUCF (Tg CO_2 eq)	461.62	545.71	482.75	572.69	599.83	4.6	24.3	29.9
CO_2 emissions per capita (Mg)	16.20	16.72	18.15	18.63	18.51	12.0	2.0	14.3
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	0.75	0.70	0.67	0.62	0.57	–10. 7	–14.9	–24.0
GHG emissions per capita (Mg CO_2 eq)	24.37	24.24	25.75	25.72	25.24	5.7	–2.0	3.6
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	1.13	1.02	0.94	0.85	0.78	–16.8	–17.0	–31.0

Sources: (1) GHG emissions data: Australia's 2011 greenhouse gas inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from those calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

15. Australia provided a summary of information on GHG emission trends for the period 1990–2007, including emissions in carbon dioxide equivalent (CO_2 eq) (presented in the common reporting format (CRF)) in an annex to the NC5. This information is consistent with the 2009 annual submission. During the review, the ERT assessed the most recent available 2011 annual submission and has reflected the findings in this report.

16. Total GHG emissions excluding net emissions and removals from land use, land-use change and forestry (LULUCF) increased by 30.4 per cent between 1990 and 2009,

whereas total GHG emissions including net emissions and removals from LULUCF increased by 29.9 per cent. The strong increase in total GHG emissions[4] was mainly attributed to carbon dioxide (CO_2) emissions, which increased by 43.9 per cent over this period. Emissions of nitrous oxide (N_2O) also increased by 37.9 per cent, while emissions of methane (CH_4) decreased by 2.9 per cent. Emissions of fluorinated gases accounted for about 1.3 per cent of total GHG emissions in 1990 and 1.2 per cent in 2009. The increase in total GHG emissions mainly reflects the increase in GHG emissions in the energy sector which was driven by GDP and population growth, with a remarkable increase of 50 per cent in GDP per capita between 1990 and 2009. Emissions in 2009, based on Kyoto Protocol accounting rules and including LULUCF, were 564.54 Mt CO_2 eq, which is 2.7 per cent higher than the 1990 level of 549.85 Mt CO_2 eq. An analysis of the key drivers of the GHG emission trends in each sector is provided in chapter II.B of this report. Table 2 provides an overview of GHG emission trends by sector from 1990 to 2009.

Table 2
Greenhouse gas emissions by sector in Australia, 1990–2009

	GHG emissions (Tg CO_2 eq)						*Change (%)*		*Shares[a] by sector (%)*	
Sector	*1990*	*1995*	*2000*	*2005*	*2008*	*2009*	*1990–2009*	*2008–2009*	*1990*	*2009*
1. Energy	289.01	313.49	360.71	395.81	417.62	417.35	44.4	–0.1	69.1	76.5
A1. Energy industries	143.22	158.43	192.70	214.28	224.98	227.79	59.0	1.3	34.2	41.7
A2. Manufacturing industries and construction	35.65	36.98	38.85	44.21	47.19	44.51	24.9	–5.7	8.5	8.2
A3. Transport	62.12	68.36	75.19	80.83	84.23	83.64	34.6	–0.7	14.8	15.3
A4.–A5. Other	15.76	17.57	18.86	20.81	21.28	21.75	38.0	2.2	3.8	4.0
B. Fugitive emissions	32.26	32.16	35.11	35.67	39.95	39.66	22.9	–0.7	7.7	7.3
2. Industrial processes	24.63	24.33	26.17	29.37	31.27	29.68	20.5	–5.1	5.9	5.4
3. Solvent and other product use	IE, NA, NO	IE, NA, NO	IE, NA, NO	IE, NA, NO	IE, NA, NO	IE, NA, NO	NA	NA	NA	NA
4. Agriculture	86.81	86.19	94.48	89.08	87.92	84.75	–2.4	–3.6	20.7	15.5
5. LULUCF	43.15	104.75	–13.50	44.84	69.49	53.97	25.1	–22.3	10.3	9.9
6. Waste	18.02	16.95	14.89	13.60	14.11	14.08	–21.9	–0.3	4.3	2.6
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	**461.62**	**545.71**	**482.75**	**572.69**	**620.41**	**599.83**	**29.9**	**-3.3**	**NA**	**NA**
GHG total without LULUCF	**418.47**	**440.96**	**496.25**	**527.85**	**550.92**	**545.86**	**30.4**	**-0.9**	**100.0**	**100.0**

Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

Abbreviations: GHG = greenhouse gas, IE = included elsewhere, LULUCF = land use, land-use change and forestry, NA= not applicable, NO = not occurring.

[4] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

[a] The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

17. In the period 1990–2009, a major increase in CO_2 eq emissions occurred in the energy sector, by 128.34 Tg CO_2 eq or 44.4 per cent (see table 2 above). The largest increase was observed in emissions from energy industries, where emissions increased by 59.0 per cent, which is principally explained by the large increase in electricity generation with a continuous reliance on fossil fuels, mainly coal. Emissions from transport also increased significantly, by 34.6 per cent, driven by the increase in passenger and freight road transportation. The ERT also noted an increase in fugitive emissions by 22.9 per cent between 1990 and 2009 due to the accelerated development of underground coal mining in Australia. The 20.5 per cent increase in emissions from the industrial processes sector was primarily driven by the growth in emissions associated with hydrofluorocarbons (HFCs) and chemical industries. Between 1990 and 2001, GHG emissions from the agriculture sector increased due to the increased use of fertilizer and savannah burning. Since 2002, sectoral emissions have decreased due to a reduction in the animal population, crop production and fertilizer use. Emissions from the waste sector have decreased since 1990 as the increased CH_4 recovery offset the emissions from the increased volume of waste resulting from the growth in population and industrial production. However, the ERT noted a stabilization in the emissions from the waste sector towards the end of the period.

18. The LULUCF sector alternated between being a net source and net sink throughout the time series. The sectoral emission levels are mainly driven by the inter-annual climate variability and natural disasters (e.g. droughts and fires). This dominating effects mask the decrease in emissions from deforestation, which was caused by the reduction of land-clearing because of reduced agricultural activities.[5] In 2009, emissions from deforestation amounted to 41.3 Mt CO_2 eq, compared to 131.5 Mt CO_2 eq in 1990.

2. National system

19. In accordance with decision 15/CMP.1, Australia provided in its NC5 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). The Party also provided a reference to the 2009 annual submission, which contains a more detailed description of the national system. The description includes all the elements as required by decision 15/CMP.1.

20. At the time when Australia's NC5 was submitted, the federal Department of Climate Change was the agency responsible for leading the national climate change policy. In April 2010 DCCEE was established under the Administrative Arrangements Orders of the Australian Government. DCCEE was to act as a one-window agency responsible for all of the activities involved in data collection, emissions estimation, quality assurance and quality control, inventory improvement planning, and the preparation of the NIR and its submission to the UNFCCC on behalf of the Australian Government.

21. Australia did not provide a description of the national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources in the NC5. However, such information was provided during the review. The Carbon Farming Initiative (CFI)

[5] Under the Kyoto Protocol, net changes in GHG emissions by sources and removals by sinks resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation, since 1990 shall be used by Annex I Parties to meet their commitments. In addition, for Australia, emissions from deforestation are included in the total base year emissions (see footnote 1 above).

(see para. 45 below) excludes high-risk activities including those that pose risks to the environment or the local community. Also, the aim of the Biodiversity Fund, which is part of the Clean Energy Future Plan, is to promote investment so that significant and strategic national biodiversity conservation gains can be made. The ERT recommends that Australia include such information in its next national communication.

22. During the review, Australia provided additional information on the national system, elaborating on the various continuous improvements, such as: developing, updating and improving methods, activity data and emission factors (EFs) for the GHG inventory; strengthening the quality management system for the GHG inventory; and developing the technical competence, independence, impartiality and integrity of the staff involved in GHG inventory preparation and management.

23. The ERT took note of the recommendations made in the report of the individual review of the 2010 annual submission of Australia.[6] During the review, the ERT learned that the Party had made some efforts to improve the transparency of its reporting by providing relevant explanations in the NIR in cases where country-specific methods and EFs are used and in relation to the use of confidential data and the reporting of the LULUCF sector.

24. The ERT concluded that the national system continues to perform its required functions as set out in decision 19/CMP.1.

3. National registry

25. In its NC5, Australia has provided information on the national registry, including a description of how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and how it complies with the requirements of the technical standards for data exchange between registry systems.

26. During the review, Australia provided additional information on the measures put in place to safeguard, maintain and recover registry data, the security measures employed in the registry to prevent unauthorized manipulations, the measures put in place to protect the registry against security compromises, the test procedures related to the performance of the current version of the national registry and on the recording of the changes and discrepancies in the national registry. In response to questions raised by the ERT during the review, Australia provided documents demonstrating how it records the changes related to the national registry and how it maintains these records. The ERT noted that updates of databases and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible staff.

27. The ERT encourages Australia to provide the international transaction log with DCCEE documentation regarding penetration tests and standard operating procedures, the recent results of the penetration tests evaluating the registry application's ability to resist threats and the results of the formal testing of the disaster recovery process, once these tests have been carried out.

28. The ERT also took note of the findings of the 2011 standard independent assessment report (SIAR) and concludes that Australia's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

[6] FCCC/ARR/2010/AUS.

B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

29. As required by the UNFCCC reporting guidelines, Australia has provided in its NC5 comprehensive information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on the most important PaMs. The ERT considers that the structure of this information broadly matches the outline contained in the annex to the UNFCCC reporting guidelines. Australia has also provided information on how it believes its PaMs, especially the originally planned Carbon Pollution Reduction Scheme (CPRS) that has since been discontinued, are likely to modify longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. The PaMs presented in the fourth national communication (NC4) did not include information on the market mechanisms in place to reduce GHG emissions, such as the emissions trading system. As emissions trading is considered to be a key cross-cutting measure, the PaMs presented in the NC5 constitute significant progress in Australia's approach to reducing GHG emissions

30. However, the ERT noted that Australia did not provide the following reporting elements required by the UNFCCC reporting guidelines: the information on the PaMs by sector is not further subdivided by gas; information on the status of implementation as well as the implementing entity for each PaM is not provided; and the types of PaMs and the gases affected are not clearly identified for some PaMs. Further, some sectors were not clearly identified using an appropriate sectoral heading and consequently for some PaMs the respective sector was difficult to identify. Some of the recommendations from the previous review report were taken into consideration by the Party to improve the reporting in the NC5, including giving priority to the reporting of the main PaMs. Starting with the next national communication, the ERT recommends that Australia: organize the reporting of all PaMs by sector then subdivide the sectoral information by gas; report on the status of implementation as well as on the implementing entity for each PaM; and report the types of all the main PaMs. The ERT encourages Australia to also report the effects of each main PaM.

31. During the review week, Australia provided comprehensive information on its PaMs at the national and, to some extent, at the state/territory and local levels. The key framework for national climate and energy policies is the three-pillar Climate Change Strategy and its Clean Energy Future Plan. The cornerstone of the plan in terms of mitigation is the Carbon Pricing Mechanism adopted in November 2011, with key features similar to the originally planned CPRS reported in the NC5 (see para. 43 below).

32. Since the NC4, Australia has further developed its climate change policies in order to meet its future commitments to reduce its GHG emissions. The Party estimates that it is on track to meet its target under the first commitment period of the Kyoto Protocol with its current set of PaMs. The introduction of the Carbon Pricing Mechanism, a cap-and-trade emissions trading scheme, establishes a price for carbon across Australia and is expected to put the economy on a downward GHG emissions trend. In 2010, the Government deferred the introduction of an emissions trading scheme as it was unable to secure support for it in the Australian Parliament. Following the 2010 general election, the Government worked with cross-party members of Parliament to secure passage of its emissions trading scheme, which will begin operating on 1 July 2012.

33. Australia did not report in its NC5 information on the cost of implementation of its PaMs. However, during the review, the Party provided information on the financial resources allocated to several initiatives, namely the Carbon Pricing Mechanism (support of Australian dollars (AUD) 5.5 billion was given under the Energy Security Fund, including

AUD 1.0 billion for the transformation of coal-fired generators (main energy generation source), AUD 8.6 billion for the Jobs and Competitiveness Program, AUD 350 million for the Low Carbon Communities Program, AUD 1.2 billion for the Clean Technology Program and AUD 64.6 million for the National Strategy on Energy Efficiency), Solar Cities (AUD 94.0 million), Low Carbon Australia (AUD 101.2 million) and Australia's Farming Future (AUD 143.3 million).[7]

34. Australia did not report in the NC5 on the PaMs that could potentially increase its GHG emissions. However, during the review week, the Party mentioned that the Productivity Commission (the Australian Government's independent research and advisory body) will conduct a review of fuel excise arrangements, including an examination of the merits of a regime based explicitly and precisely on the carbon and energy content of fuels.

35. The NC5 includes a list of PaMs that are no longer in place. Since the NC5, some PaMs have been terminated due either to their non-complementarity with a carbon price or the expiration of their allocated funding. In some cases, programme elements were absorbed by new programmes. Examples of the PaMs, which are no longer in place include the following: the Action on Energy Efficiency, the Greenhouse Gas Abatement Program, the Renewable Energy Development Initiative, the Solar Homes & Communities Plan and the Low Emissions Technology Demonstration Fund.

36. The NC5 provides estimates of the effects of the PaMs by sector, and to some extent by gas, but at more aggregated levels. The mitigation effects are estimated for the major implemented PaMs and are presented in the NC5. As Australia updates its GHG emission projections annually, the expected effects of its PaMs are also updated based on the most recent GHG projections. DCCEE is responsible for monitoring the effects of climate change mitigation PaMs. During the review, Australia provided the ERT with updated information on the mitigation effects of its PaMs. Table 3 provides a summary of the reported information on the PaMs of Australia.

Table 3
Summary of information on policies and measures

Major policies and measures	*Examples/comments*
Policy framework and cross-sectoral measures	
Climate Change Strategy (2008) and its Clean Energy Future Plan (2011)	Four key elements are covered: • Introducing a carbon price • Promoting innovation and investment in renewable energy • Encouraging energy efficiency • Creating opportunities in the land sector to cut pollution
Carbon Pricing Mechanism	The cap-and-trade scheme, due to start with a fixed price on 1 July 2012, covers all sectors except for agriculture and forestry. The scheme will move to a flexible priced cap-and-trade scheme from 1 July 2015. Information on the overall mitigation effect of the scheme is not available; by default, the cap option should ensure that the GHG reduction target of 5 per cent by 2020 compared to the 2000 level is delivered
Carbon Farming Initiative (CFI)	The initiative corresponds to a carbon crediting mechanism (domestic offset), is operational since 2011 and complements the Carbon Pricing Mechanism by addressing emissions from the agriculture, forestry and waste sectors. In the Treasury modelling report, *Strong Growth, Low*

[7] A table of measures, which Australia has implemented under the Clean Energy Feature plan is available at <http://www.cleanenergyfuture.gov.au/wp-content/uploads/2011/07/Consolidated-Final.pdf> (pp. 121–135).

Major policies and measures	*Examples/comments*
	Pollution: Modelling a Carbon Price, under a 'medium global action' scenario, Kyoto Protocol-compliant CFI activities are projected to provide 7 Mt CO_2 eq of abatement in 2020
Policies and measures by sector	
Energy	
Renewable Energy Target (RET) scheme	The RET scheme is designed to deliver on the commitment that the equivalent of at least 20 per cent of Australia's electricity comes from renewable sources by 2020 8.8 Tg CO_2 eq in 2010 and 29.9 Tg CO_2 eq in 2020) and includes a Large-scale Renewable Energy Target (26.3 Tg CO_2 eq in 2020) and a Small-scale Renewable Energy Scheme (3.7 Tg CO_2 eq in 2020)
National Strategy on Energy Efficiency	The strategy includes, among others, the Energy Efficiency Opportunities programme, energy efficiency requirements (e.g. the Building Code of Australia), and the Equipment Energy Efficiency Program (14.3 Tg CO_2 eq in 2010 and 42.6 Tg CO_2 eq in 2020)
Development and deployment of carbon dioxide capture and storage	Establishment of the Global Carbon Capture and Storage Institute
Transport	
Fuel consumption labels	The aim of the mandatory labels is to help the public choose environmentally sound cars
Green Vehicle Guide	The guide aims to help the public choose environmentally sound cars
Industrial processes	
Standards to reduce emissions from ozone-depleting substances (ODS) and synthetic greenhouse gases (SGGs)	This involves a permit scheme to regulate the use and handling of ODS and SGGs in the refrigeration and air-conditioning, and fire-protection industries
Clean Technology Program	Grants are provided to manufacturing businesses to enable them to invest in energy-efficient equipment and low-emission technologies and processes
Agriculture	
Agriculture and Climate Change Action Plan	This plan provides a coordinated framework for climate change policy in the agriculture sector in order to contribute to the development of a sustainable, competitive and profitable sector
Measures accompanying the Carbon Farming Initiative	These include: Carbon Farming Futures, Carbon Farming Skills, the Biodiversity Fund and the Indigenous Carbon Farming Fund
Forestry	
National Climate Change and Commercial Forestry Action Plan	The plan is aimed at assisting the forestry industry to respond to climate change through adaptation and mitigation, underpinned by research and development, and communication.
Waste	
National Waste Policy: Less Waste, More Resources	This policy forms the basis of many regional measures, including the capture of landfill gas and CH_4 flaring

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in CO_2 eq for the years 2010 (the average for the period 2008–2012) and 2020 based on updated information provided by Australia during the review.

1. Policy framework and cross-sectoral measures

37. In Australia, responsibility for addressing climate change is shared across three levels – the federal government; six state governments and two territory governments; and around 700 local authorities. The Council of Australian Governments (COAG) is the main forum for intergovernmental cooperation in Australia, and comprises the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association. COAG initiates, develops and monitors the implementation of policies and reforms that are of significant national importance, including cooperation on, integration with and the implementation of climate change policy.

38. DCCEE is the lead agency for climate change policy in the Australian Government and is responsible for policy advice, implementation and programme delivery. Recently, three new institutions were created, with specific portfolios for the implementation of the Clean Energy Future Plan: The Clean Energy Regulator will administer the Carbon Pricing Mechanism, CFI and the RET scheme as well as the National Greenhouse Gas and Energy Reporting System, starting on 2 April 2012; the Climate Change Authority will be responsible for monitoring and reviewing the Carbon Pricing Mechanism, including tracking the progress made towards the targets, and advising the Government on scheme caps, starting on 1 July 2012; the Australian Renewable Energy Agency (established through legislation in 2011) will manage research and development projects related to renewable energy sources (RES), and the Clean Energy Finance Corporation will invest in the commercialization and deployment of renewable energy, energy efficiency and low pollution energy technologies.

39. State, territory and local governments also play an important role in shaping Australian climate change policy by developing legislation at their respective level. Those governments agreed under COAG to implement measures consistent with and complementary to the emissions trading scheme. As part of the National Strategy on Energy Efficiency, all state and territory governments developed PaMs related to energy efficiency and sustainability. The objective of these PaMs is to improve the efficiency of energy and water use as well as to improve the efficiency of waste treatment across sectors including government, industry, communities and households. Further three states (South Australia, Victoria and New South Wales) have launched energy savings initiatives called white certificate schemes. The federal Government is currently undertaking further work on a potential national energy savings initiative.

40. The three-pillar Climate Change Strategy, led by DCCEE addresses climate change mitigation and adaptation, as well as international engagement. In July 2011, the Government implemented the Clean Energy Future Plan covering carbon pricing; promoting innovation and investment in renewable energy; encouraging energy efficiency; and creating opportunities for action to cut pollution and improve productivity, sustainability and resilience.

41. As part of the Climate Change Strategy, the Australian Government has committed itself to an unconditional target of reducing its GHG emissions level to 5 per cent below the 2000 level by 2020. It is prepared to adopt a more ambitious target of more than 5 per cent up to 15 per cent under conditions that relate to the extent of global action, which include reference to the following:

(a) That major developing economies make clear commitments to substantially restrain emissions;

(b) That advanced economies take on clear commitments to reduce emissions comparable with those of Australia;

(c) That the restraints and reductions of emissions are verifiable;

(d) That the credibility of the commitments and actions is established by a robust global agreement;

(e) That there is access to broad, liquid carbon markets, and appropriate land sector rules;

(f) That there is clarity on assumptions for emissions accounting and market access.

The Australian Government would be prepared to adopt a target of 25 per cent under strict conditions, including comprehensive global action capable of stabilizing atmospheric greenhouse gas concentrations at 450 parts per million or lower.[8]

42. Recently, under the Clean Energy Future Plan, a GHG emissions reduction target of 80 per cent below the 2000 level by 2050 was adopted. The achievement of the 2020 and 2050 targets is highly dependent on the full implementation and success of the recently adopted Carbon Pricing Mechanism. In the Clean Energy Future Plan 2011, the Government also noted that there are opportunities for Australia to improve its energy efficiency by up to 30 per cent by 2020. However, the Government does not currently support the adoption of an aspirational national energy efficiency target.

43. The Clean Energy Future Plan introduced market-based mechanisms to reduce GHG emissions in Australia, namely the Carbon Pricing Mechanism and CFI. The Carbon Pricing Mechanism is due to start on 1 July 2012 and will cover approximately two thirds of Australia's GHG emissions. Certain activities will be exempted, namely agriculture and forestry, light-duty on-road vehicles or on-site use of fuel by agriculture, forestry and fisheries industries. Other entities will be indirectly affected (e.g. with respect to electricity demand). It is expected that around 500 businesses will meet the eligibility criterion of GHG emissions of 25 kt CO_2 eq/year. These businesses covered under the mechanism will face an initial fixed price for a three-year period, followed by a flexible price phase, beginning on 1 July 2015, which will start with an emissions cap set for a five-year period.

44. A default cap is also foreseen, to ensure that the 5 per cent emission reduction target is met. Permits will be auctioned or allocated to business free of charge. Support is planned for the energy-intensive industries exposed to carbon leakage, the energy sector and households. The mechanism allows for unlimited banking and borrowing of permits. Furthermore, during the fixed price period of the Carbon Pricing Mechanism, domestic offsets (Australian Carbon Credit Units (ACCUs)) generated under the Carbon Farming Initiative will be eligible for compliance (up to 5 per cent). International units cannot be used under the Carbon Pricing Mechanism during this period. During the flexible price period, commencing on 1 July 2015, ACCUs can be used to meet all of an entity's liability, and international units can be used for up to 50 per cent of a covered entity's liability under the Carbon Pricing Mechanism. Opt-ins to the mechanism (from 1 July 2013) will be possible for large users of liquid fuels (e.g. airlines, railways) instead of being subject to the fuel tax system. It is anticipated that the mechanism will be linked to other international emissions trading schemes in the future.

45. CFI, is open to voluntary participation and is already operational together with other measures under the Land Sector Package of Clean Energy Future Plan. It complements the Carbon Pricing Mechanism by addressing emissions from the agriculture, forestry and waste sectors. Credits under CFI can be granted for reducing emissions and increasing carbon stores ("domestic offset"). The initiative differentiates between Kyoto Protocol

[8] For more details see <http://www.climatechange.gov.au/minister/previous/wong/2009/media-releases/May/ mr20090504c.aspx> and <http://www.climatechange.gov.au/minister/previous/wong/2010/media-releases/January/mr20100127.aspx>.

activities (under Article 3, paragraph 3, of the Kyoto Protocol, thus eligible for the Carbon Pricing Mechanism) and non-Kyoto Protocol activities (not recognized under international accounts and thus eligible for the non-Kyoto Carbon Fund run by the Government or voluntary offset markets). The proposed methodologies have to be designed to comply with the integrity principles that ensure that the offsets are additional, permanent, measurable, conservative, avoid leakage, based on peer-reviewed science and internationally consistent. To ensure additionality, projects have to go beyond common practice and must not be required by law. An independent Domestic Offsets Integrity Committee has been established to assess methodologies. The committee assesses proposed methodologies against the offset integrity principles, undertakes public consultation and advises the Minister for Climate Change and Energy Efficiency. If approved by the Minister for Climate Change and Energy Efficiency, the methodologies are published as legislative instruments. Ensuring that these criteria are met, especially with regard to additionality, will be critical for the proper functioning of the scheme and the eligibility of the credits under the Carbon Pricing Mechanism.

46. The ERT notes the progress in the Party's approach to emissions trading compared to the NC5 and commends the Party for the transparent information on the revised emissions trading scheme provided during the review.

2. Policies and measures in the energy sector

47. Between 1990 and 2009, GHG emissions from the energy sector increased by 44.4 per cent, mainly driven by a 59.7 per cent increase in electricity generation brought about by a 28.7 per cent increase in population, and an increase in household income. The trend in GHG emissions from fuel combustion showed a notable increase of 34.6 per cent in transport and a 38.0 per cent increase in energy use in other sectors.

48. ***Energy supply***. In 2010, electricity generation in Australia mainly relied on fossil fuels, mostly black coal (52 per cent), brown coal (23 per cent) and gas (15 per cent). RES (mostly hydro and wind) contributed 8 per cent to total electricity production. Modelling of the impact of a carbon price in Australia suggests that, with a carbon price, by 2050, there will be a significant shift to RES (around 40 per cent, mostly by increasing share of wind) as well as the implementation of carbon dioxide capture and storage (CCS) technology at coal-fired power generation facilities (around 30 per cent). Although Australia is rich in uranium resources, nuclear-based power generation does not form part of the energy mix at present and it is not expected to in the future.

49. The Carbon Pricing Mechanism is the core PaM in energy supply. As around 75 per cent of electricity production comes from coal, some transitional assistance has been foreseen to soften the impact of the introduction of the carbon pricing mechanism. This includes cash assistance of AUD 1 billion to coal-fired power generation plants with an emissions intensity greater than 1.0 t CO_2 eq/MWh and the free allocation of permits valued at AUD 4.5 billion to be allocated over the period 2013–2017. The eligible plants will be obliged to prepare an annual clean energy investment plan. In addition, the Government is seeking to negotiate the closure of some of Australia's most emission-intensive coal-fired power generation plants (with an emission intensity of at least 1.2 t CO_2 eq/MWh, constituting around five to six plants). In order to do so, contracts for the closure of plants totalling a capacity of around 2,000 MW will be negotiated to take effect between 2016 and 2020.

50. Australia has also taken up several initiatives for the development and deployment of CCS. The Global Carbon Capture and Storage Institute (GCCSI) was established in 2008, with a total funding of AUD 315 million from 2009 until 2017. The Australian Government recently extended the term of the funding agreement to June 2017, thereby

more clearly linking the work of the Institute with the 2015–2020 deployment goal of 30 per cent for CCS.

51. The ERT encourages the Party to continue reporting on the measures aimed at switching to low-carbon and efficient energy production, especially RES, bearing in mind the high potential of this energy source in Australia (see also para. 48 above).

52. ***Renewable energy sources***. The promotion of renewables is one of the key elements in the Clean Energy Future Plan. Australia has set a 20 per cent renewable energy target by 2020 with regard to electricity supply from RES. In 2010, the share of RES amounted to around 8 per cent of total electricity production. This means that the use of RES will have to more than double over the next 10 years. Australia estimates that the implementation of the 20 per cent target will drive AUD 20 billion of large-scale project investment by 2020 in RES. The Clean Energy Finance Corporation was legislated in 2012 to leverage private sector financing for RES and clean technology projects, and the Australian Renewable Energy Agency was also established in order to fund projects to enhance the deployment of renewable energy and drive down its costs nationally.

53. In order to assist the Party in reaching its 20 per cent renewable energy target, a national RET scheme was developed and its implementation is overseen by the Clean Energy Regulator. The RET scheme is designed to deliver on the commitment that the equivalent of at least 20 per cent of Australia's electricity will come from renewable sources by 2020. The RET scheme creates a guaranteed market for additional renewable energy deployment using a mechanism of tradable certificates that are created by renewable energy generators such as wind farms and owners of small-scale renewable energy systems including solar panels and solar water heaters. Demand for certificates is created by placing a legal obligation on entities that buy wholesale electricity (mainly electricity retailers) to source and surrender these certificates to the Clean Energy Regulator to demonstrate their compliance with annual obligations. The legislation was amended in 2010 and the scheme was divided into two categories: the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES). Projects supported by LRET include wind farms, commercial solar and geothermal power stations. The SRES provides assistance to installers of small-scale technologies such as photovoltaic panels and solar or heat pump hot-water heaters. The LRET is capped by annual targets, while the SRES is uncapped to ensure all eligible small-scale installations receive support.

54. There are also several measures to support the move to the increased use of RES. For example, the Solar Flagships program under the Clean Energy Initiative has a primary objective of providing the foundation for large-scale, grid-connected solar power to play a significant role in Australia's electricity supply and to operate within a competitive electricity market with the aim of up to 1,000 MW of solar power generation.

55. ***Energy efficiency***. The National Strategy on Energy Efficiency 2009–2019 aims to help accelerate energy efficiency improvements in households and businesses across all sectors in Australia. The National Partnership Agreement on Energy Efficiency ensures cooperation in this field between the federal, state and territory governments. The strategy provides a coordinated and nationally consistent approach to energy efficiency and encompasses many individual measures within expressed within four key areas: assisting households and businesses in the transition to a low-carbon future; reducing impediments to the uptake of energy efficiency measures; making buildings more energy-efficient; and the Government working in partnership and leading the way.

56. One of the programmes under the strategy is the Equipment Energy Efficiency (E3) Program, which consists of a set of measures covering the technical, legal and administrative aspects of national appliance and equipment energy efficiency initiatives. The objective of E3 is to deliver economic and environmental benefits to the community by

requiring minimum energy performance standards and energy efficiency labelling. The individual product energy efficiency target is either the equivalent of a world-best regulatory target or a more stringent level developed specifically for Australia, ensuring that it is determined at a level appropriate for the Australian economy.

57. In October 2010, the Australian Government published the report of the Prime Minister's Task Group on Energy Efficiency. The Task Group examined the most economically and environmentally effective ways of delivering a change in Australia's energy efficiency performance. The Task Group made six recommendations, including an aspirational national energy efficiency improvement target of 30 per cent between 2010 and 2020. However, while noting the recommendation, the Government does not intend to implement it at this time. The ERT notes that the Party is currently deliberating on the establishment of a National Energy Savings Initiative and encourages Australia to report on its development in the next national communication.

58. ***Residential and commercial sectors.*** GHG emissions from the residential and commercial sectors increased by around 38 per cent between 1990 and 2009, mainly as a result of the population growth (25 per cent during this period) and income, and amounted to 2.6 per cent of total GHG emissions in 2009. Australia has a variety of measures in place to address energy efficiency in the residential and commercial sectors, many of which are rooted in the National Strategy on Energy Efficiency. In 2006, the minimum energy efficiency standard for houses in the Building Code of Australia was increased to five stars. In 2009, the Building Code of Australia was amended to include six star standards for housing, along with standards for lighting and hot water. Standards for commercial buildings were also raised. These standards are performance based, and allow for compliance through a mixture of measures including the choice of building materials, and the orientation, glazing, lighting, and heating ventilation and air-conditioning system design for commercial buildings.

59. The Clean Energy Future plan provides assistance to households worth more than 50 per cent of national carbon price revenue. Assistance is especially targeted at low to middle income households, and will be delivered through increases in Government payments (pensions, allowances and family payments) and the reform of the tax system. Taxpayers with an income below AUD 80,000 per year will get a tax cut, with most receiving a cut of at least AUD 300 a year, and by 2015–2016 up to one million tax payers will no longer need to file a tax return. Eligible low income households that do not have access to assistance through the tax or transfer system may receive assistance through an annual AUD 300 Low Income Supplement.

60. The ERT noted the numerous programmes supporting households in improving energy efficiency, and encourages the Party to continue reporting on such PaMs in its next national communication.

61. ***Transport sector***. Emissions from the transport sector are among those that have increased the most in Australia. Between 1990 and 2009, GHG emissions increased by 34.6 per cent, leading to a 15.3 per cent share of emissions from transport in total GHG emissions in 2009. The main driver of the increase in emissions from transport is the continuing growth in the numbers of vehicles due to the growth in household income. However, the ERT noted that the emissions from passenger cars have been stable in Australia since 2003 and encourages the Party to further analyse the factors confirming this trend and to report thereon in the next national communication.

62. Since 2001, all new cars and light commercial vehicles in Australia have been required to display a fuel consumption label at the point of sale. The label has been progressively improved to provide more useful comparative information both on fuel consumption and on the CO_2 emissions of different vehicle models. Since 2009, the revised

fuel consumption label now displays fuel consumption values ('combined', 'urban' and 'extra-urban') as well as the corresponding combined CO_2 value. The label is linked with the Green Vehicle Guide, and the fuel consumption and CO_2 data displayed on the label match those published in the guide. The Green Vehicle Guide website is a tool to assist consumers in making informed decisions regarding the environmental performance of new vehicles. It covers all light vehicles (up to 3.5 t) released onto the Australian market since late 2004 and is regularly updated as new models are released.

63. Australia is planning the introduction of a mandatory vehicle emissions standard. The implementation of this new standard will set a national fleet-wide target for average CO_2 emissions and each individual motor vehicle company will have to contribute to this target by reducing the average emissions of the vehicles they sell. The standard will cover all light-duty vehicles up to 3.5 t, including passenger vehicles, sports utility vehicles and light-duty commercial vehicles. The average CO_2 emissions for light-duty vehicles sold in Australia were 206 g/km in 2011. The Government has proposed average mandatory CO_2 emissions standards of 190 g/km by 2015 and 155 g/km by 2024, as a starting point for discussion with industry and stakeholders. The actual emission levels set by the new standards will be determined in consultation with the vehicle industry and other key stakeholders. A discussion paper on the key issues associated with the standards was issued in late 2011 and a formal regulation impact statement will be released in mid-2012. Progress towards the targets will be monitored over time. The ERT encourages Australia to report on the progress made in the introduction of the mandatory vehicle emission standards in its next national communication.

64. In its NC5, Australia reported on its cooperation with other countries to reduce emissions from international aviation and shipping through the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). Australia reported that it supports practical solutions to address GHG emissions from international transport that are non-discriminatory and do not introduce market distortions. The ERT encourages Australia to further elaborate on the steps it has taken to promote and implement decisions of ICAO and IMO and to report on the PaMs influencing GHG emissions from international transport in its next national communication.

65. ***Industrial sector***. GHG emissions from manufacturing industries and construction increased by 24.9 per cent between 1990 and 2009, amounting to 8.2 per cent of total GHG emissions in 2009. However, between 2008 and 2009, a decrease of 5.7 per cent was noted, mainly resulting from the global economic downturn.

66. The Australian Government requires Australian companies using more than 0.5 PJ of energy per year to participate in the Energy Efficiency Opportunities (EEO) programme. Under the EEO legislation, which came into effect in July 2006, these companies must undertake a rigorous and comprehensive assessment of their energy use to identify cost-effective energy efficiency opportunities, and report to the Australian Government and public on their business response. Around 200 companies that had reported to the Government by December 2008 had assessed nearly 65 per cent of all company energy use. They reported publicly that they had committed to implementing energy savings opportunities totalling more than 37 PJ, equivalent to an abatement of 4 Mt CO_2 eq and worth AUD 435 million overall in net financial savings per year to participating companies.

3. Policies and measures in other sectors

67. Between 1990 and 2009, GHG emissions from the industrial processes (including solvent and other product use), agriculture and waste sectors decreased by 0.7 per cent, mainly due to droughts, which caused emission reductions in the agriculture sector, as well as improved CH_4 recovery in the waste sector. The trend in GHG emissions from the

industrial processes sector showed a notable increase of 20.5 per cent, which was partly compensated by a 5.7 per cent decrease in emissions from other non-energy sectors.

68. ***Industrial processes***. Between 1990 and 2009, GHG emissions from the industrial processes sector increased by 20.5 per cent (5.1 Tg CO_2 eq), mainly driven by the growth in emissions associated with the consumption of HFCs and the increase in emissions from the chemical industries.

69. In 2005, the Australian Government established a permit scheme to regulate the use and handling of ozone-depleting substances (ODS) and synthetic greenhouse gases (SGGs) in the refrigeration and air-conditioning, and fire-protection industries using the 1995 Ozone Protection and Synthetic Greenhouse Gas Management Regulations. This scheme established minimum industry standards to reduce emissions of ODS and SGGs from their use and disposal. In January 2009, emissions of ODS and SGGs became prohibited, other than in prescribed circumstances. Later in 2009, amendments were made to the legislation to help minimize ODS and SGG emissions and to streamline compliance and enforcement activities. The ERT noted that these measures may drive the decrease of HFCs emissions, however, the effect of introducing those measures has not yet been quantified.

70. In addition, the Clean Technology Program (AUD 800 million over seven years starting 2011-2012) provides grants to manufacturing businesses to enable them to invest in energy-efficient equipment and low-emission technologies and processes.

71. The ERT noted that the information on the PaMs in this sector was limited in the NC5 and encourages Australia to improve the transparency of its reporting on the PaMs in its next national communication by clearly attributing the relevant PaMs to this sector as well as by reporting on the effects of the PaMs that address ODS and SGGs.

72. ***Agriculture***. Between 1990 and 2009, GHG emissions from the agriculture sector decreased by 2.4 per cent (2.1 Tg CO_2 eq), mainly driven by drought conditions in eastern Australia which contributed to a reduction in the animal population, crop production, fertilizer use and associated emissions. The share of GHG emissions from agriculture in total GHG emissions, in comparison to other developed countries, is relatively high in Australia (15.5 per cent in 2009).

73. The National Agriculture and Climate Change Action Plan is an agreement between the Australian Government and the state and territory governments to develop a coordinated framework for climate change policy in the agriculture sector and to contribute to the development of a sustainable, competitive and profitable Australian agriculture sector in the future. The action plan provides a framework for climate change policy for the Government and the agriculture sector across four strategic focus areas: adaptation strategies for a changing climate; mitigation strategies to reduce GHG emissions; research and development; and communication to inform decision-making by primary producers and rural communities.

74. CFI is the main mitigation policy in the "land sector" (comprising the agriculture, forestry and waste sectors) and is due to start on 1 July 2012. The aim of this mechanism, depending on the approval of relevant offsetting methodologies, is to deliver emission reductions from such activities as fertilizer management, manure management (in piggeries), livestock emissions, landfill gas capture and flaring and savannah fire management, which could be granted credits. Currently, four methodologies have been approved: piggeries, environmental plantings, savannah burning and landfill gas capture (see also para. 45 above).

75. CFI is accompanied by a set of land sector measures as part of the Clean Energy Future Plan, such as: Carbon Farming Futures, which provides assistance to landholders to enable them to participate in CFI; the Biodiversity Fund, which supports projects that

establish, restore, protect or manage biodiverse carbon stores; the Indigenous Carbon Farming Fund, which provides grants to support indigenous participation in CFI; and the Regional Natural Resource Management Planning for Climate Change Fund, which provides support for regional Natural Resource Management (NRM) organizations to incorporate climate change mitigation and adaptation components into existing regional NRM plans. The aim of Carbon Farming Skills is to establish a new qualification in carbon farming and a national accreditation scheme so that landholders have access to credible, high-quality advice and carbon services. The CFI Non-Kyoto Carbon Fund will allow the Government to purchase CFI credits that are not counted towards Australia's emission reduction targets under current accounting rules. The Land Sector Carbon and Biodiversity Board is a permanent, expert board which provides advice on the implementation of measures in this sector.

76. The ERT notes the importance of mitigation PaMs in this sector due to the sector's high share of emissions in total GHG emissions and the innovative character of the CFI and its potential to reduce GHG emissions from agriculture. The ERT thus encourages Australia to report on how it ensures the implementation and operation of CFI in its next national communication.

77. ***LULUCF***. Australia's LULUCF sector was a net source of emissions of 54.0 Tg CO_2 eq in 2009 compared to a net source of emissions of 43.1 Tg CO_2 eq in 1990. The levels in emissions and removals from the LULUCF sector are primarily driven by inter-annual climate variability and natural disturbance which tend to mask other underlying patterns in the sector. For some activities these patterns are directly associated with human-induced activities, such as afforestation, reforestation and deforestation. Therefore, no clear trend in emissions and removals from LULCUF can be identified since 1990.

78. The National Climate Change and Commercial Forestry Action Plan 2009–2012 was developed in collaboration with key stakeholders to assist the forestry industry to respond to climate change through adaptation and mitigation. The plan, underpinned by research and development, and communication covers the following activities: tree plantations developed for commercial purposes at all scales; wood production from native forests; and processing facilities that rely on raw material from production forests, including sawmills, board plants, and pulp and paper mills.

79. The forestry sector is also part of CFI and the same rules apply as for the agriculture sector (see para. 45 above). The activities eligible for this mechanism include reforestation, soil carbon, and native forest protection, provided that relevant methodologies for crediting are available. Currently, one methodology for reforestation exists. Credits generated for reforestation will be eligible for compliance under the Carbon Pricing Mechanism.

80. The ERT notes the importance of this sector in the Party's GHG emissions and encourages Australia to further improve the reporting of the PaMs in this sector in its next national communication.

81. ***Waste management***. Between 1990 and 2009, GHG emissions from the waste sector decreased by 21.9 per cent (3.9 Tg CO_2 eq). Net emissions from the waste sector have decreased as the increases associated with the growing population and the growth in industrial production have been offset by the increase in CH_4 recovery.

82. In November 2009, Australia's Environment Ministers, through the Environment Protection and Heritage Council, introduced the National Waste Policy: Less Waste, More Resources. It includes the vision for resource recovery and waste management until 2020 and provides for collaboration to deliver effective approaches to domestic waste issues. The policy is aligned with Australia's international obligations and complements the Australian Government's climate change and sustainability policies.

83. The waste sector is also covered by the Carbon Pricing Mechanism which imposes obligations on operators of large landfill, wastewater treatment and waste incineration facilities. Landfill facilities that emit more than 25 kt CO_2 eq annually are covered by the scheme. It is expected that this mechanism will create incentives for local authorities, households and businesses to reduce the amount of organic waste being sent to landfill as well as incentives to capture methane from waste landfill sites before it is emitted into the atmosphere. Also, CFI covers landfill legacy emission avoidance projects that seek to avoid GHG emissions from the operation of landfill facilities, to the extent to which the emissions are attributable to waste accepted by the facility before 1 July 2012.

84. Despite the low share of emissions from the waste sector in total GHG emissions, the ERT notes a stabilization in the decrease of emissions in recent years and encourages Australia to report on how the implementation of Carbon Pricing Mechanism affects the emissions from the waste sector.

4. Minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol

85. In its NC5, Australia did not report information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. However, this information was provided during the review. Further information on how Australia strives to implement its commitments under Article 3, paragraph 1, of the Convention, in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, as reported in the 2011 annual submission, is presented in chapter II.I of this report.

86. According to the information provided during the review, Australia approaches the minimization of adverse effects in the three main following ways:

(a) By addressing the risk of carbon leakage under the Carbon Pricing Mechanism;

(b) Through cooperation with other countries on best practices and clean technologies;

(c) Through cooperation on the development of CCS technology.

87. The ERT recommends that Australia include this information in its next national communication and encourages the Party to continue exploring the adverse effects of its PaMs and to enhance the reporting on this issue.

C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms

88. Similarly to its previous national communication, in its NC5 Australia provided a baseline (‘with measures’) and a ‘business as usual’ (‘without measures’) scenario as part of its GHG emission projections. In addition, the NC5 illustrates indicative pathways until 2020 under the assumptions of different emission reduction target options (see para. 41 above), but those pathways are not classified as projections according to the ‘with additional measures’ definition. During the review, Australia provided the ERT with the latest update to the emission projections published in 2010.

1. Projections overview, methodology and key assumptions

89. The GHG emission projections provided by Australia in the NC5 include a 'with measures' (baseline) scenario and a 'without measures' ('business as usual') scenario up to 2020. The 'with measures' projection is presented against actual inventory data for 1990, 1995, 2000 and 2005. GHG inventory data for 2007 were used as a starting point for the projections for all sectors. The 'with measures' projection is presented on a sectoral basis, using the same sectoral definitions as those contained in the GHG inventory, and on a gas-by-gas basis for all six GHGs. Projections are also provided in an aggregated format for each sector as well as for the national total, using global warming potential values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals.

90. However, the ERT noted that the Party did not report the total effect of implemented PaMs for the years before 2010, thereby making it difficult to evaluate the historic trend of emissions in the absence of those policies. This information was presented by the Party during the review. The ERT recommends that Australia provide an estimate of the total effect of implemented PaMs for historic years in accordance with the UNFCCC reporting guidelines in its next national communication.

91. Australia has an ongoing programme run by DCCEE to update, on an annual basis, and improve the accuracy of its GHG emission projections. The projections are prepared on a sectoral basis using different model approaches and the results are then combined to estimate the projections for the whole economy. The projections reported in the NC5 were elaborated in 2009. The latest update to the projections, which was provided to the ERT during the review, was developed in 2010. The new Carbon Pricing Mechanism did not exist when the projections reported in the NC5 were developed, nor when the projections update was published in 2011. Australia is currently developing new projections that will include the effects of the Carbon Pricing Mechanism on domestic GHG emissions and the DCCEE aims to integrate its regular work on projections with the modelling results obtained by the Australian Treasury. The ERT welcomes this, and encourages Australia to report on the results in its next national communication. The ERT also encourages Australia to report a 'with additional measures' scenario related to more ambitious unconditional targets, where appropriate.

92. The 'without measures' projections refer to a scenario where the specific PaMs reported in the NC5 are not implemented. Such a scenario was developed by excluding the PaMs from the stationary energy sector and by combining an economy-wide computable general equilibrium (CGE) model with a more detailed bottom-up analysis. For the other sectors, the effects of the PaMs were estimated on a sector-by-sector basis by DCCEE, and the resulting effects were added to the baseline projections. The ERT encourages Australia to indicate the 'without measures' projections in the summary diagram in chapter 5 of its next national communication, bearing in mind the higher level of uncertainty of such projections in comparison with the 'with measures' projection.

93. The 'with measures' scenario reported by Australia reflects the mitigation effects from implemented PaMs in the various sectors of the economy, mainly in the stationary energy, fugitive emissions and land-use change sectors. The 'with measures' scenario calculated for the LULUCF sector is based both on Kyoto Protocol accounting rules, as reflected in the report of the review of the initial report of Australia,[9] and on the UNFCCC reporting guidelines. The ERT noted some inconsistencies in the presentation of the summary results of the 'with measures' projection. The summary diagram included in the NC5 takes into account LULUCF emissions according to the Kyoto Protocol accounting rules while the gas-by-gas summary table includes inventory data and projected net

[9] FCCC/IRR/2007/AUS.

emissions from LULUCF according to the UNFCCC reporting guidelines. The ERT encourages Australia to enhance the transparency of its reporting by including, in its next national communication, an additional summary diagram of the projections that excludes emissions and removals from the LULUCF sector. This would allow a direct comparison of the non-LULUCF GHG emission projections against historical trends, since the historical decline in LULUCF emissions tends to mask the non-LULUCF emission trends. The ERT considers that the provision of an additional graph excluding LULUCF emissions and removals would show a more reasonable and coherent pathway of historic and projected emissions.

94. The 'with measures' projection reported by Australia is a combination of the results from each sector, and the final best estimate is a simple average of the combined results for each model class. This approach is similar to the approach used in the NC4. The ERT acknowledges the advantages and strengths of a sectoral modelling approach to the projections, especially where sectors show specific characteristics and drivers for activities and emissions. The ERT notes Australia's efforts to improve the integration between sectoral scenarios in the latest update of the projections (published in 2011), and that the Party reported that further efforts were under way to integrate the sector models with the Department of the Treasury's macroeconomic modelling of the Carbon Pricing Mechanism. The ERT encourages Australia to continue its efforts to improve integration between sectoral scenarios.

95. For the stationary energy sector, which is by far the most important sector in terms of its share of emissions in total GHG emissions, the combined CGE bottom-up energy model takes into account the behaviour of certain individual operators in the market (forward-looking investment and plant closure decisions for electricity generation and major industries). Two external modellers were commissioned by DCCEE in order to obtain more balanced results from the modelling exercises. A range of variables was included, such as commodity prices, domestic electricity demand and energy efficiency improvements. Relevant implemented PaMs (e.g. RET and the National Strategy on Energy Efficiency) were taken into account.

96. The transport sector was modelled using a bottom-up analysis based on projections for the vehicle fleet, fuel efficiency, population and economic growth. A range of measures was included in the model, such as the Greenhouse Gas Abatement Program, the Environment Strategy for the Motor Vehicle Industry as well as specific actions taken at the state and territory levels. For the other sectors, which were modelled separately either by external consultants or in-house by DCCEE, a mix of bottom-up and top-down modelling approaches were chosen, also taking into account the expectations for Australia's important export markets (e.g. for agriculture, energy and industrial commodities).

97. Australia uses a different modelling approach for each sector, as described in paragraphs 94 to 96 above, and a number of drivers of future emissions are sector-specific. Some of those sector-specific drivers are mentioned in the NC5, although the completeness and transparency of the reporting could be improved. The NC5 does not clearly explain which key assumptions are valid across all sectors. This mainly refers to GDP and population growth as well as to international energy prices. The 2010 projections update presented by the Party during the review showed significant improvement, as the key assumptions used for all sectors were transparently presented. The ERT encourages Australia to enhance the transparency of its reporting by clearly identifying the key assumptions used in its projections and by providing more detailed and comprehensive information on the key assumptions used, both for the variables used in the economy-wide model and for those used in the sector-specific models in the next national communication.

98. In the 2010 projections, average annual GDP growth is assumed to be 3.0 per cent during the period 2010–2020, which is slightly lower than the periods 1990–2000 and

2000–2010, when GDP increased by 3.2 per cent annually on average. In comparison with other industrialized countries, Australia was not severely hit by the 2008–2009 global financial and economic crisis. Nevertheless, a considerable temporary downturn in production was noted in export-oriented manufacturing industries and primary energy production. Australia's population is expected to grow by 1.4 per cent annually from 2010 to 2020 in comparison with a 1.5 per cent annual growth during the period 1990–2010. The oil price (2009 USD/barrel) is expected to average USD 82 during the first commitment period of the Kyoto Protocol and to reach USD 102 in 2020. Oil price assumptions have been increased considerably from the projections reported in the NC5, where prices of USD 75 (2010) and USD 57 (2020) were reported for the transport sector. Apart from oil prices, Australia's energy market is largely influenced by the development of world commodity prices for coal and liquefied petroleum gas (LPG), since these energy products are mainly produced for export. Australia anticipates an important growth in both coal and LPG exports, with a continuously growing energy demand in Asian countries.

99. As a part of its 'with measures' projections, Australia performed sensitivity analyses for all sectors except for the LULUCF sector. Sensitivity is reported in terms of 'high' and 'low' scenario projection results. These are calculated by simultaneously varying the key variables from their best estimate values. For example, in the electricity sector, deviations (increases and decreases) in GDP and population growth assumptions have been modelled in order to show a possible range of emission results. For other sectors (especially those for which bottom-up modelling has been used), the sensitivity analysis was carried out by varying a single variable at a time, for example the production value for coal in a specific sector. In the 'high' and 'low' scenarios reported in the NC5, some sectors showed a broad range of projected emissions across the scenarios. This was especially the case for the transport, waste and fugitive emissions sectors. The sensitivity analysis for the 2010 updated projections showed considerable improvement as the 'high' and 'low' scenarios provide much smaller spreads. The ERT encourages Australia to further refine and report on its approach to the sensitivity analysis in its next national communication.

2. Results of projections

100. According to the results of the baseline scenario, Australia projects that it will meet its target for the first commitment period of the Kyoto Protocol (an 8 per cent increase relative to the base year level) without the use of the mechanisms under the Kyoto Protocol. Taking into account the emissions and removals from LULUCF under the Kyoto Protocol accounting rules, the 2008–2012 average emissions level will reach around 581 Tg CO_2 eq, resulting in a 6 per cent increase relative to the base year level (547.70 Tg CO_2 eq) compared to the Kyoto target of 8 per cent increase. According to the projections reported in the NC5, no considerable growth in emissions is expected for the remaining years of the first commitment period. The 2010 projections update and the historical GHG inventory data for 2008 and 2009 show a very similar assessment for this period (an average emissions level of 582 Tg CO_2 eq for the years 2008–2012).

101. With regard to Australia's 2020 target, the Party has yet to release projections that include the impact of the new Carbon Pricing Mechanism. During the review, Australia advised the ERT that such projections are currently being developed. The 2010 projections update suggests that, without a carbon price, the country is not on track to meet its commitment. The 2010 updated 'with measures' scenario shows a further increase in emissions to 24 per cent above the 2000 level. Australia's emission reduction targets for 2020 range between an unconditional 5 per cent and up to 15 per cent or 25 per cent below its 2000 level. Australia's targets of up to 15 per cent or 25 per cent are conditional on the extent of global action (see para. 41 above). The Carbon Pricing Mechanism, due to start on 1 July 2012, introduces a fixed carbon price of AUD 23, and a cap on emissions combined with market-based carbon prices (cap-and-trade) will be applied from 1 July 2015. The

Carbon Pricing Mechanism is expected to deliver a reversal of Australia's long-term emission trends, although it will allow domestic emissions to be offset by international credits up to a limit of 50 per cent. At the same time, the carbon price signal is expected to drive a long-term conversion to a lower carbon economy. The key results of Australia's GHG emission projections are provided in table 4 and the emission trends are illustrated in figures 1 and 2.

102. Using the sectoral results from the 2010 updated 'with measures' projections, the increases projected in 2020 relative to 2000 are highest for fugitive emissions (+97 per cent), followed by industrial processes (+56 per cent), stationary energy (+33 per cent), transport (+29 per cent) and waste (+5 per cent). The projected net change in emissions from deforestation and forestry activities represents a decrease of 32 per cent. The projected significant increase in fugitive emissions results from expected high growth rates in the export of coal and LPG, combined with a shift to a higher share of coal production in more emissions-intensive ("class A gassy") underground coal mines. Conversely, the ERT noted a considerable slowdown in the projected growth of emissions in the stationary energy sector between 2010 and 2020 compared to the periods 1990–2000 and 2000–2010. Both the RET and energy efficiency measures are expected to contribute to this slowing, through their impacts on electricity demand and the emissions intensity of electricity generation. Total emissions per gas are expected to increase for all gases until 2020.

Table 4
Summary of greenhouse gas emission projections for Australia

	Greenhouse gas emissions (Tg CO_2 eq per year)	*Changes in relation to base year level (%)*	*Changes in relation to 1990 level (%)*
Inventory data 1990[a]	418.47	–	–
Inventory data 2009[a]	545.86	–	130.4
Kyoto Protocol base year[b]	547.70	–	–
Kyoto Protocol target[b]	591.52	108	–
'Without measures' projections for 2010[c]	656	120	–
'With measures' projections for 2010[c]	581	106	–
'Without measures' projections for 2020[c]	816	149	–
'With measures' projections for 2020[c]	669	122	–
Updated 'with measures' projections for 2010[d]	582	106	–
Updated 'with measures' projections for 2020[d]	690	126	–

[a] *Data source*: Australia's 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

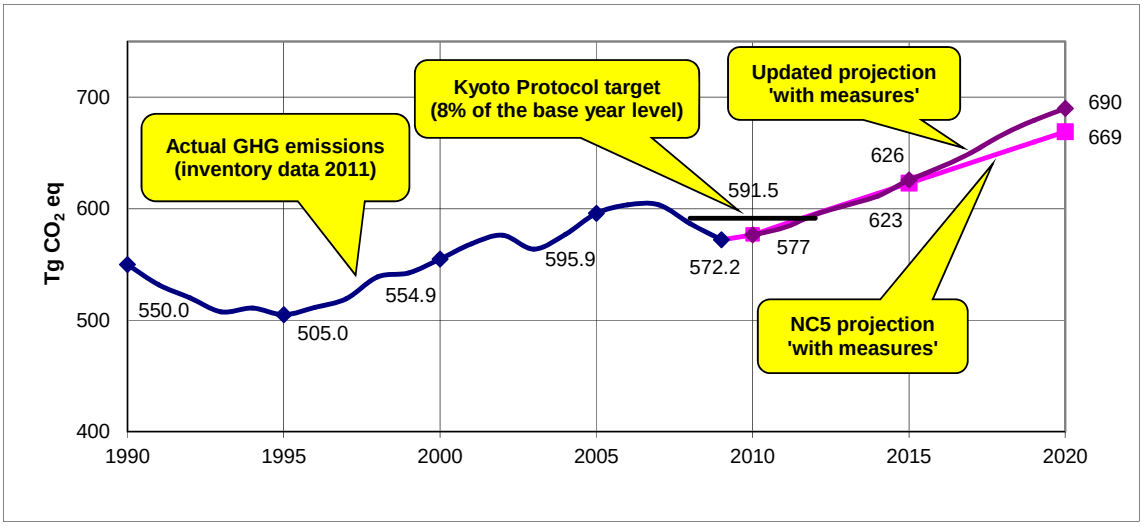
[b] *Data source*: Based on the initial review report of Australia contained in document FCCC/IRR/2007/AUS.

[c] *Data source*: Australia's fifth national communication; the emissions include emissions and removals from afforestation, reforestation and deforestation activities.

[d] *Data source*: 2010 updated projections published in *Australia's emissions projection 2010*; the emissions include emissions and removals from afforestation, reforestation and deforestation activities.

Note: The projections for 2010 are the average for the period 2008–2012.

Figure 1
Greenhouse gas emission projections including LULUCF

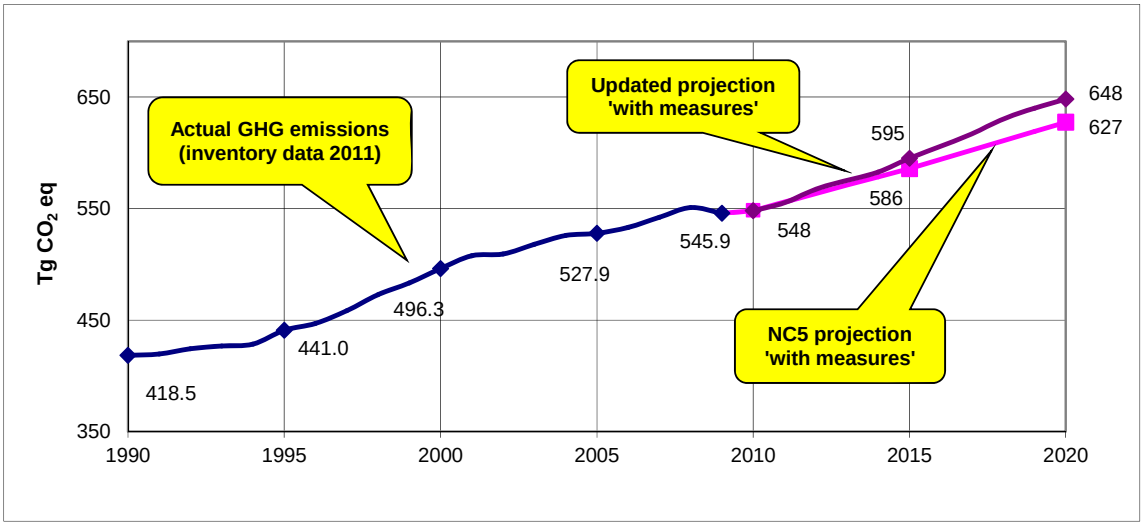


Sources: (1) Data for the years 1990–2009: Australia's 2011 greenhouse gas inventory submission; the emissions are with LULUCF. (2) Data for the years 2010–2020: Australia's NC5 and 2010 updated projections provided by the Party during the in-depth review; the emissions are with LULUCF.

Note: "Including LULUCF" means including emissions and removals from afforestation, reforestation and deforestation as defined in Article 3, paragraph 3, of the Kyoto Protocol.

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NC5 = fifth national communication.

Figure 2
Greenhouse gas emission projections excluding LULUCF



Sources: (1) Data for the years 1990–2009: Australia's 2011 greenhouse gas inventory submission; the emissions are without LULUCF. (2) Data for the years 2010–2020: Australia's NC5 and 2010 updated projections provided by the Party during the in-depth review; the emissions are without LULUCF.

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NC5 = fifth national communication.

103. Australia faces major challenges in reaching its long-term targets for 2020 and 2050. The key drivers of the emissions trends are GDP and population growth, which are expected to remain relatively high compared to other industrialized countries. An additional important driver of the increase in GHG emissions is the expected high energy demand from Asia for Australian coal and LPG, both of which are abundant in the country. At the same time, the Party has considerable potential for reducing the emissions from both the supply and the demand sides of the energy sector. The current coal-based electricity sector in Australia can be expected to gradually migrate towards less carbon-intensive energy sources under the Carbon Pricing Mechanism, sending a strong long-term price signal. It should be reiterated that this new policy has not yet been included in Australia's emission projections. There are good reasons to expect that GHG emissions can be considerably reduced, depending on the magnitude of the target for 2020, although a part of the reduction would need to be met by offsetting emissions with international credits. The ERT noted that the emission reductions for 2020 in line with the higher conditional reduction targets (15–25 per cent) would follow the pathway to 2050 with the adopted emission reduction of 80 per cent. At the same time, the lower unconditional reduction target of 5 per cent would make the reduction effort for the period 2020–2050 more challenging.

3. Total effect of policies and measures

104. In the NC5, Australia has presented an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition compared to the 'without measures' definition. Information is presented in terms of GHG emissions avoided or sequestered (on a CO_2 eq basis) for 2010 and 2020. The NC5 also presents relevant information on factors and activities influencing the emissions in each sector for the period up to 2020.

105. However, the ERT noted that in its fifth national communication, Australia did not provide the following reporting elements required by the UNFCCC reporting guidelines: an estimate of the total effect of its PaMs, in accordance with the definitions cited above, subdivided by gas (on a CO_2 eq basis) for 1995 and 2000. The missing information was provided to the ERT during the review, based on updated estimates within the framework of the 2010 projections. The ERT recommends that Australia present, in its next national communication, the total estimated effect of its PaMs on a gas-by-gas basis.

106. In its 2010 updated projections, Australia estimated that the total effect of its adopted and implemented PaMs is 56.5 Tg CO_2 eq in 2010 and 109 Tg CO_2 eq in 2020. The ERT noted that these figures are considerably lower than those reported in the NC5 (74 Tg CO_2 eq in 2010 and 147 Tg CO_2 eq in 2020), mainly because certain PaMs were no longer included, for example the measures introduced in the early 1990s to reduce CH_4 emissions from the waste sector, and because the effect of some PaMs was recalculated and resulted in a more modest effect than originally estimated (e.g. the National Strategy on Energy Efficiency or RET). According to the new information provided by the Party during the review, the PaMs implemented in the stationary energy sector are still expected to deliver by far the largest emission reductions (around 77 per cent of the total mitigation effect in 2020), followed by the effect of the PaMs implemented in the LULUCF and fugitive emissions sectors. The most effective PaMs and drivers behind the GHG emission reductions are described in sections II.B.1 and II.B.2 of this report. Table 5 provides an overview of the total effect of PaMs as reported by Australia.

Table 5
Projected effects of implemented and adopted policies and measures in 2010 and 2020

Sector	*Effect of implemented and adopted measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*	*Effect of implemented and adopted measures (Tg CO_2 eq)*	*Relative value (% of 1990 emissions)*
	2010		*2020*	
Energy (without CO_2 from transport)	34.30	15.3	88.60	39.6
Transport – CO_2	0.70	1.1	1.30	2.1
Industrial processes	2.60	10.8	0.00	–
Agriculture	0.00	–	0.00	–
Land-use change and forestry	18.10	13.7	18.40	13.9
Waste management	0.70	3.7	0.70	3.7
Total	**56.50**	**10.3**	**109.00**	**19.9**

Source: Unpublished data from *Australia's Emissions Projection 2010,* provided by Australia during the review. Shares of 1990 emissions listed in the last column were calculated by the expert review team.

Note: The total effect of implemented and adopted policies and measures is defined as the difference between the 'without measures' and 'with measures' scenarios.

4. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

107. In its NC5, Australia provided implicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. Australia explicitly stated in its NC5 that its target under the first commitment period of the Kyoto Protocol can be reached with domestic efforts alone. The ERT noted that the Party's expected compliance with the target under the first commitment period of the Kyoto Protocol is sufficiently substantiated with the results of the 'with measures' projection. The effect of GHG emissions and removals from activities in the forestry sector, mainly the emission reductions from deforestation since 1990, is essential for Australia to meet its target, since emissions from other sources have increased substantially since 1990. The ERT recommends that the Party provide more explicit information on supplementarity in its next national communication, taking also into account the fact that Australia might not be able to meet an ambitious 2020 target within the framework of a comprehensive future international agreement without the use of the Kyoto Protocol mechanisms. The upcoming Carbon Pricing Mechanism is designed to allow for the substantial use of international carbon credits.

D. Vulnerability assessment, climate change impacts and adaptation measures

108. Australia has provided in its NC5 the required information on: the expected impacts of climate change on key sectors in the country; the vulnerability assessment at the national and regional levels; adaptation measures implemented by the Australian Government, and the states and territories; and policy approaches in harmonizing adaptation measures across sectors and among states and territories. The ERT noted that Australia has provided significant information on the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 6
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: Agricultural production is vulnerable to reduced rainfall, increased evaporation and reduced streamflow *Adaptation*: The Australian Government has made significant investments in the following four programmes: the Climate Change Research Program, FarmReady, Community Networks and Capacity Building, and the Climate Change Adjustment Program
Biodiversity and natural ecosystems	*Vulnerability*: Natural systems are directly threatened by higher concentrations of CO_2, increased temperatures, sea-level rise, changes in precipitation, increases in extreme weather events and ocean acidification. The extinction of species is likely to result from temperature increases of greater than 1.5 °C to 2 °C *Adaptation*: Since 2008, the Australian Government has encouraged the adoption of sustainable land management practices that slow land degradation processes and increase the resilience of farms and agricultural landscapes to the effects of climate change
Coastal zones	*Vulnerability*: Around 85 per cent of the Australian population live in the coastal regions, which are of significant national economic, social and environmental importance. Sea-level rise, more intense cyclones and ocean acidification will potentially significantly increase the capital and operating costs of ports by 2050 *Adaptation*: The Australian Government has provided financial resources for activities across sectors and states and territories, such as the Great Barrier Reef Climate Change Action Plan, a five-year programme designed to develop and test strategies that will give the Great Barrier Reef, and those who depend on it, the best chance of coping with climate change
Drought	*Vulnerability*: The projections indicate that there will be up to 20 per cent more drought months over most of Australia by 2030 relative to 1990 levels under a high emission scenario *Adaptation*: The Australian Government has undertaken a comprehensive national review of drought policy, covering climatic, social and economic aspects of drought and drought support, which will support the development of policies to help farmers and rural communities prepare for and adapt to a changing climate
Fisheries	*Vulnerability*: A first assessment was published in 2008, entitled *Implications of Climate Change for Australia's Fisheries and Aquaculture: A Preliminary Assessment* *Adaptation:* The Australian Government is in the process of developing a National Climate Change Action Plan for Fisheries and Aquaculture to inform and support effective climate change responses in the Australian aquaculture and wild-catch fishing sectors
Forests	*Vulnerability*: There was no explicit information in the NC5 on the vulnerability assessment for the forestry sector or on where the vulnerability assessment for this sector is included in the Australian adaptation policies/programmes *Adaptation*: The Australian Government has committed AUD 8 million to assist Australian forestry industries to prepare for the impacts of climate change by addressing major knowledge gaps on the impact of climate change on forestry industries
Human health	*Vulnerability*: The impacts of climate change on the health of Australians will be experienced in several ways: direct pathways; and indirect pathways as a result of disturbances of natural ecological systems or disruption to livelihoods and communities *Adaptation*: Under the National Adaptation Research Plan 2008, critical gaps were identified in the information needed by decision makers in the health sector and, based on those gaps, research priorities were set and the capacity that could be harnessed to conduct priority research was identified
Infrastructure and economy	*Vulnerability*: Modelling undertaken by the Garnaut Climate Change Review (2008) suggests that climate change impacts on infrastructure could reduce Australia's gross domestic product by 1.23 per cent by 2050 and by 2.42 per cent by 2100, compared to a reference case without climate change *Adaptation*: The Australian Building Codes Board has commenced an investigation into possible

Vulnerable area	*Examples/comments/adaptation measures reported*
	modifications to the Building Code of Australia that take into account adaptation measures for climate change
Water resources	*Vulnerability*: Reduced streamflows, which are likely due to increased temperatures and reduced rainfall, will have significant implications for urban and agricultural water supply and the environmental health of rivers
	Adaptation: The Australian Government has introduced adaptation measures based on the following four key priorities: taking action on climate change; using water wisely; securing water supplies; and supporting healthy rivers

Source: The fifth national communication of Australia and information provided by the Party during the in-country in-depth review.

109. In its NC5, the Party explained its condition as the world's driest inhabited continent. Climate change is likely to impact water availability across Australia and potential changes to water availability will have significant implications for Australia's economic, social and environmental well-being. Since the NC4, significant progress has been made, especially in the provision of tools for decision makers to enable them to understand the potential impacts of climate change, which facilitates priority-setting, both in the assessment of vulnerability and in the development of adaptation measures. Many modelling exercises have been carried out by research institutions across the country in a coordinated manner between the Australian Government and the state and territory governments. Through the modelling exercises, water resources and supply, infrastructure, coastal areas, agriculture, iconic and productive natural systems and health were identified as the most vulnerable areas.

110. Since the NC4, the Australian Government has undertaken a number of strategic national vulnerability assessments in key vulnerable sectors identified in the National Climate Change Adaptation Framework, such as coastal areas, biodiversity, infrastructure and indigenous communities. Adaptation actions undertaken by the Government have been guided by priorities identified in the National Climate Change Adaptation Framework which was endorsed in 2007. A range of adaptation actions have been carried out in vulnerable sectors and regions to manage the risks of the impacts of climate change at the national, regional and local levels. These actions were drawn from the lessons and insights learned from the vulnerability assessments, research, and adaptation PaMs.

111. Since the NC4, Australia has developed tools and support for adaptation planning and has implemented adaptation measures in the following sectors: biodiversity and natural ecosystems, coastal areas, infrastructure and settlements, agriculture, fisheries, forestry, tourism, human health, water resources, emergency management, and local and regional planning. Significant investment has been made to develop knowledge and tools for delivering adaptation responses, including the funding of adaptation research and the generation of information and tools for decision makers.

112. Adaptation measures have also been undertaken by the state and territory governments as well as by local governments. The Clarence City Council Initiative is perhaps one of the most innovative examples of effective measures. The initiative, supported by the Australian Government and the Tasmanian State Emergency Service, carried out a study of climate change impacts on Clarence coastal areas in south-east Tasmania in response to council and community concerns about the erosion of beaches and flooding events in coastal areas. The outcome of the study was a recommendation for some practical adaptive responses.

113. Through the International Climate Change Adaptation Initiative (ICCAI), Australia has allocated AUD 328.2 million for its official development assistance (ODA) budget for

five years (2008–2013) to support vulnerable countries to adapt to the unavoidable impacts of climate change, especially in the Pacific region. The Pacific climate change science programme has financed new research on climate drivers in the Pacific area, on ocean processes and acidification, and on climate projections. The programme has also supported training and capacity-building for the Pacific National Meteorological Services. The Pacific Adaptation Strategy Assistance Programme has supported effective adaptation planning and increased the understanding of vulnerability to climate change in the Pacific region, with the following key work areas: building a knowledge base for adaptation (on risk, adaptive capacity and adaptation); supporting adaptation planning and policy development; and providing a regional overview, including future priorities.

114. The ERT noted with appreciation the significant progress made since the NC4 and the complete and transparent reporting on the vulnerability assessment, climate change impacts and adaptation measures. During the review, the Party informed the ERT that significant progress had also been made since the NC5. Given the enormous work relating to vulnerability and adaptation that has been carried out by the Party since the NC5, the ERT encourages Australia to continue its comprehensive reporting and to include information on those efforts in its next national communication.

E. Financial resources and transfer of technology, including information under Articles 10 and 11 of the Kyoto Protocol

1. Provision of financial resources, including "new and additional" resources and resources under Article 11 of the Kyoto Protocol

115. The information provided in the NC5 covers most of the issues for which information is required under the Convention and its Kyoto Protocol. In the NC5, the Party provided extensive information on the measures to be taken pursuant to Article 4, paragraphs 3, 4 and 5, of the Convention. However, the ERT noted that Australia did not clearly explain how the financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention are determined as being "new and additional". This information was provided by the Party during the review. The ERT recommends that Australia enhance the completeness of its reporting by including this information in its next national communication.

116. In its NC5, Australia provided details of the measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention, as required by the UNFCCC reporting guidelines, and under Article 11 of the Kyoto Protocol, as required by the guidelines for the preparation of information required under Article 7 of the Kyoto Protocol. Australia has indicated what "new and additional" financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention. In the NC5, the Party states that "new and additional" financial resources amounting to AUD 476 million have been allocated for the period 2005–2009, including AUD 30 million for the Global Environment Facility (GEF). However, the Party did not clarify how it has determined such resources as being "new and additional".

117. During the review, Australia provided a written explanation, which stated that: Australia's climate finance was "new and additional" because it was financed from an increasing ODA budget. All ODA expenditure was captured in the AusAID programme management tool Aidworks. The calculation of Australia's finance contributions as reported in the NC5 was done by running the Aidworks database for UNFCCC markers against programmes, cross-checking the data against profile activities with subject experts, and determining the levels of "new and additional" investment based on previous commitments and current commitment levels.

118. Australia also provided detailed information on the assistance it has made available to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects. Further, Australia has provided information on other financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels, including the GEF. Table 7 summarizes information on financial resources for the period 2004–2009.

Table 7
Summary of information on financial resources for 2004–2009

Channel of financial resources	*Years of disbursement*				
	2004–2005	*2005–2006*	*2006–2007*	*2007–2008*	*2008–2009*
GEF (USD million)	13.40	11.35	15.00	17.65	14.68
World Bank (USD million)	–	–	–	12.59	64.52
Asian Development Bank (USD million)	–	–	–	1.79	3.74
United Nations bodies (USD million)	0.72	0.74	0.81	8.64	2.34
Other (USD million)	8.38	11.30	11.88	28.78	99.57
Bilateral and regional	3.47	5.10	5.33	42.89	37.79

Source: Australia's fifth national communication, tables 7.1, 7.2 and 7.3i-v.

Notes: One-third of the contributions to the GEF are for climate change related activities; "Other" includes USD 65.05 million for the Global Carbon Capture and Storage Institute in the financial year 2008–2009.

Abbreviation: GEF = Global Environment Facility.

119. Australia has continuously increased its contributions of financial resources through bilateral, regional and other channels. As stated in paragraph 116 above, Australia has provided approximately AUD 476 million since 2005 in new and additional funding for climate change related programmes in the areas of adaptation, mitigation, capacity-building and technology cooperation to support climate change action in developing countries. Through its overseas programmes, Australia is helping to bridge knowledge and finance gaps to support mitigation and adaptation in developing countries. During the period 2007–2008, there was a sharp increase in the Party's financial assistance for climate change support for developing countries (see table 7 above) through multilateral initiatives such as the World Bank Climate Investment Fund and the Least Developed Countries Fund, and the enhancement of bilateral and regional initiatives on adaptation and mitigation.

120. Australia has demonstrated its commitment to support fast-start finance provision under the Copenhagen Accord which was strengthened in the Cancun Agreements. During the review, Australia elaborated on the financial resources it has committed to the climate change related funds set up under the Copenhagen Accord and agreed at the seventeenth session of the Conference of the Parties. The Party has committed AUD 599 million to the fast-start finance scheme. The first third of this commitment, amounting to AUD 201 million, was disbursed in the financial year 2010–2011. By that time, Australia had allocated AUD 498 million of its fast-start investment package. The Party projects that AUD 380 million will be disbursed by the end of the second financial year and the disbursement of the total AUD 599 million package will be completed in 2013. Australia's fast-start finance is grant-based, balanced between adaptation and mitigation, and strongly focused on the countries most vulnerable to climate change, and does not displace funding from existing aid programmes.

121. The fast-start finance has been delivered primarily through two Australian flagship climate finance initiatives, namely: ICCAI and the International Forest Carbon Initiative

(IFCI). There has been an increase in the support provided to a range of multilateral initiatives during the fast-start financing period, including: the GEF, the Clean Technology Fund, the Partnership for Market Readiness, the Forest Investment Programme, the Least Developed Countries Fund, the Adaptation Fund and the Global Green Growth Institute.

2. Activities related to transfer of technology, including information under Article 10 of the Kyoto Protocol

122. In its NC5, Australia has provided details of measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies, as well as information on activities related to technology transfer, including success stories, in table 6. Further, Australia has also reported in textual format on the steps taken by the Government to promote, facilitate and finance transfer of technology. However, the ERT noted that the Party did not provide the following reporting elements required by the UNFCCC reporting guidelines: (a) a clear distinction between activities undertaken by the public sector and those undertaken by the private sector; (b) information on the success or failure of activities related to technology transfer; and (c) information on the support for the development and enhancement of the endogenous capacities and technologies of developing countries. During the review, Australia provided relevant information and explained that much of its international engagement is more appropriately referred to as technology cooperation or capacity-building, rather than technology supply/transfer. Many of Australia's activities with developing countries are based on sharing the experiences and lessons that the Party has learned in adapting and deploying technologies for use in Australia (e.g clean energy technologies). The ERT recommends that Australia include relevant information in its next national communication.

123. Australia is participating in international technology-based partnerships and programmes which aim at strengthening information networks, training, research and practical collaboration on climate change actions. For example, through the UNFCCC Expert Group on Technology Transfer, Australia assists in providing strategic advice to Parties on technology issues and promotes information exchange on technology between Parties. Australia also provides GCCSI with funding of AUS 100 million per annum. GCCSI promotes the collaboration of existing efforts and knowledge-sharing. Through bilateral activities under the Cleaner Development Pathways, Australia promotes less GHG-intensive development pathways, including investment in energy efficiency and renewable energy with a main focus on the Mekong and Pacific regions.

124. An estimated AUD 15.1 million has been allocated to promote energy efficiency and AUD 5.2 million to promote renewable energy in the financial years 2007–2008 and 2008–2009. Further, Australia also supports projects implemented by the World Bank, including the Rural Electrification and Transmission Project in the Lao People's Democratic Republic and Cambodia and the Sustainable Energy Financing Project in the Solomon Islands. Some of the selected projects or programmes that promote practicable steps to facilitate and/or finance the transfer of, or access to, environmentally sound technologies include the Climate Prediction Project in the Pacific Islands, the Vulnerability and Adaptation Initiative in the Pacific, and the National Carbon Accounting System in Indonesia.

125. Australia's policy in promoting, facilitating and financing transfer of technology is through technology cooperation and partnership. It aims at strengthening information networks, training, research and practical collaboration on climate change actions. Within this policy, public sector measures are currently playing a more important role than private sector measures. The ERT noted from the detailed information provided by the Party that most activities seem to be carried out by the public sector. Australia explained during the review that the Government's effort to engage the private sector in promoting, facilitating

and financing transfer of technology focuses on creating an enabling environment for private sector investment.

F. Research and systematic observation

126. Australia has provided information on its actions relating to research and systematic observation, and has addressed both domestic and international activities, including the World Climate Research Programme (WCRP), the International Geosphere–Biosphere Programme (IGBP), the Global Climate Observing System (GCOS), and the Intergovernmental Panel on Climate Change (IPCC). The NC5 also reflects action taken to support related capacity-building in developing countries, although the information provided was very limited, with a specific focus on Pacific Island countries. Further, Australia has provided a summary of information on GCOS activities. Most of the information was provided in the NC5 and the activities undertaken at the national, regional and international levels were clearly described. However, the information provided on activities under Article 5(b) of the Convention relating to developing countries was very limited (e.g. with a focus on the Pacific Islands, such as the Climate Prediction Project).

127. More relevant information was provided during the review, including new developments since the NC5. The ERT recommends that Australia increase the transparency of its reporting by further elaborating on this reporting item in its next national communication. During the review, the Party also provided further information on opportunities for and barriers to the free and open international exchange of data and information and on action taken to overcome these barriers. The ERT commends Australia for the magnitude of the work undertaken on research and systematic observation since the NC4, for the significant progress made since the NC5, and for the information provided during the review. The ERT encourages Australia to continue its comprehensive reporting on research and systematic observation and, where possible, to improve it in the next national communication.

128. The NC5 provides summary information on the current status of national plans, programmes and support for ground- and space-based climate observing systems, including the long-term continuity of data, data quality control and availability, and the exchange and archiving of data in all areas as required by the UNFCCC reporting guidelines. The programmes include support for developing countries to establish and maintain observing systems, and related data and monitoring, focusing on Pacific Island countries. The NC5 does not provide relevant information on the socioeconomic analysis, including an analysis of the impacts of climate change and of response options. Australia explained during the review that the socioeconomic analysis is carried out under vulnerability and adaptation, especially with regard to indigenous people, while under research and systematic observation, relevant research is focused on human behaviour towards climate change issues. The ERT encourages Australia to include this information in its next national communication. The Party's support for building technical research capacity is mainly focused on the Pacific region. Training and capacity development are part of the Pacific Climate Change Science Programme. One of the programme's objectives is to develop the capacity of Pacific Island scientists, decision makers and planners to access and apply information and tools to identify and develop in-country adaptation responses.

129. The Australian Bureau of Meteorology coordinates the Party's GCOS-related activities. Significant planning is undertaken to ensure an appropriate correlation between Australian and international needs and the data collected. As part of its contribution to the GCOS activities, Australia also hosted the international workshop on "Future climate change research and observations: GCOS, WCRP and IGBP learning from the IPCC Fourth Assessment Report" in October 2007.

130. The Australian Climate Change Science Program has run continuously since 1989 and achieved success from a collaborative approach to climate change science. In 2010–11 Australian researchers published their findings in 147 peer-reviewed papers in Australian and international publications. In 2012, a plan for implementing climate change science in Australia was agreed on that is designed to: coordinate the delivery of climate change science in Australia; ensure the most effective and efficient use of resources; and deliver the science needed to underpin Australia's policy priorities of adaptation, mitigation and shaping a global solution. The Plan also establishes the governance arrangements to coordinate the efficient delivery of the plan and aligns climate change science deliverables to answering key policy questions. This should allow to deliver national benefits through implementing robust adaptation and mitigation policy and helping to shape a global solution.

131. Australia also contributes significantly to regional and global research and systematic observation activities. One of its most significant contributions is the Australian Community Climate and Earth-System Simulator (ACCESS). ACCESS, which was developed by the Centre for Australian Weather and Climate Research, is now operational for weather prediction and provides long-term global and regional climate projections; it also plays a key role in Australia's contributions to the IPCC Fifth Assessment Report.

G. Education, training and public awareness

132. In the NC5, Australia has provided information on its activities relating to education, training and public awareness on both the domestic and the international level. The level of detail and the comprehensiveness of the information is comparable to that reported in the NC4, where the Party provided extensive information on various aspects of education, training and public awareness. The ERT noted that certain reporting elements on international activities relating to public awareness have also been covered in the chapters on financial resources and on research and systematic observation, and encourages Australia to avoid the duplication of information across different chapters. Cross-references between chapters might help to streamline the information provided in future national communications.

133. Considerable progress can be observed with respect to the integration of various aspects of climate change (both adaptation and mitigation) in school and university programmes. For example, the Australian Sustainable Schools Initiative is helping schools to reduce waste generation, water and energy consumption. More than 2,000 schools are participating in the programme and the effects of those activities (e.g. with respect to energy savings and efficient water consumption) are being evaluated. The National Solar Schools Program offers grants of up to AUD 50,000 to enable Australian schools to improve their energy and water efficiency. It is scheduled to cease on 30 June 2013. Australia is also active in enhancing education and training on climate change in developing countries, for example through the Australian Leadership Awards, which are designed to increase access to, and the quality of, education and training for people in partner countries. Climate change is a priority area within those scholarships and fellowships.

134. The ERT noted that both the Australian Government and the states and territories have been very active in recent years with regard to public awareness-raising campaigns. Non-governmental organizations are considerably involved in those activities. According to the additional information provided by the Party during the review, the Australian Government is also very active in informing people about the necessities of and expected effects from major legislative initiatives, such as the Carbon Pricing Mechanism. The

impacts of public awareness-raising campaigns are being monitored and are found to have a considerable effect.

H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

135. Australia has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 8 provides an overview of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided.

136. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the relevant sections of this report. The ERT recommends that Australia include these reporting elements in its next national communication.

Table 8
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference*
National registry	NC5, chapter 3
National system	NC5, chapter 3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NC5, chapter 5 Explanations provided during the review
Policies and measures in accordance with Article 2	Provided during the review
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	NC5, chapters 3, 4 and 5
Information under Article 10	NC5, chapters 6, 7 and 8
Financial resources	NC5, chapter 7

Abbreviation: NC5 = fifth national communication.

I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

137. Australia has reported the information requested in chapter I.H "Minimization of adverse impacts in accordance with Article 3, paragraph 14", of the annex to decision 15/CMP.1 as a part of its 2010 and 2011 annual submissions. In the 2011 NIR, the Party has improved its reporting by including updated information on this item. The PaMs that could have adverse social, environmental or economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention, undergo rigorous and transparent evaluation. Australia's development policies are developed with full consideration of the potential consequences on the recipients of development assistance.

138. In the 2011 annual submission, Australia has provided information on additional activities that aim to minimize adverse impacts, including the progressive reduction or phasing out of market imperfections, and the removal of subsidies associated with the use of environmentally unsound and unsafe technologies. The Productivity Commission (the

Australian Government's independent research and advisory body) will conduct a review of fuel excise arrangements, including an examination of the merits of a regime based explicitly and precisely on the carbon and energy content of fuel. The ERT noted that no specific policies directed towards support for the technological development of non-energy uses of fossil fuels are currently under consideration.

139. During the review, Australia provided the ERT with additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be transparent and complete.

140. Australia supports a number of programmes to assist vulnerable countries to build economic resilience. The establishment of GCCSI is an important measure taken by Australia to assist carbon-intensive economies, including developing countries with carbon-intensive economies, to reduce their exposure to the impact of the implementation of response measures. Australia assists other countries in the Asia-Pacific region, both developed and developing, to reduce the carbon intensity of their goods and services through the Asia-Pacific Partnership on Clean Development and Climate. Australia is actively involved in a number of initiatives to help developing countries build their trade resilience and diversify their economy. The ERT commends Australia for the additional information provided during the review and encourages the Party to continue exploring and reporting on the adverse impacts of response measures.

III. Conclusions and recommendations

141. The ERT concludes that Australia's NC5 generally provides a good overview of the national climate policy of Australia. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidelines and by Article 7 of the Kyoto Protocol. The ERT noted some missing mandatory reporting elements and some areas where transparency could be improved, for example with regard to PaMs, projections and the total effect of PaMs and financial resources and technology transfer. During the review, Australia provided sufficient additional information on all of the missing mandatory reporting elements.

142. Australia's emissions for 2009 were 30.4 per cent above the 1990 level excluding LULUCF and 29.9 per cent above the 1990 level including LULUCF. Emissions in 2009, based on Kyoto Protocol accounting rules and including LULUCF were 564.54 Mt CO_2 eq, which is 2.7 per cent higher than the 1990 level of 549.85 Mt CO_2 eq. The emission increases were driven by strong economic and population growth, continued reliance on fossil fuels for primary energy supply, and growing commodity exports. These factors outweighed the improvements in the efficiency of energy supply and use and the emission reductions in the agriculture and waste sectors.

143. In its NC5, Australia presented GHG emission projections using a 'with measures' scenario and a 'without measures' scenario for the period 2010–2020. Updated information on the total effect of PaMs was provided during the review, together with an update of the projections published in 2010. The projected GHG emission levels for 2010 under the 'with measures' scenario, when taking into account activities under Article 3, paragraph 3, of the Kyoto Protocol, were 6 per cent above the base year level. Thus, the 'with measures' projection indicates that Australia can meet its Kyoto Protocol target (which allows for an 8 per cent increase in GHG emissions above the base year level) with domestic measures alone.

144. The 'with measures' scenario also shows a considerable growth in emissions until 2020; however, the effects of the upcoming Carbon Pricing Mechanism were not incorporated into the projections. Australia's emission reduction targets for 2020 range from an unconditional reduction of 5 per cent below the 2000 level; or up to 15 per cent or a 25 per cent reduction, conditional on the extent of global action (see para. 41 above). Emission caps under the Carbon Pricing Mechanism will be set in accordance with the target, thus it can be assumed that the price signal of the mechanism will have a significant impact on Australia's medium-term GHG emissions trend.

145. The NC5 contains information on the role of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, although it did not elaborate on supplementarity as such. The ERT noted that Australia is not planning to make use of the Kyoto Protocol mechanisms to meet its target under the first commitment period of the Kyoto Protocol.

146. Australia has put in place a wide range of PaMs to reduce GHG emissions in all sectors in order to meet its future GHG emission reduction commitment. The most recent policy is the Carbon Pricing Mechanism at the core of the Clean Energy Future Plan, which establishes a price for carbon across Australia and is expected to put the economy on a downward GHG emission trend. The mechanism will address emissions from all sectors except for the agriculture, forestry and waste sectors, and will cover approximately 500 businesses and two thirds of Australia's GHG emissions. The mechanism is complemented by CFI, which addresses the agriculture and forestry sectors by granting domestic offset credits for reducing emissions and increasing carbon stocks. The GHG emission reduction target is substantiated by policies that attach carbon price, a RES target, energy efficiency measures and a strong institutional framework involving new institutions that support the implementation of the Clean Energy Future Plan.

147. Australia's financial support for developing countries to address climate change amounted to AUD 476 million during the period 2005–2009 and was delivered in large part through multilateral channels. The Party also continuously increased its contribution of financial resources through bilateral and regional channels and funds have been provided for climate change related programmes in the areas of adaptation, mitigation, capacity-building and technology cooperation. The ERT noted the disbursed AUD 201 million in the financial year 2010–2011 as part of the fast-start financing by Australia. Australia's policy in promoting, facilitating and financing transfer of technologies is through technology cooperation and partnership. Thus, the Party is participating in international technology-based partnerships and programmes which aim at strengthening information networks, training, research and practical collaboration on climate change actions.

148. As the world's driest inhabited continent, Australia considers the impact of climate change on water availability as the biggest threat for the country, with significant implications for Australia's economic, social and environmental well-being. The Party has undertaken thorough impact and vulnerability assessments in priority areas and sectors, and has implemented adaptation measures based on the results of the assessments.

149. In its NC5, Australia has provided substantial information on its actions relating to research and systematic observation and those relating to education, training and public awareness, both on the domestic and on the international level. Australia has put in place national plans, programmes and support for ground- and space-based climate observing systems. A programme on Pacific Island countries to establish and maintain observing systems is the main focus of Australia's international initiatives relating to developing countries. Both the Australian Government and the states and territories have been very active in recent years with regard to public awareness-raising campaigns, and non-governmental organizations are considerably involved in those activities. The Australian Government undertakes multiple and diverse actions to inform people about the necessities

of and expected effects from major legislative initiatives, such as the Carbon Pricing Mechanism.

150. The ERT concluded that Australia's national system continues to perform its required functions as set out in decision 19/CMP.1, and that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol. The ERT noted that updates of database and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible persons.

151. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol provided by the Party in its 2010 and 2011 annual submissions is complete and transparent.

152. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Australia's reporting under the Convention and its Kyoto Protocol. The key recommendations[10] are that Australia:

(a) Improve the completeness of its reporting by including in the next national communication:

(i) A description of all major PaMs that have a significant impact on GHG emissions and removals, including all mandatory information on the type of PaM, the sector and gas affected, the status of implementation and the implementing entity as required by the UNFCCC reporting guidelines;

(ii) Information on the total effect of implemented and adopted PaMs on a gas-by-gas basis for historic years in accordance with the UNFCCC reporting guidelines;

(iii) A clarification of how the financial resources provided pursuant to Article 4, paragraph 3, of the Convention have been determined as being "new and additional";

(iv) A clear distinction between activities related to technology transfer undertaken by the public sector and those undertaken by the private sector;

(v) A description of any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources;

(vi) Information on how the Party strives to implement PaMs under Article 2, paragraph 3 of the Kyoto Protocol in such a way as to minimize adverse effects.

(b) Improve the transparency of its reporting by:

(i) Organizing the reporting of all PaMs by sector further subdivided by gas;

(ii) Further elaborating on the information relating to the success or failure of activities related to technology transfer and to the support for the development and enhancement of the endogenous capacities and technologies of developing countries;

[10] The recommendations are given in full in the relevant sections of this report.

(iii) Further elaborating on the action taken to support capacity-building related to research and systematic observation in developing countries;

(iv) Including more explicit information on supplementarity pursuant to Articles 6, 12 and 17 of the Kyoto Protocol.

153. The ERT encourages Australia to undertake a number of improvements regarding the transparency and completeness of its reporting; the most important of these are that the Party:

(a) Further enhance the ways of estimating the effects of individual PaMs and report the mitigation effect for more PaMs;

(b) Further elaborate on the reporting of the PaMs in the household, industrial processes and LULUCF sectors;

(c) Further report on the key assumptions used for the emission projections, both cross-sectoral and sector specific using table 2 of the UNFCCC reporting guidelines;

(d) Provide an additional summary diagram of the trends and projections excluding emissions and removals from the LULUCF sector, in order to allow for a better understanding of emission trends in non-LULUCF sectors.

IV. Questions of implementation

154. During the review, the ERT assessed the NC5, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. No question of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/CP/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

"Guidelines for review under Article 8 of the Kyoto Protocol". Decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>.

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <http://unfccc.int/resource/docs/2011/sbi/eng/inf01a02.pdf>.

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FCCC/ARR/2010/AUS. Report of the individual review of the annual submission of Australia submitted in 2010. Available at <http://unfccc.int/resource/docs/2010/arr/aus2.pdf>.

FCCC/IRR/2007/AUS. Report of the review of the initial report of Australia. Available at <http://unfccc.int/resource/docs/2009/irr/aus.pdf>.

FCCC/IDR.4/AUS. Report of the in-depth review of the fourth national communication of Australia. Available at <http://unfccc.int/resource/docs/2009/idr/aus04.pdf>.

Fourth national communication of Australia. Available at <http://unfccc.int/resource/docs/natc/ausnc4.pdf>.

2009 national GHG inventory submission of Australia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>.

2010 national GHG inventory of Australia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php>.

2011 national GHG inventory of Australia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Andrew Bray (Department of Climate Change and Energy Efficiency), including additional material on updated policies and measures, GHG projections, the national registry and recent climate policy developments in Australia. The following documents[1] were also provided by Australia:

Baker & McKenzie. 2011. *Local Council Risk of Liability in the Face of Climate Change – Resolving Uncertainties A Report for the Australian Local Government Association*. Australian Local Government Association.

Commonwealth of Australia (Department of Climate Change and Energy Efficiency) 2011. *Climate Change Risks to Coastal Buildings and Infrastructure*. Department of Climate Change and Energy Efficiency. Canberra

Turnbull W. 2011. *Review of the Local Adaptation Pathways Program*. Department of Climate Change and Energy Efficiency. Canberra

Commonwealth of Australia (Department of Climate Change and Energy Efficiency) 2011. *Developing a national coastal adaptation agenda*. Department of Climate Change and Energy Efficiency. Canberra

Maddocks. 2011. *The role of regulation in facilitating or constraining adaptation to climate change for Australian infrastructure*. Department of Climate Change and Energy Efficiency. Canberra

Commonwealth of Australia (Department of Climate Change and Energy Efficiency) 2011. *Securing a clean energy future. The Australian government's climate change plan.* Department of Climate Change and Energy Efficiency. Canberra

Commonwealth of Australia (Department of Climate Change and Energy Efficiency) 2010. *Australia's emissions projections 2010*. Department of Climate Change and Energy Efficiency. Canberra

Williams RJ, Bradstock RA, Gary GJ, Enright NJ, Gill AM, Liedloff AC, Lucas C, Whelan RJ, Andersen AN, Bowman DMJS, Clarke PJ, Cook GD, Hennessy KJ and York A. 2009. Interactions between climate change, fire regimes and biodiversity in Australia – a preliminary assessment. Department of Climate Change and Energy Efficiency. Canberra

Commonwealth of Australia (Treasury) 2011. *Strong growth, low pollution. Modelling a carbon price*. Treasury

Commonwealth of Australia (Treasury) 2011. *Strong growth, low pollution. Modelling a carbon price*. *Update*. Treasury

[1] Reproduced as received from the Party.