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Report on the technical review of the seventh national communication of Australia

Parties included in Annex I to the Convention were requested by decision 9/CP.16 to submit their seventh national communication to the secretariat by 1 January 2018. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the seventh national communication and relevant supplementary information under the Kyoto Protocol of Australia, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” and the “Guidelines for review under Article 8 of the Kyoto Protocol”.

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Abbreviations and acronyms

AAU	assigned amount unit
ACT	Australian Capital Territory
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
ARENA	Australian Renewable Energy Agency
BR	biennial report
CEFC	Clean Energy Finance Corporation
CER	certified emission reduction
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CSIRO	Commonwealth Scientific and Industrial Research Organization
CTF	common tabular format
ERF	Emissions Reduction Fund
ERT	expert review team
GCF	Green Climate Fund
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
ICAO	<i>International Civil Aviation Organization</i>
IMO	<i>International Maritime Organization</i>
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LRET	Large-scale Renewable Energy Target
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NEPP	National Energy Productivity Plan
NF ₃	nitrogen trifluoride
NGO	non-governmental organization
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
N ₂ O	nitrous oxide
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
Reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
RET	Renewable Energy Target
SF ₆	sulfur hexafluoride
SRES	Small-scale Renewable Energy Scheme
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC7 of Australia. The review was coordinated by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention” (annex to decision 13/CP.20), and the “Guidelines for review under Article 8 of the Kyoto Protocol” (annex to decision 22/CMP.1 and annex I to decision 4/CMP.11).¹

2. In accordance with the same decisions, a draft version of this report was transmitted to the Government of Australia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 28 May to 2 June 2018 by the following team of nominated experts from the UNFCCC roster of experts: Ms. Christine Dragisic (United States of America), Mr. Xiang Gao (China), Ms. Maria Purzner (Austria), Mr. Arthur Rolle (Bahamas) and Mr. Harry Vreuls (Netherlands). Mr. Gao and Mr. Vreuls were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of Australia in accordance with the UNFCCC reporting guidelines on NCs (decision 4/CP.5) and the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol (annex to decision 15/CMP.1 and annex III to decision 3/CMP.11).

1. Timeliness

5. The NC7 was submitted on 28 December 2017, before the deadline of 1 January 2018 mandated by decision 9/CP.16. Australia resubmitted the projections section of the NC7 on 4 May 2018. Australia resubmitted the entire text of the NC7 on 15 June in response to the findings made by the ERT during the review.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Australia in its NC7, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

¹ At the time of the publication of this report, the Party had submitted its instrument of acceptance of the Doha Amendment (9 November 2016); however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

Table 1

Assessment of completeness and transparency of mandatory information reported by Australia in its seventh national communication, including supplementary information under the Kyoto Protocol

<i>Section of NC</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>	<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
Executive summary	Complete	Transparent		National system	Complete	Transparent	
National circumstances	Complete	Transparent		National registry	Complete	Transparent	
GHG inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs	Complete	Transparent		PaMs in accordance with Article 2	Complete	Transparent	
Projections and the total effect of PaMs	Complete	Transparent		Domestic and regional programmes and/or arrangements and procedures	Complete	Mostly transparent	Issue 1 in table 5
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10a	Complete	Transparent	
Financial resources and transfer of technology	Complete	Transparent		Financial resources	Mostly complete	Transparent	Issue 2 in table 15
Research and systematic observation	Complete	Transparent		Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	
Education, training and public awareness	Complete	Transparent					

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

^a The assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant only to Parties included in Annex II to the Convention. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

3. Summary of reviewed supplementary information under the Kyoto Protocol

7. The supplementary information under Article 7, paragraph 2, of the Kyoto Protocol is incorporated in different sections of the NC7, and the supplementary information under Article 7, paragraph 1, of the Kyoto Protocol is reported in the NIR of the 2017 annual submission. Table 2 provides references to where the information is reported. The technical assessment of the information reported under Article 7, paragraphs 1 and 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 2

Overview of supplementary information under the Kyoto Protocol reported by Australia

<i>Supplementary information</i>	<i>Reference to the section of NC7</i>
National registry	3.4
National system	3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	5.2, (BR 3.3)
PaMs in accordance with Article 2	4
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	4.1.1
Information under Article 10	3.3, 4, 6.1, 7.4, 8, 9
Financial resources	7.1, 7.2
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Reported in the NIR of the Party's 2017 annual submission

II. Technical review of the information reported in the seventh national communication, including the supplementary information under the Kyoto Protocol

A. Information on national circumstances and greenhouse gas emissions and removals

1. National circumstances relevant to greenhouse gas emissions and removals

(a) Technical assessment of the reported information

8. The national circumstances of Australia explain the relationship between its historical and future emission trends and the climate change policy agenda. The changing nature of those circumstances defines the factors that affect the climate policy development and implementation of the Convention. The NC7 contains key data on geography, demography and government, economy, energy, industry, transport, agriculture, forestry, building stock and urban structure, waste and climate.

9. Australia is one of the world's largest energy producers, generating almost three times the volume of national consumption and exporting excess production of coal and natural gas. Australia also has a large agricultural sector, producing food for domestic consumption as well as for export. The energy production and the large agricultural sector, together with the dependence on long-haul transport, have led to relatively high² (but declining since 2000) per capita emissions (22.4 t CO₂ eq) compared with other developed countries.

10. The ERT noted that during the period 1990–2015, Australia's GDP increased by 53.4 per cent, while GHG emissions (excluding LULUCF) per GDP and GHG emissions per capita decreased by 40.6 and 8.9 per cent, respectively. GHG emissions (including LULUCF)

² Australia was ranked 7 for CO₂ emissions from fuel combustion per capita in 2015 (15.8 t CO₂ per capita).

per GDP and GHG emissions per capita decreased by 57.6 and 34.9 per cent, respectively. Table 3 illustrates the national circumstances of Australia by providing some indicators relevant to emissions and removals.

Table 3
Indicators relevant to greenhouse gas emissions and removals for Australia for the period 1990–2015

Indicator						Change (%)	
	1990	2000	2010	2014	2015	1990–2015	2014–2015
GDP per capita (thousands 2011 USD using purchasing power parity)	28.58	35.28	41.38	43.40	43.83	53.4	1.0
GHG emissions including LULUCF per capita (thousands 2011 USD using purchasing power parity)	33.95	28.78	25.51	22.46	22.09	–34.9	0.0
GHG emissions without LULUCF per capita (t CO ₂ eq)	24.60	25.31	24.38	22.41	22.42	–8.9	0.0
GHG emissions including LULUCF per GDP unit (kg CO ₂ eq per 2011 USD using purchasing power parity)	1.19	0.82	0.62	0.52	0.50	–57.6	0.0
GHG emissions without LULUCF per GDP unit (kg CO ₂ eq per 2011 USD using purchasing power parity)	0.86	0.72	0.59	0.52	0.51	–40.6	–1.0

Sources: (1) GHG emission data: Australia's 2017 GHG inventory submission, version 1, 27 May 2017; (2) population and GDP: World Bank, World Development Indicators.

Notes: (1) In the NC7 (section 3.2.1) Australia reports on GDP changes using “real GDP” prices for 2013–2014; (2) Values in this table are calculated on the basis of the 2018 annual submission, as submitted by the Party and which has not yet undergone expert review.

(b) Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

2. Information on greenhouse gas inventory arrangements, emissions, removals and trends

(a) Technical assessment of the reported information

12. Total GHG emissions³ excluding emissions and removals from LULUCF increased by 30.7 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 9.0 per cent over the same period. Table 4 illustrates the emission trends by sector and by gas for Australia.

³ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission.

Table 4
Greenhouse gas emissions by sector and by gas for Australia for the period 1990–2016

Sector	GHG emissions (kt CO ₂ eq)						Change (%)		Share (%)	
	1990	2000	2005	2010	2015	2016	1990–2016	2015–2016	1990	2016
1. Energy	294 010.18	364 552.31	399 994.36	421 032.15	421 911.49	433 528.46	47.5	2.8	70.0	78.9
2. Fuel combustion (sectoral approach)	256 777.72	324 357.83	361 200.07	378 509.65	376 134.62	384 482.85	49.7	2.2	61.1	70.0
A1. Energy industries	143 099.58	192 159.28	216 461.87	226 111.20	211 998.41	220 412.20	54.0	4.0	34.1	40.1
A2. Manufacturing industries and construction	36 256.19	38 952.22	41 584.24	41 435.58	43 952.45	41 663.39	14.9	-5.2	8.6	7.6
A3. Transport	61 394.56	74 388.55	82 453.71	89 190.54	96 181.75	97 462.60	58.7	1.3	14.6	17.7
A4. and A5. Other	16 027.39	18 857.78	20 700.25	21 772.34	24 879.31	24 944.65	55.6	0.3	3.8	4.5
B. Fugitive emissions from fuels	37 232.46	40 194.48	38 794.30	42 522.50	45 776.87	49 045.61	31.7	7.1	8.9	8.9
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	26 080.61	26 768.02	32 060.55	35 363.43	32 327.34	34 174.23	31.0	5.7	6.2	6.2
3. Agriculture	80 178.51	78 625.09	76 186.25	66 449.58	70 011.73	69 140.89	-13.8	-1.2	19.1	12.6
4. LULUCF	156 700.24	61 673.65	82 297.89	22 730.00	-20 345.86	-24 120.95	-115.4	18.6	NA	NA
5. Waste	19 658.31	15 420.75	14 092.14	14 923.01	11 367.98	12 314.13	-37.4	8.3	4.7	2.2
6. Other	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
Indirect CO ₂	NO, NE	NO, NE	NO, NE	NO, NE	NO, NE	NO, NE	NA	NA	NA	NA
NAN Gas ^a										
CO ₂	415 581.74	394 363.17	452 512.61	412 174.30	368 529.37	374 481.85	-9.9	1.6	98.9	68.2
CH ₄	133 188.54	124 423.28	119 321.48	113 407.69	111 335.05	112 689.42	-15.4	1.2	31.7	20.5
N ₂ O	21 777.99	25 099.88	25 865.65	26 477.08	24 185.71	24 293.06	11.5	0.4	5.2	4.4
HFCs	1 424.68	1 613.20	5 002.48	9 415.04	12 814.90	13 176.44	824.9	2.8	0.3	2.4
PFCs	4 607.01	1 287.06	1 791.70	283.32	171.32	224.92	-95.1	31.3	1.1	0.04
SF ₆	220.56	212.43	196.22	144.40	168.64	171.07	-22.4	1.4	0.1	0.03
NF ₃	NO	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions without LULUCF	420 100.30	485 325.37	522 392.25	539 171.83	537 550.85	549 157.72	30.7	2.2	100.0	100.0
Total GHG emissions with LULUCF	576 800.53	546999.03	604690.14	561901.83	517204.99	525036.77	-9.0%	1.5%	NA	NA

Note: Values in this table are calculated on the basis of the 2018 annual submission, as submitted by the Party and which has not yet undergone expert review.

13. The biggest drivers for the increase in emissions in the period 1990–2016 are from the stationary fuel combustion in the energy sector, with an overall increase of energy production owing to the increasing population and higher household incomes, as well as increases in exports of fuel. However, emissions from electricity generation peaked in 2009 and have since fallen, because of a combination of lower electricity demand and changes in the fuel mix used to generate electricity. Emissions from road transportation have been growing over the years, owing to growth in the number of passenger vehicles, as well as an increase in diesel consumption in heavy-duty vehicles. Fugitive emissions have also been increasing, owing to increased production from open cut coal mines and increased gas production (Australia is the world's biggest exporter of liquefied natural gas).

14. Emissions from IPPU have been increasing since 1990, owing to the growth of emissions of HFCs, as well as an increase of emissions from chemical industry. The increase of emissions is offset by a reduction of emissions mainly because of the decline in land clearance in the LULUCF sector (a reduction in the amount of forest land converted to cropland and grassland), as well as a reduction of emissions from the waste sector (owing to increased CH₄ recovery) and from agriculture owing to a decline in sheep numbers (although this was partly offset by an increase in cattle numbers) which, together, led to an overall decrease of total GHG emissions including LULUCF. As the changes in the LULUCF sector are the major driver for the reduction of emissions, there is an overall increase of total GHG emissions excluding LULUCF.

15. Between 1990 and 2016 GHG emissions from the energy sector increased by 47.5 per cent (13,9518.28 kt CO₂ eq) The trend in GHG emissions from fuel combustion showed notable increases in the transport sector (58.7 per cent or 36,068.05 kt CO₂ eq) and fugitive emissions from fuels (31.7 per cent or 11,813.15 kt CO₂ eq). The increase in emissions from electricity generation (which is mainly based on coal) was mostly due to increases in population, household income and exports. Emissions from electricity generation peaked in 2009 and have since fallen because of a combination of lower electricity demand and changes in the fuel mix used to generate electricity. The increase of emissions from road transport was due to an increase in the number of passenger vehicles and also an increase in diesel consumption in heavy-duty vehicles. The increase in fugitive emissions can be attributed to high production rates from open cut coal mines and increased gas production.

16. Between 1990 and 2016, GHG emissions from IPPU increased by 31.0 per cent (8,093.62 kt CO₂ eq) which was due to increasing emissions from HFCs. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 13.8 per cent (-11, 037.62 kt CO₂ eq), owing mainly to a decline in the number of sheep. The LULUCF sector was a net sink, responsible for removals of 24,120.95 kt CO₂ eq in Australia in 2016; which has contributed to a net decrease in GHG emissions of -180,821.19 kt CO₂ eq since 1990. The trend was mainly driven by the decline in emissions from land clearing (forest land converted to cropland and grassland). Between 1990 and 2016, GHG emissions from the waste sector decreased by 37.4 per cent (-7,344.18 kt CO₂ eq) owing mainly to CH₄ recovery.

17. The trends by sector are reflected in the trends by gas, with CO₂ accounting for 68.2 per cent of Australia's emissions in 2016. The principal source of these emissions is stationary combustion in the energy sector, mostly driven by increases in population, household income and exports. Other drivers of CO₂ emissions in the energy sector are transport, fugitive emissions and increased gas production, as described in paragraph 14 above.

18. Emissions from CH₄ account for 112, 689.42 kt CO₂ eq, or 20.5 per cent of the total. For methane, the overall trend has decreased by 15.4 per cent change compared with 1990–2016. The main drivers of this declining trend are the agriculture sector (owing to a decrease in national sheep numbers) and the waste sector (because of an increase in the amount of CH₄ collected for energy production or flaring purposes).

19. For N₂O, emissions have been increasing by 11.5 per cent since 1990 and account for 4.4 per cent of the total (24,293.06 kt CO₂ eq) in 2016. The main drivers for this development are emissions from road transportation as well as manure management and agricultural soils.

20. Emissions of fluorinated gases are mostly driven by an increase of emissions from HFCs (PFCs, SF₆ and NF₃ only play a marginal role in emissions from this sector), and have increased over time from 1.5 per cent of the total GHG emissions in 1990 to 2.5 per cent in 2016 (this equals an increase of 7,320.18 kt CO₂ eq). The main driver behind this is the transition from the use of ozone-depleting refrigerants to using HFCs as refrigerants, which led to an increase in the bank of synthetic gas in equipment, and an increase in the stock of domestic refrigerant and air conditioners (split systems).

21. The summary information provided on GHG emissions was consistent with the information reported in the 2018 annual submission. Trends and drivers are given for the overall sector, but not for all subsectors. A full description for those are provided in the NIR 2018.

(b) Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

23. Australia provided in the NC7 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The NC7 also contains a reference to the description of the national system provided in the report mandated by decision 2/CMP.8, submitted in 2016 (FCCC/IRR/2016/AUS) and in the NIR of the 2017 annual submission. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2016 annual submission of Australia.

(b) Assessment of adherence to the reporting guidelines

24. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

25. In the NC7 Australia provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2016 annual submission of Australia.

(b) Assessment of adherence to the reporting guidelines

26. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Information on policies and measures and institutional arrangements

1. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

27. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Australia committed to reducing its GHG emissions to 99.5 per cent of 1990 level. This is consistent with Australia's 2020 target to reduce emissions by 5 per cent below 2000 levels by 2020.

28. Implementation of the Kyoto Protocol by Australia is underpinned at the federal level by the ERF and its Safeguard Mechanism, the renewable energy target and the Equipment Energy Efficiency Program. In addition, state and territory governments have developed climate change policies for their regions. In July 2016, the Australian Government merged the national energy and environment portfolios to form the Department of the Environment and Energy to better integrate climate and energy policies. The overall responsibility for climate change policymaking lies at the national level with this Department of the Environment and Energy and a number of national institutions are involved in the implementation of the policy. The Council of Australian Governments established the Energy Council which is responsible for developing and implementing an integrated and coherent approach to national energy and mineral resources policy.

29. Australia has legislative arrangements and administrative procedures in place to make information publicly accessible, such as the obligation that legislation are published electronically in The Government Notices. The Australian Government makes publications accessible to the public through various websites⁴ (including publications on legislative arrangements and enforcement and administrative procedures) established pursuant to the implementation of the Kyoto Protocol.

30. Australia has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources, but only included general information on biodiversity in the NC.

(b) Assessment of adherence to the reporting guidelines

31. The ERT assessed the information reported in the NC7 of Australia and identified an issue relating to transparency. The finding is described in table 5.

Table 5

Findings on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol from the review of the seventh national communication of Australia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 38 Issue type: transparency Assessment: recommendation	General information on biodiversity is provided in the NC7, but without a clear reference to how this information relates to Article 3, paragraphs 3 and 4, of the Kyoto Protocol. During the review, in response to a question from the ERT, Australia acknowledged that biodiversity is an important element in the management of forests and in the conservation of coastal zones. The Australian state and territory governments have separate legislation and measures to conserve biodiversity and sustainably manage natural resources (Environment Protection and Biodiversity Conservation Act 1999). This includes the Native Vegetation Framework and natural resource management

⁴ See, for example, <https://www.australia.gov.au/about-government/publications>, <https://www.nla.gov.au/librariesaustralia/recent-australian-government-publications-govrap> and <http://www.environment.gov.au/about-us/publications>.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
		<p>plans implemented at the regional level. In addition, ERF projects provide important co-benefits for improved biodiversity.</p> <p>To increase transparency the ERT recommends that Australia report in the next NC explicit information on the national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the Reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

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

(a) Technical assessment of the reported information

32. Australia provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Australia reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

33. Australia provided information on a set of PaMs similar to those previously reported, with a few exceptions. Australia also provided information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. The BR3 made reference to the NC7 for details of changes in institutional, legal, administrative and procedural arrangements. These changes include the 2016 merger of the energy and environment portfolios to form the Department of the Environment and Energy, which is responsible for developing and implementing the national response to climate change.

34. Australia provides information in its NC7 on several international GHG mitigation targets and domestic energy targets, which are expected to have an impact on reducing the overall level of emissions. In addition to the 2020 target described below, Australia has a 2030 target to reduce emissions by 26–28 per cent below the 2005 level. Australia also has the LRET, which aims for 33,000 GWh from eligible renewable sources by 2020. The LRET and SRES, together, are expected to result in a share of at least 23.5 per cent for electricity generated by renewables by 2020. The NEPP aims to accelerate a 40 per cent improvement in energy productivity by 2030.

35. The ERT noted that Australia did not include in its NC7 a reference to its target under the second commitment period of the Kyoto Protocol. Australia confirmed during the review that its ratification of the Doha Amendment included the following target: “Australia has now committed to reducing its GHG emissions to 99.5 per cent of 1990 levels for the Kyoto Protocol’s second commitment period (2013–20). This is consistent with Australia’s 2020 target to reduce emissions by 5 per cent below 2000 levels by 2020.”

36. Australia gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts. Australia provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. Australia reported on how it periodically updates its PaMs to reduce greater levels of emissions and on the PaMs that have been discontinued since the previous submission.

37. Some PaMs are deferred to the state, territory and local levels. These include the targets included in the ACT Climate Change and Greenhouse Gas Reduction Act 2010 and the related 2012 Climate Change Strategy and Action Plan, the 2016 NSW Climate Change Policy Framework and numerous state-level policies, and a Northern Territory target of a 50 per cent share of renewable energy by 2030. Queensland has a 2017 Climate Change

Response and Climate Transition Strategy, Climate Transition Strategy, and Powering Queensland Plan, among other climate strategies. South Australia has a 2015–2050 Climate Change Strategy, while Tasmania released the Climate Action 21: Tasmania’s Climate Change Action Plan 2017–21 and has amended the Climate Change Act of 2008. Victoria has a Climate Change Act 2017 and is implementing a series of initiatives in the energy sector, while Western Australia is implementing a series of strategies and programmes to address climate change. Local councils have implemented additional measures, including participating in the Cities Power Partnership.

38. The key overarching cross-sectoral policy reported by Australia is the ERF and its Safeguard Mechanism. This is also the policy with the most significant mitigation effect. The ERF is made up of three interrelated elements: crediting emission reductions, purchasing emission reductions and safeguarding emission reductions. The ERF defines activities in a number of sectors that are eligible to receive carbon credits, and registers projects. The Australian Government has allocated 2.5 billion Australian dollars for the Clean Energy Regulator to purchase carbon credits through the ERF, using competitive processes. The Safeguard Mechanism places emission limits on the largest emitters in the country, and covers around 140 businesses. Other policies that are estimated to deliver significant emission reductions by 2020 are the RET scheme, which supports the deployment of both large- and small-scale renewable energy projects, and the NEPP, which aims to accelerate a 40 per cent improvement on Australia’s energy productivity by 2030. The NEPP will deliver emission reductions through: higher standards for equipment, appliances, light vehicles, and residential and commercial buildings; improved disclosure to purchasers or lessors of the energy performance of residential and commercial buildings; and improved uptake of innovative, more energy-efficient technologies through funding from ARENA and CEFC.

39. The NC7 includes information on a series of cross-cutting PaMs that include projects or actions in a number of sectors. A number of other PaMs were also reported in the energy sector, and a few in the transportation and industrial processes sectors. These included federal PaMs, as well as some PaMs under the authority of states, territories and local councils.

40. The ERT noted that no policies were reported separately for the LULUCF, agriculture or waste sectors. Given the significance of emissions and removals from these sectors to Australia’s national totals, and the significant decline in net LULUCF emissions reported in recent years, the ERT considers that providing additional information on federal, state/territory, and or local PaMs in this area would enhance the completeness of reporting on mitigation efforts and their results.

41. Australia highlighted the mitigation actions that are under development, such as the measures to address vehicle emissions through the Ministerial Forum on Vehicle Emissions, and an HFC management policy for the phase-down of HFC imports, complemented by measures to encourage regular system maintenance, including testing for leaks in installed equipment, to improve energy performance and reduce HFC emissions from leakages. These additional mitigation actions, and the adopted HFC management policy, reducing HFC imports by 85 per cent by 2036 will contribute to Australia’s efforts to attain its 2030 emission reduction target. Table 6 provides a summary of the reported information on the PaMs of Australia.

Table 6
Summary of information on policies and measures reported by Australia

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	ERF	21 825
	Safeguard Mechanism	NE
	National Carbon Offset Standard	NE

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Energy	Ministerial Forum on Vehicle Emissions	
Transport	Green Vehicle Guide	
Renewable energy	LRET	19 838
	SRES	NE
	Australian Renewable Energy Agency funding	NE
	Concentrated Solar Thermal	NE
Energy efficiency	NEPP	6 608
	National Energy Guarantee	NE
	Clean Energy Finance Corporation	NE ^a
IPPU	HFC management (imports)	0
	HFC management (leakage info)	NE
Agriculture	Not reported	NA
LULUCF	Not reported	NA
Waste	Not reported	NA

Note: The estimates of mitigation impact are estimates of emissions of CO₂ or CO₂ eq avoided in a given year as a result of the implementation of mitigation actions. The funded projects which CEFC will support are estimated to deliver 9 Mt CO₂ eq by 2020, but CEFC does not claim that this abatement occurs independent of complementary policies such as the renewable energy target.

42. Australia provided information in its submissions on the contracted emission reductions per project type under the ERF. The ERF is a significant component of Australia's efforts towards its 2020 target. The ERF has contracted a total emission reduction of 191.7 Mt CO₂ eq to date, from 438 projects across a variety of sectors. AUD 2.5 billion has been allocated to date to purchase carbon credits through the ERF. The ERT was unable to assess the accuracy of the estimates provided for the overall mitigation impact of the ERF in 2020 as it was not able to analyse in sufficient detail the annual projections of emission reductions expected for each contracted project.

43. Numerous other PaMs reported at the national, state, territory and local level may also make important contributions to mitigation efforts in 2020. Several of these, including the measures to reduce vehicle emissions through the Ministerial Forum on Vehicle Emissions, and some aspects of the HFC management policies, are not yet implemented. Other reported PaMs are under implementation, but do not have reported estimates of mitigation impacts for 2020. As estimates for these PaMs were not reported, it is not possible to assess their potential contribution to mitigation in 2020.

(b) Policies and measures in the energy sector

44. **Energy supply.** The CEFC is intended to increase the flow of finance into the clean energy sector by using debt and equity finance to promote investment in clean energy technologies. The CEFC has made investments of more than AUD 6 billion since 2013 for projects with a total value of more than AUD 19 billion. In 2016 the Australian Government created three new funds within the CEFC: the Sustainable Cities Investment Program to support the national Smart Cities Agenda; the Reef Funding Program providing up to AUD 1 billion over 10 years to clean energy programmes benefiting the Great Barrier Reef; and the Clean Energy Innovation Fund. This latter fund, managed by CEFC and ARENA includes AUD 200 million to support early stage and emerging clean energy technologies. More than AUD 43 million has been invested in seven projects addressing issues such as energy use

management devices, the conversion of medium-duty trucks and commercial vans to electric vehicles and the introduction of light-weight carbon fibre cars. While the mitigation impact of the CEFC is not estimated, the projects it supports are expected to achieve annual abatement of 9 Mt CO₂ eq in 2020. This abatement is not claimed independently of complementary policies such as the RET scheme.

45. The Australian Government released a Low Emissions Technology Roadmap in 2017. This Roadmap outlined four options or pathways to decarbonize the energy sector, and considered the possible mix of energy technologies to make a greater contribution to Australia's 2030 target. The Australian Government and private sector are contributing to several carbon capture and storage research, development and deployment activities. One of these, Chevron's Gorgon project in Western Australia, is expected to commence in 2018 and reduce emissions from the natural gas facility by 40 per cent each year through the injection of 3–4 Mt CO₂ eq into undersea storage. Australia is also a founding member of Mission Innovation, a global initiative to increase public investment in clean energy research and development in order to accelerate breakthroughs in clean energy technologies. The Australian Government has committed to double public expenditure on clean energy research and development from 2015 levels by 2020.

46. **Renewable energy sources.** Australia has put in place the RET scheme, which is expected to result in a share of at least 23.5 per cent for electricity from renewable sources in Australia by 2020. The scheme has two components: LRET and SRES. LRET, which aims for 33,000 GWh from eligible renewable sources by 2020, encourages investment in large-scale projects by obligating electricity retailers to buy and surrender a certain number of certificates to the Clean Energy Regulator each year. These certificates may be created by eligible large-scale renewable energy projects such as solar and wind farms, hydroelectricity and biomass power stations. LRET is expected to reduce 19,838 kt CO₂ eq emissions in 2020. SRES assists homeowners and small businesses with the costs of installing small-scale wind-, hydro- and solar-power systems. The scheme has helped households install more than 1.8 million solar photovoltaic systems and 1 million solar water heater systems. Its potential mitigation impacts have not been estimated separately.

47. The National Energy Guarantee, proposed in October 2017, requires electricity retailers to contract or invest in energy resources to supply an amount of dispatchable energy while also meeting a specified emission level for the electricity they buy. Each retailer determines how it will meet the requirements of the Guarantee. The Australian Government will determine a 2030 target for the National Electricity Market based on the country's international commitments, and use this to set the annual level of the Guarantee for individual retailers.

48. ARENA provides research, development and grant funding to improve the supply and affordability of renewable energy funding. It has committed over AUD 1 billion to 317 projects in areas along the commercialization pathway. The 2020 mitigation impact of ARENA is not estimated.

49. The Solar Communities programme provides AUD 5 million in funding for community groups to install rooftop solar panels, solar hot water heaters and collar-connected battery systems. The Food Rescue Charities programme provides an additional AUD 1.2 million for solar or efficient refrigeration systems. Australia has also committed up to AUD 110 million, if needed, in equity investment for a solar thermal project in Port Augusta. The mitigation impact of these programmes is not estimated.

50. **Energy efficiency.** The NEPP aims to accelerate a 40 per cent improvement in Australia's energy productivity by 2030. It is a national framework and initial energy economy-wide workplan that brings together national, state, territory and industry actions in a package of 34 measures designed to encourage more productive consumer energy choices and promote more productive consumer energy services. To date, the NEPP has, among other things: instigated a consultation on tighter energy efficiency standards under the Equipment Energy Efficiency programme (expected to deliver 45 Mt CO₂ eq by 2030); led to the expansion of the Commercial Building Disclosure programme that requires sellers and lessors to disclose energy efficiency information (expected to deliver 3.5 Mt CO₂ eq between

2015 and 2019); targeted industry training and tools to help support compliance with energy performance requirements; and engaged with CSIRO in creating an Energy Use Data Model to understand Australia's energy consumption. The NEPP is expected to achieve a mitigation impact of 6,608 kt CO₂ eq in 2020.

51. **Residential and commercial sectors.** Australia did not report separate information on the residential and commercial sectors, although some relevant activities are included under cross-cutting and energy PaMs including the ERF and the NEPP.

52. **Transport sector.** The Ministerial Forum on Vehicle Emissions coordinates the Government's approach to addressing emissions from motor vehicles. It is consulting on three potential measures: fuel efficiency standards for light-duty vehicles; strengthening noxious emissions standards; and improving fuel quality. A Green Vehicle Guide provides information on vehicle fuel efficiency and emissions to inform buyers, and the Government provides exemptions on some vehicle taxes to highly efficient luxury vehicles.

53. The NC7 includes information on how Australia promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. Australia supported the adoption of ICAO's Carbon Offsetting and Reduction Scheme, and has volunteered to participate in this scheme beginning in 2021. Australia also supports negotiations within the IMO to develop a strategy to reduce GHG emissions from international shipping.

54. **Industrial sector.** Australia did not report PaMs specific to the industrial sector in the NC7, although some relevant activities are included under cross-cutting and energy PaMs including the ERF and the NEPP.

(c) Policies and measures in other sectors

55. **Industrial processes.** The Australian Government announced in 2016 a phase-down of HFC imports. It expects to reduce HFC imports by 85 per cent below a baseline of 8,000 kt CO₂ eq by 2036. During the review Australia confirmed that no HFCs are produced domestically and also explained that this phase-down is expected to reduce emissions. The phase-down began on 1 January 2018, and was complemented by additional measures to reduce HFC emissions such as action to improve equipment maintenance to reduce HFC leaks and improve energy efficiency. Australia plans to use 25 per cent less HFCs than permitted under the Montreal Protocol over the period 2018–2036. The Montreal Protocol phase-down will see developed countries reducing HFC production and imports by 85 per cent below current levels by 2036, and developing countries taking on phase-down obligations.

56. **Agriculture.** Australia did not report PaMs specific to the agriculture sector in the NC7, although agriculture projects are included under the ERF. During the review Australia provided additional information on a 2017 Australia Food Waste Strategy, intended to halve food waste by 2030. Australia also noted that the CEFC may fund projects in the agricultural sector, including under the Reef Funding Program.

57. **LULUCF.** In the NC7, Australia did not report PaMs specific to the LULUCF sector in addition to the LULUCF projects included under the ERF. During the review, Australia further explained that the significant decline in LULUCF emissions in recent years may be attributed to a number of factors, including: the previous Carbon Farming Initiative (now replaced by the ERF), which provided an early start to many offset programmes in the sector; state- and territory-level policies regulating land clearing; and commodity prices.

58. **Waste management.** Australia did not report PaMs specific to the waste sector, although waste projects are included under the ERF. During the review, Australia provided additional information on the Meeting of Environment Ministers Statement on Recyclable Waste, which aims to increase recycling and increase the percentage of reusable, recyclable or biodegradable packaging. Australia also noted the Safeguard Mechanism applies to large landfill facilities.

(d) Minimization of adverse impacts in accordance with Article 2 and Article 3, paragraph 14, of the Kyoto Protocol

59. Australia reports in several places in the NC7 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 social, environmental and economic impacts on other Parties, especially developing country Parties.

60. Further information on how Australia strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2017 NIR. Australia reported on how it increases understanding of the positive and negative impacts of response measures. The reporting included information on how potential adverse impacts are identified and addressed, namely through participation in the UNFCCC Forum on the Impact of the Implementation of Response Measures, and through the provision of a range of assistance for countries seeking to implement low-emission development strategies.

(e) Assessment of adherence to the reporting guidelines

61. The ERT assessed the information reported in the NC7 of Australia and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 7.

Table 7

Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol from the review of the seventh national communication of Australia

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement ^a specified in paragraph 14 Issue type: completeness Assessment: encouragement	<p>The ERT noted that while a number of cross-cutting PaMs were reported in the NC7, no policies or measures were reported separately for the LULUCF, agriculture or waste sectors, and few were reported for transportation. Given the significance of emissions and removals from these sectors to Australia's national totals, and the significant declines in net LULUCF emissions reported in recent years, the ERT considers that providing additional information on federal, state/territory and local PaMs for these sectors would enhance the completeness of reporting the PaMs which have the most significant impact on GHG emissions and removals.</p> <p>During the review, Australia provided summary information on additional PaMs with mitigation impacts being implemented at the federal level, including the National Food Waste Strategy and measures included under the Meeting of Environment Ministers Statement on Recyclable Waste, as well as investments in bioenergy by ARENA and by CEFC. The Party added that state- and territory-level policies on land clearing, and the previous Carbon Farming Initiative, have been important in reducing emissions from the LULUCF sector. Several initiatives are also under way in the states and territories, and by the private sector, to enhance public transportation options and improve the penetration of low-emission vehicles.</p> <p>To enhance completeness the ERT encourages Australia to report on additional PaMs being undertaken at the federal, state/territory, or local levels. This is especially important in the LULUCF, agriculture, waste and transportation sectors.</p>
2	Reporting requirement ^a specified in paragraph 23 Issue type: transparency Assessment: encouragement	<p>The ERT noted that although Australia reported a number of PaMs in narrative format but did not provide a quantitative estimate of their impacts. The ERT further noted that the level of aggregation with which the expected 2020 mitigation impact of the ERF is reported makes it difficult to analyse the numbers provided.</p> <p>During the review, Australia noted that it is difficult to estimate the mitigation impact of many PaMs because, among other things, many PaMs are complementary and their attribution can be challenging. In response to the ERT request, Australia provided additional information on how it calculated 21,825 Mt CO₂ eq abatement cost estimated for 2020. This estimate was based on project-level annual schedules of projected mitigations provided by projects proponents contracted through the first five auctions, and projections of results for the sixth and future auctions.</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
3	Reporting requirement ^a specified in paragraph 20 Issue type: completeness Assessment: encouragement	<p>To enhance the transparency of reporting on PaMs, the ERT encourages Australia to include, as appropriate, estimates of mitigation impacts for additional PaMs at the local, regional and federal level or to clearly explain why this may not be possible due to its national circumstances. Transparency could also be improved by elaborating how the mitigation impact has been estimated, especially for complex cross-cutting PaMs such as ERF.</p> <p>The NC should describe the overall policy context, including any national targets for greenhouse gas mitigation. The ERT noted that Australia’s target under the second commitment period of the Kyoto Protocol is not referenced in its NC7.</p> <p>During the review, Australia confirmed during the review that its ratification of the Doha Amendment in 2016 included its target under the second commitment period of the Kyoto Protocol. Australia clarified that Australia’s KP target for the second commitment period to reduce its GHG emissions by 0.5 per cent by 2020 compared with the base-year (1990) level is consistent with Australia’s 2020 target to reduce emissions by 5 per cent below the 2000 level by 2020. (see para 36)</p> <p>The ERT encourages Australia to enhance the completeness of its reporting in the NC7 by including a reference to its target under the second commitment period of the Kyoto Protocol.</p>

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

^a Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

62. Australia reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Australia includes implemented and adopted PaMs. Projections are presented up to 2030; however, there are PaMs currently under discussion that are not yet included in the projections. It is expected that future PaMs currently under development will lead to a decrease in emissions after 2020.

63. Australia provided a definition of its WEM scenario, namely that the PaMs listed in NC7 table 4.1 as ‘implemented’ or ‘adopted’ have been included in the emission projections. Those PaMs are the ERF, the Safeguard Mechanism, LRET, SRES, the NEPP, the phase-down of HFCs, as well as measures introduced through the Australian Renewable Energy Agency and the Clean Energy Finance Corporation. For those PaMs, where Australia was able to isolate the effect of a policy for the year 2020, a mitigation estimate is provided in CTF table 3.

64. Projections are also presented on a gas-by-gas basis for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ for 1990–2030. NF₃ is reported as “NO” in Australia’s NIR and CRF tables. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

65. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals. Australia also reported on factors (e.g. increasing installation of solar panels) and measures affecting emissions for

each sector in the chapters on projections for each sector, as well as in the projections methodology report that was published separately.⁵

(b) Methodology, assumptions and changes since the previous submission

66. The methodology used for the preparation of the projections in the NC7 is different from that used for the preparation of the emission projections for the NC6, but the same as that used for the BR2. Australia reported supporting information further explaining the methodologies and the changes made since the NC6 and the BR2. For the NC6 Australia used a model comprising a combination of computable general equilibrium and partial equilibrium models and sector-specific models, which was the basis for the design of an economy-wide emission reduction mechanism. Projections for Australia's NC7 were based on largely the same kind of combination of top-down and bottom-up sectoral models as used for the BR2, but with some changes in assumptions.

67. During the review, Australia highlighted that Australia's emission projection models mostly estimate emissions in terms of CO₂ eq and do not produce separate estimates for each gas. To meet the NC reporting requirements Australia undertook a detailed allocation of emissions from all subsectors to each GHG. This allocation was based on Australia's emission projections for 2016 and was the basis of Australia's initial NC7 submission in December 2017. Australia explained that it is working on a way to include a gas-by-gas approach into the calculation of projections in order to provide more information on the drivers behind each gas and might apply this approach while preparing projections of the next submissions.

68. To prepare its projections, Australia relied on the underlying key assumptions that were presented in CTF table 5. Compared with the BR2, assumptions for population growth and exchange rates (AUD/USD) remained the same, but for the NC7 real GDP was used instead of "GDP growth", and labour cost was omitted. In addition, the following factors were taken into account: electricity generation (in TWh delivered), oil price (2016 AUD/barrel), the production of thermal and coking coal (run of mine, Mt), liquefied natural gas (Mt), iron ore, aluminium (kt), iron and steel (Mt), residential use of gas (PJ), commercial use of gas (PJ), beef cattle (million heads), dairy cattle (million heads) and solid waste disposal (kt). The ERT noted that transparency of the reported information increased considerably by Australia extending the list of factors used. The use of more factors also positively influences the accuracy of projections.

69. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections.

70. Australia provided information in CTF table 5 on assumptions and key variables. Information on methodologies, models and other approaches used in the preparation of the projection scenarios was provided in the narrative of NC7, where table 5.3 provides a summary of sectoral models, including the types and purposes of these models. Additional information was published shortly before the review week in the above-mentioned 2017 methodology report, which provides extensive information on the calculations used for each sector, the main assumptions and the PaMs that will affect emissions.

(c) Results of projections

71. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the assigned amount, as well as the emissions budget are presented in table 8 and figure 1 below.

⁵ <http://www.environment.gov.au/system/files/resources/eb62f30f-3e0f-4bfa-bb7a-c87818160fcf/files/2017-projections-methodology.pdf>.

Table 8
Summary of greenhouse gas emission projections for Australia

	GHG emissions (kt CO ₂ eq per year)	Changes in relation to base-year ^a level (%)	Changes in relation to 1990 level (%)
Kyoto Protocol base year (including LULUCF) ^b	566 786.41	NA	NA
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020) ^c	NA ^f	–0.5	–0.5
Assigned amount	4 511 619.83		
Quantified economy-wide emission reduction target under the Convention (base year 2000) ^d	NA ^f	–5.0	NA
Emissions budget 2013–2020 (under the Convention)	4 500 000		
Inventory data 1990 ^e	582 754.00	4.9	NA
Inventory data 2000 ^e	554 407.00	NA	–4.9
Inventory data 2015 ^e	537 850.52	–10.0	–7.2
WEM projections for 2020 ^f	554 133.00	–7.2	–4.6
WEM projections for 2030 ^f	573 947.00	–3.9	–0.9

Note: The projections are for GHG emissions with LULUCF, because LULUCF is included in the target.

^a “Base year” in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year (2000) used for that target.

^b The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/AUS. The review report on the initial report is available at http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/second_commitment_period_2013-2020/items/9499.php.

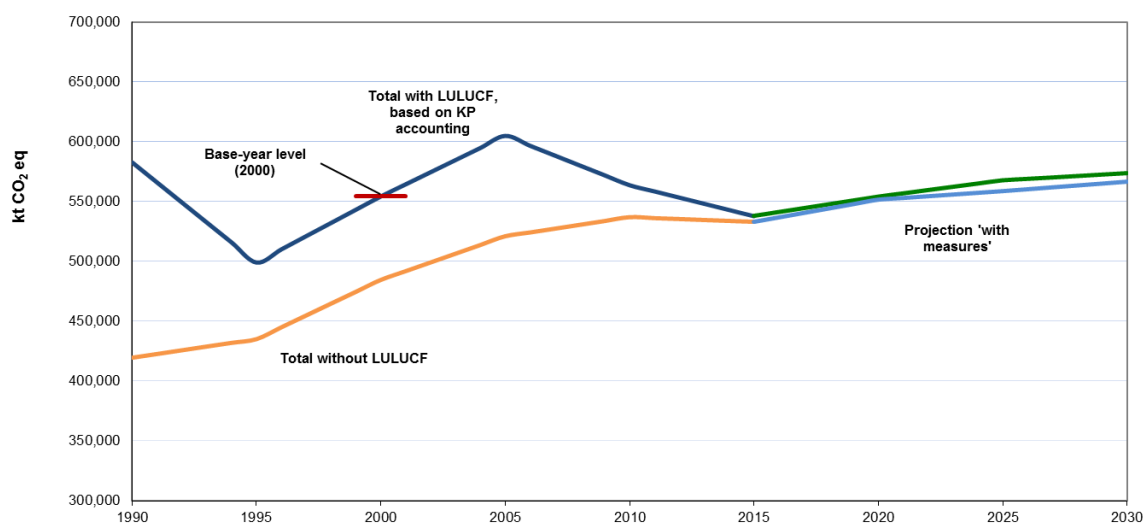
^c From Australia’s BR3 CTF table 6.

^d From Australia’s NC7 and/or BR3.

^e From CTF table 6(a).v4.0 based on the Kyoto Protocol accounting rules. Projections have been scaled to the 2015 national GHG inventory.

^f As Australia uses a linear target, this number is not applicable.

Greenhouse gas emission projections reported by Australia



Sources: (1) data for the years 1990–2015: Australia’s NC7; total GHG emissions including and excluding LULUCF; (2) data for the years 2016–2020/2030: Australia’s NC7 and BR3; total GHG emissions including and excluding LULUCF.

72. Australia's total GHG emissions with LULUCF are projected to be 554,133 and 573,947 kt CO₂ eq in 2020 and 2030, respectively, under the WEM scenario. Australia presented its progress against the target using an emissions budget approach, which is why the target is not depicted as 5 per cent below the base-year level in the figure 1 above. In order to calculate the progress towards the 2020 target, a trajectory is calculated by taking a linear decrease from 2010 to 2020, beginning from the level of the target under the first commitment period of the Kyoto Protocol, and finishing at 5 per cent below the 2000 level by 2020. Australia's progress is assessed as the difference in cumulative emissions between projected emissions and the target trajectory over the second commitment period of the Kyoto Protocol, 2013–2020 (see para. 36 above).

73. The 2020 projections as presented by the Party suggest that Australia expects to achieve its 2020 target under the Convention, taking into account elements of Kyoto Protocol accounting (see para. 86 below). For reference, projected emissions without LULUCF would be 13.8 per cent (2020) and 16.8 per cent (2030) above emissions from 2000. Based on its projections, Australia expects to overachieve its 2020 target by 166 Mt CO₂ eq. Australia's projections show that its net cumulative emissions from 2013 to 2020 are expected to be 166 Mt CO₂ eq less than the 2013–2020 emissions budget of 4,500 Mt, without carry-over of the units.

74. Australia presented the WEM scenario by sector for 2020 and 2030, as summarized in table 9.

Table 9

Summary of greenhouse gas emission projections for Australia presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)				Change (%)			
	1990	2000	2020	2030	1990 –2020	2000 –2020	1990 –2030	2000 –2030
Energy (not including transport)	232 531.00	289 888.00	331 454.00	329 366.00	42.5	14.3	41.6	13.6
Transport	61 395.00	74 139.00	101 485.00	111 887.00	65.3	36.9	82.2	50.9
Industry/industrial processes	26 081.00	26 768.00	34 307.00	32 482.00	31.5	28.2	24.5	21.3
Agriculture	80 179.00	78 625.00	74 756.00	82 407.00	-6.8	-4.9	2.8	4.8
LULUCF	162 910.00	69 565.00	2 590.00	7 596.00	-98.4	-96.3	-95.3	-89.1
Waste	19 658.00	15 421.00	9 541.00	10 208.00	-51.5	-38.1	-48.1	-33.8
Total GHG emissions with LULUCF	582 754.00	554 407.00	554 133.00	573 947.00	-4.9	0.0	-1.5	3.5
Total GHG emissions without LULUCF	419 843.00	484 842.00	551 543.00	566 350.00	31.4	13.8	34.9	16.8

Source: Australia's BR3 CTF table 6, version 4.0.

75. According to the projections reported for 2020 under the WEM scenario (1990–2020), the most significant emission reductions are expected to occur in the LULUCF sector, but also waste and agriculture, amounting to projected reductions of 160,320.00 kt CO₂ eq (–98.4 per cent), 10,117.00 kt CO₂ eq (–51.5 per cent) and 5,423.00 kt CO₂ eq (–6.8 per cent) between 1990 and 2020, respectively. The reduction in emissions from the LULUCF sector is due to an increase in the carbon sequestration from forests and plantations which offset a short-term rise in land clearance to support additional grazing land. Emissions from the LULUCF sector are projected to increase between 2015 and 2020 owing to further land clearing and increasing net emissions from other land categories. Emissions from the agriculture sector are projected to increase again between 2015 and 2030 owing to rising food demand and an assumed return to average seasonal conditions (in recent times, low rainfalls reduced agricultural activity). Pattern of emissions from the waste sector are expected to remain the same between 2020 and 2030. Projected emission reductions in the waste sector are due to an increase in recycling and CH₄ capture, and projects to avoid CH₄ by reducing the amount of waste in landfills.

76. The pattern of projected emissions reported for 2030 under the WEM scenario slightly changes, based on projections for the PaMs currently adopted. This leads to an increase of emissions between 2020 to 2030, meaning that total emissions in 2030 will be an increase of 19,814.00 kt CO₂ eq (3.6 per cent) with LULUCF or an increase of 14,807 kt CO₂ eq (2.7 per cent) without LULUCF. Total emissions with LULUCF in 2030 are projected to be 3.5 per cent lower than in the base year 2000, total emissions without LULUCF are projected to be 16.8 per cent above base year (2000) level. During the review week, Australia noted that there are currently a number of further PaMs under negotiation that have not yet been included into the calculation of projections until 2030.

77. Australia presented the WEM scenarios by gas for 2020 and 2030, as summarized in table 10.

Table 10

Summary of greenhouse gas emission projections for Australia presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)				Change (%)			
	1990	2000	2020	2030	1990–2020	2000–2020	1990–2030	2000–2030
CO ₂	424 507.00	404 571.00	400 776.00	410 971.00	–5.6	–0.9	–3.2	1.6
CH ₄	131 337.00	122 799.00	117 923.00	126 253.00	–10.2	–4.0	–3.9	2.8
N ₂ O	20 667.00	23 946.00	22 927.00	24 881.00	10.9	–4.3	20.4	3.9
HFCs	1 425.00	1 613.00	12 186.00	11 538.00	755.2	655.5	709.7	615.3
PFCs	4 607.00	1 287.00	182.00	172.00	–96.0	–85.9	–96.3	–86.6
SF ₆	211.00	191.00	139.00	132.00	–34.1	–27.2	–37.4	–30.9
NF ₃	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions with LULUCF	582 754.00	554 407.00	554 133.00	573 947.00	–4.9	0.0	–1.5	–3.5
Total GHG emissions without LULUCF	419 843.00	484 842.00	551 543.00	566 350.00	31.4	13.8	34.9	16.8

Source: Australia's BR3 CTF table 6, v 4.0. Numbers for CO₂, CH₄ and N₂O include emissions from LULUCF.

78. Emissions by gas follow the same logic as described above: emissions of CO₂, CH₄ and N₂O decrease due to the decline in emissions from the LULUCF sector as well as waste and agriculture, which offsets the increase of emissions from the energy sector. Emissions of HCFs are expected to decrease from 2018 onwards, owing to the implementation of the Kigali Amendment⁶ and reductions of HFCs imports into Australia. In addition, because HFCs are still in stock in equipment currently in use, the decrease in emissions through the measures on imports will be seen in emissions after 2030.

79. The ERT noted that Australia tracks total emissions in terms of CO₂ eq against its emission reduction target, rather than tracking individual gases. Once this is complete, the total in CO₂ eq is converted back into the different GHGs. This means that the numbers presented in NC7 will change in future publications, and do not accurately reflect the drivers behind emission reductions per gas.

80. For 2020 the most significant reductions are projected for CO₂ and CH₄ emissions: 23,731.00 kt CO₂ eq (–5.6 per cent) and 13,414.00 kt CO₂ eq (–10.2 per cent) between 1990 and 2020, respectively. Emissions from PFCs have decreased substantially between 2000 and 2010, owing to improvements in process control in aluminium production. For 2030 there are no significant reductions projected for PFC emissions.

81. In its NC7, Australia also provided information on the models used for each sector, the type and the sector used, and whether it was computed by other departments or consultants. The methodology report (see para. 66 above) provides information on the

⁶ Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 2016, available at https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-2-f&chapter=27&clang=en.

assumptions used and the PaMs taken into account for the calculation of projections of each sector.

82. The total effect of PaMs was presented only as a total and on a gas-by-gas basis. The ERT considers that transparency would be increased if the total effects of PaMs were presented on a sectoral basis, as well as by different gases. The biggest changes in the assumptions between the NC6 and the NC7 concern those sectors with the largest revisions in emissions since the NC6 and were made in order to account for the main drivers for changes in the electricity, agriculture and LULUCF sectors.

83. Emissions from electricity generation have been revised down since the NC6, largely owing to changes in assumptions and the effects of policy: lower electricity demand forecasts compared with the NC6 because of the impacts of policy-driven energy efficiency, higher than previously projected generation from rooftop solar photovoltaics as well as closures of coal power stations and of electricity-intensive industrial facilities.

84. Agriculture emission projections are lower in the NC7 owing to assumptions, specifically: weaker growth rates for livestock, particularly grazing beef cattle and sheep after revising expectations of recovery from the drought between 2001 and 2009. Emissions from this sector have also reduced since the NC6 because emissions from savannah burning have been moved from agriculture to the LULUCF sector.

85. Emissions from the LULUCF sector were revised downward primarily owing to inventory reporting improvements and changes to LULUCF accounting rules. Under the first commitment period of the Kyoto Protocol Australia only reported emissions and removals from activities under Article 3, paragraph 3, of the Kyoto Protocol, namely deforestation and afforestation/reforestation. Whereas under the second commitment period Australia began reporting emissions from forest management, cropland management, grazing land management and revegetation. Significant modelling improvements were undertaken to support this change; in particular, broadening the scope of forests included in the accounting (by including emissions from forest management) has reduced overall net LULUCF emissions.

86. The ERT noted that Australia updates its projections on an annual basis in a report published on the governmental website. The ERT commends Australia for this additional transparency.

(d) Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the NC7 of Australia and identified some areas for improvements to completeness and transparency as listed in table 11.

Table 11

Findings on greenhouse gas emission projections reported in the seventh national communication of Australia

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement ^a specified in paragraph 28 Issue type: completeness Assessment: encouragement	The ERT noted that Australia did not report a WOM or a WAM scenario. Australia stated in its NC7 that this was due to the fact that most PaMs are interlinked, which makes it difficult to assess the abatement capacity of any individual policy or measure. During the review week, Australia confirmed that WOM was not calculated due to the challenges faced to model a WOM scenario to determine the impact of measures, because the assumptions used may not have a high degree of confidence or consensus. Australia also stated that WAM scenario was not calculated as the PaMs currently under discussion might change during the process until adoption. The ERT noted that PaMs currently under discussion might contribute to a possible WAM scenario, which could then be used in negotiations for the adoption of PaMs. The ERT encourages Australia to report WOM and WAM projections in the next submission.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
2.	Reporting requirement ^a specified in paragraph 34 Issue type: transparency Assessment: encouragement	The projections are presented on a sectoral basis, generally using the same sectoral categories as those used in the reporting on mitigation actions. However, in the chapter on projections, the energy sector is divided into electricity and stationary combustion. During the review, Australia provided information on sectoral disaggregation of electricity and stationary combustion sectors. In order to increase transparency, the ERT encourages Australia to elaborate on the sectoral disaggregation of projections in the next submission.
2	Reporting requirement ^a specified in paragraph 30 Issue type: completeness Assessment: encouragement	The ERT noted that no sensitivity analysis was provided in the NC7. During the review, in response to the question raised by the ERT, Australia stated that this was due to time constraints, and that it is aiming to include a sensitivity analysis in the next NC submission. The ERT encourages Australia to include a sensitivity analysis in the next submission.
3.	Reporting requirement ^a specified in paragraph 35 Issue: completeness Assessment: encouragement	Australia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides. During the review week, Australia informed the ERT of its intention to work to improve its models in order to provide emission projections for direct GHGs. During the review Australia acknowledged the issue. The ERT encourages Australia to provide projections for indirect GHG emissions.
4	Reporting requirement ^a specified in paragraph 46 Issue type: completeness Assessment: encouragement	Australia did not discuss in its BR3 the sensitivity of the projections to underlying assumptions. During the review, Australia explained that this was due to time constraints, and that efforts are being undertaken to include this in the next submission. The ERT encourages Australia to discuss the sensitivity of the projections to underlying assumptions qualitatively and, where possible, quantitatively in its next BR submission.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

^a Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on Cs.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

88. In the NC7 Australia presented the estimated and expected total effect of implemented and adopted PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis), in 2020, 2025 and 2030.

89. Australia reported that the total estimated effect of its adopted and implemented PaMs is 48,000 kt CO₂ eq in 2020 and 54,000 kt CO₂ eq in 2030. According to the information reported in the NC7, abatement measures will account for the largest reduction in CO₂ emissions (41,000 out of 48,000 kt CO₂ eq) followed by CH₄ emissions. Please refer to table 12 for the impact of PaMs in 2020, and paragraph 39 for a description of the PaMs with the highest impact.

Table 12
Projected effects of Australia's implemented and adopted policies and measures by 2020 and 2030

Sector	2020		2030	
	Effect of implemented and adopted measures (kt CO ₂ eq)	Effect of planned measures (kt CO ₂ eq)	Effect of implemented and adopted measures (kt CO ₂ eq)	Effect of planned measures (kt CO ₂ eq)
CO ₂	41 000	NE	44 000	NE
CH ₄	8 000	NE	5 000	NE
N ₂ O	0	NE	0	NE
HFCs	0	NE	5 000	NE
PFCs	0	NE	0	NE
SF ₆	0	NE	0	NE
Total	48 000	NA	54 000	NA

Source: Australia's NC7.

Abbreviation: NE = Not estimated.

(b) Assessment of adherence to the reporting guidelines

90. The ERT assessed the information reported in the NC7 of Australia and identified an issue relating to completeness as described in table 13.

Table 13
Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication of Australia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 39 Issue type: completeness Assessment: encouragement	Australia presented the estimated and expected total effect of implemented and adopted PaMs. However, it did not present the total expected effect of planned PaMs. During the review, Australia explained that because of its annual submission of projections it is able to include PaMs in its projections as soon as they are adopted. Presenting expected effects of planned PaMs is difficult because details may change before adoption. The ERT encourages Australia to undertake further efforts to include planned PAMs into the projections, because this could also help decision-making.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

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

(a) Technical assessment of the reported information

91. In the NC7 Australia provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. The ERT noted that Australia may make use of the market-based mechanisms to meet its Kyoto Protocol target. Australia reported that is focusing on domestic action consistent with the principle of supplementarity; most greenhouse gas emission reductions will be realized domestically. In addition, Australia may use clean development mechanism units received through a voluntary Waste Industry Protocol and carry-over of AAUs from the first commitment period of the Kyoto Protocol.

(b) **Assessment of adherence to the reporting guidelines**

92. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

D. Provision of financial and technological support to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

1. Financial resources, including under Article 11 of the Kyoto Protocol

(a) **Technical assessment of the reported information**

93. Australia reported information on the provision of financial support required under the Convention. According to the “Joint Ministerial Foreword” of the NC7, the submitted NC7 is also for reporting under the Kyoto Protocol, and the Party further confirmed during the review that this part of the NC7 is also for reporting under the Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions.

94. Australia indicated what “new and additional” financial resources it has provided and clarified how it has determined such resources as being “new and additional” Australia’s definition is that the Party sources its climate finance from new and additional aid budget appropriations from the Australian Parliament’s annual budget process, therefore all annual aid appropriations related to climate support are considered new and additional.

95. Australia described how its resources address the adaptation and mitigation needs of developing country Parties generally by referring to the policy “Australian aid: promoting prosperity, reducing poverty, enhancing stability”, and especially through the Aid Investment Plans as clarified during the review. It also described how those resources assist developing country Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

96. Australia helps to minimize the economic and social impacts of response measures on developing countries by supporting their economic diversification and transition towards less polluting forms of energy, employment and growth, including the provision of targeted and coordinated technical assistance so that countries can effectively develop and implement robust climate and development plans in a holistic manner in line with their nationally determined contributions. Australia reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change in order to help them to meet the costs of adaptation to those adverse effects. From 2010-11 to 2015-16, Australia invested more than AUD 1 billion with the aim of assisting developing country Parties to reduce their emissions, build resilience and reduce vulnerability to climate change, with a focus on the Indo-Pacific region, a region that is highly vulnerable to the impacts of climate change. In 2015, Australia committed to spending a further AUD 1 billion on climate change assistance over five years, to 2020.

97. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Australia reported that its climate finance has been allocated on the basis of priority areas identified with partner countries, such as working closely with Pacific island countries to build resilience to the impacts of climate change with sustained and increased funding to sectors affected by climate change, such as fisheries, and disaster preparedness. Australia also reported that it prioritizes countries most vulnerable to climate change, with over two thirds of bilateral, regional and global programmes expected to benefit small island developing States and the least developed countries. Table 14 includes some of the information reported by Australia on its provision of financial support.

Table 14

Summary of information on provision of financial support by Australia in 2015–2016

(Millions of United States dollars)

Allocation channel of public financial support	Year of disbursement			
	2013	2014	2015	2016
Official development assistance ^a	NE	NE	3 489.34	3 277.52
Climate-specific contributions through multilateral channels, including ^b :	NE	NE	146.58	106.98
Global Environment Facility	NE	NE	9.70	9.78
GCF	NE	NE	63.27	46.42
Financial institutions, including regional development banks	NE	NE	52.97	47.21
United Nations bodies	NE	NE	4.18	3.58
Climate-specific contributions through bilateral, regional and other channels ^b	NE	NE	90.11	100.21

Note: NC7 provided information for years 2015–2016, while data for years 2013–2014 were not reported in the NC7.

^a Source: Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

^b Source: BR3 CTF tables.

98. Australia's climate support is tracked through the AidWorks system of the Department of Foreign Affairs and Trade. During the review, Australia explained to the ERT how this project-based AidWorks system works. There are four main modalities to public climate finance support: (1) core contributions to climate change related multilateral funds; (2) core contributions to climate change related multilateral development banks and United Nations institutions; (3) bilateral support where the investment is targeted at climate change mitigation or adaptation; and (4) other official flows related to climate change. These are tracked and Australia reported that it also makes efforts to work with international partners to improve methods for tracking leveraged private sector investment. However, Australia also indicated during the review that it is not yet in a position to confidently report quantitatively on this.

(b) Assessment of adherence to the reporting guidelines

99. The ERT assessed the information reported in the NC7 of Australia and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 15.

Table 15

Findings on financial resources, including information under Article 10 of the Kyoto Protocol from the review of the seventh national communication of Australia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement ^a specified in paragraph 53 Issue type: completeness Assessment: encouragement	Australia provided information on financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels for 2015 and 2016. This information was not provided for the reporting years since previous NC (2013-2014), as required by table 4 of the UNFCCC reporting guidelines for NC. No reference was made to BR2 for this information. The ERT encourage Australia to report on financial resources for the latest 3 -4 years since previous NC in the next NC.
2	Reporting requirement ^a specified in paragraph 51	In communicating information on what "new and additional" financial resources it has provided Australia reported information for years 2015-2016. The information was not provided for the reporting years since previous NC (2014), as required by

Issue type: completeness	table 3 of the UNFCCC reporting guidelines for NC. No reference was made to BR2 for this information.
Assessment: recommendation	The ERT recommends that Australia report on financial resources provided to GEF for 3 -4 years since previous NC in the next NC.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

^a Paragraph numbers listed under reporting requirement refer to the relevant paragraphs of the UNFCCC reporting guidelines on NCs.

2. Technology development and transfer, including information under Article 10 of the Kyoto Protocol

(a) Technical assessment of the reported information

100. Australia provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Australia provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of developing country Parties. For example, Australia reported and clarified during the review that it supported the International Savanna Fire Management project which enables developing country participants to benefit from a combination of Australian traditional indigenous knowledge with their local understanding of landscapes and climatic conditions to inform effective and locally based fire management practices.

101. The ERT noted that Australia reported on its PaMs as well as success stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. Australia reported that under the AUD 3 million Pacific Appliance Labelling and Standards Program, the Party is assisting several Pacific island countries and territories to implement standards and labelling regulations for appliances, which could reduce emissions by up to 2.2 Mt CO₂ eq, and save between USD 600 million and USD 900 million between 2011 and 2025.

102. Australia provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol. These were mainly through Australia's active engagement in a range of international technology-based partnerships and programmes aimed at accelerating the development and diffusion of climate-friendly technology. For example, Australia reported and further clarified during the review week that the Party co-chaired the Building Energy Efficiency Taskgroup under the Major Economies Forum, which produced the report *Opportunities for International Collaboration* highlighting opportunities for collaboration on building codes and standards, appliance standards and labels, and building component standards. The Major Economies Forum also contributed to the International Partnership for Energy Efficiency Cooperation's work on assisting countries, including developing countries, to develop and collaborate on building energy performance metrics.

(b) Assessment of adherence to the reporting guidelines

103. The ERT assessed the information reported in the NC7 of Australia and identified an issue relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 16.

Table 16

Findings on technology development and transfer, including information under Article 10 of the Kyoto Protocol from the review of the seventh national communication of Australia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
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1	Reporting requirement ^a specified in paragraph 54	Australia did not provide information on how it has encouraged the private sector to get involved in technology development and transfer to developing countries.
	Issue type: transparency	During the review, the Party provided further information that public financing is provided by Australia to create enabling environments for technology investment, development and transfer, which facilitated the participation of the private sector in technology development and transfer (e.g. through Mission Innovation programme), while Australia also held public-private round-table meetings between national ministers and senior executives from the private sector (e.g. through the Clean Energy Ministerial, to help ensure the organization's activities are informed by the needs of private sector actors).
	Assessment: encouragement	The ERT encourages Australia to provide such information in its next NC.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

^a Paragraph numbers listed under reporting requirement refer to the relevant paragraphs of the UNFCCC reporting guidelines on NCs.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

104. Since the NC6, Australia has developed a coherent adaptation framework that highlights the efforts of all parts of its society – all levels of government, business and the wider community. Australia has also provided a wide array of case studies in its NC7.

105. Australia's State of the Climate 2016 report indicates observations and climate modelling, painting a consistent picture of ongoing, long-term climate change interacting with underlying natural variability. In the NC7 Australia provided the required information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Australia provided a description of climate change vulnerability and impacts on coastal zones, cities and the built environment, agriculture, forestry and fisheries, water resources, natural ecosystems, health and well-being, and disaster risk management, and it also highlighted the adaptation response actions taken and planned at different levels of government.

106. Impetus has been given to addressing adaptation matters with the adoption of the National Climate Resilience and Adaptation Strategy, which identifies a set of principles to guide effective adaptation practice and resilience building, and outlines the Australian Government's vision for a climate-resilient future. Within that framework sector-specific policies cover: water resources, agriculture, forestry and fisheries and natural ecosystems; and disaster risk management. The strategy also supports better information and research for climate change adaptation through: the National Climate Change Adaptation Research Facility Adaptation Partnership; incorporating disaster and climate resilience in Australian Government decision-making; and the Australian Government Disaster and Climate Resilience Reference Group and the Climate Action 21 (2017) whose priority is to build climate resilience to enhance the State's capacity to withstand and recover from extreme weather events and better understand and manage the risks of a changing climate.

107. Each state/territory has its own overarching climate change adaptation policy. Examples include: ACT Climate Change Adaptation Strategy – Living with a Warming Climate; NSW Climate Change Policy Framework; Northern Territory – Climate Change Strategy (under development; to be finalized by mid-2018); Queensland Climate Adaptation Strategy; Prospering in a Changing Climate: A Climate Change Adaptation Framework for South Australia; Tasmanian Government – Climate Action 21; Victoria's Climate Change Adaptation Plan 2017–2020; and Western Australia – a recent stocktake of climate change actions and measures.

108. The participation of the Australian public in decision-making and action on climate change is enhanced by the collective efforts of the Australian state and territory governments, NGOs, special interested groups and research institutes. Initiatives to support public participation include the establishment of networks and forums, state and territory action plans and engagement forums, and the delivery of public and industry views to policymakers.

109. The Party reported in the NC7 and further clarified during the review that adaptation initiatives launched since the submission of the NC7 include: implementing priorities of the Australian Government Disaster and Climate Resilience Reference Group; the establishment of a National Resilience Taskforce within the Department of Home Affairs to lead national efforts to reduce the impacts of natural hazards on critical infrastructure, economy, cities and regions; the 2018–19 budget, providing AUD 6.1 million over three years to develop improved climate and extreme weather information to support decision-making and investment decisions in the energy sector; and a method to understand the impacts of storm events on beaches, released in April 2018 by Geoscience Australia and the Bushfire and Natural Hazards Cooperative Research Centre.

110. In 2016, the Australian Government established Innovation and Science Australia as an independent statutory body responsible for providing strategic whole-of-government advice on science, research and innovation matters. The Government also established an independent National Climate Science Advisory Committee to inform the future direction of Australia's climate science research.

111. During the review, the Party also specified that, since the submission of the NC7, Australia has instituted a slate of policies and research programmes. Most recent are: the 2016 National Research Infrastructure Roadmap, which outlines national research infrastructure required over the coming decade to ensure Australia's world class research system continues to improve productivity, create jobs, lift economic growth and support a healthy environment and increase research for marine, climate and Antarctic science; an investment of AUD 1.9 billion over 12 years from 2017–18 (AUD 393.3 million over five years) to implement the Research Infrastructure Investment Plan to drive the development of Australia's blue (i.e. ocean) economy; the Australian Antarctic Strategy and the 20 Year Action Plan (released in 2016), a spinoff from the Australian Antarctic Science Program through which the Australian Government is providing AUD 255 million over the next ten years to enhance Australia's Antarctic logistics and science capabilities; the Centre for Southern Hemisphere Oceans Research opened in May 2017 to focus on the role of the Southern Hemisphere oceans in the global climate; and a new Australian Research Council Centre of Excellence for Climate Extremes commenced in 2017 focused on understanding and prediction of climate extremes.

112. The National Environmental Science Program is a long-term commitment by the Australian Government to environment and climate research. The programme has funding of AUD 145 million up to 2021. It supports six themed research hubs, along with projects to address emerging environmental research needs that provide further direction to government agencies on enhancing preparedness for climate change. During the review, the Party provided information on climate science initiatives put in place since the submission of the NC7, for research infrastructure support, including: funding for computational infrastructure and climate observing systems; new funding for Antarctic and Southern Ocean science; funding to develop improved climate and extreme weather information to support decision-making and investment decisions in the energy sector to facilitate the Low Emissions Technology Roadmap; and the National Climate Science Advisory Committee has begun developing a national strategy.

113. Table 17 summarizes the information on vulnerability and adaptation to climate change presentence in the NC7 of Australia.”

Table 17

Summary of information on vulnerability and adaptation to climate change reported by Australia

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Coastal zones	<p><i>Vulnerability:</i> More than 85 per cent of Australians live within 50 km of a shoreline. Infrastructure and coastal assets within this distance from the shoreline will be vulnerable to sea level rise. Other vulnerabilities in coastal zones include coastal inundation and river flooding, increased storm surge flooding and coastal erosion, removal of sediment from beaches and loss of land, ocean acidification, warmer sea surface temperatures, increased frequency of bush fires, increased wind speeds, and increased frequency and intensity of heatwaves.</p> <p><i>Adaptation:</i> Climate change risk management planning in coastal zones, including guidance on risk-based land zoning, mandatory risk disclosure, setback provisions, conditional development approvals, use of protective structures, and changes to building codes and design standards. Detailed adaptation strategies have been formulated for some coastal areas, while structural protection has been developed for others. The Tasmanian Government has developed coastal hazard maps and has used sea level rise projections and planning allowances to develop coastal inundation and erosion maps. Reforms in 2016 to NSW coastal management legislation are improving planning for development and natural hazards along the NSW coastline.</p>
Cities and the built environment	<p><i>Vulnerability:</i> Sea level and temperature rises and extreme events (floods, heatwaves and bushfires) present challenges to assets and infrastructure, including commercial and residential buildings, energy, water and communications utilities, and transport systems.</p> <p><i>Adaptation:</i> A Critical Infrastructure Resilience Strategy outlines activities to be undertaken to build resilience within and among critical infrastructure sectors; a Natural Disaster Relief and Recovery Arrangements initiative provides funding to state and territory governments for certain relief and recovery assistance measures made available in response to natural disasters such as bushfires, flooding and cyclones.</p>
Agriculture	<p><i>Vulnerability:</i> Drought and extreme events will cause strain on the agriculture industry (decreased water availability, a reduction in livestock productivity and reproduction rates, changes in growing season, and disruption to agricultural yields).</p> <p><i>Adaptation:</i> In 2016 the Western Australian Government released <i>Climate-ready agriculture: A situation statement for Western Australia</i> and <i>Climate change: Impacts and adaptation for agriculture in Western Australia</i> to help farmers consider their climate risks and responses.</p>
Forestry and fisheries	<p><i>Vulnerability:</i> Increased frequency of extreme fire weather and drought will cause a decline in forest productivity and an increase in tree mortality. There is evidence of extensive southward movement of tropical fish and plankton species in south-east Australia, declines in abundance of temperate species and signs of the effect of ocean acidification on marine species with shells.</p> <p><i>Adaptation:</i> A National Fire Danger Rating System has been developed; a Natural Disaster Relief and Recovery Arrangements initiative provides funding to state and territory governments for certain relief and recovery assistance measures made available in response to natural disasters such as bushfires.</p>
Water Resources	<p><i>Vulnerability:</i> Almost four million people, inside and outside the Murray-Darling Basin will be vulnerable to a reduction in the availability of fresh water.</p> <p><i>Adaptation:</i> In 2017, the Government released Considering Climate Change and Extreme Events in Water Planning and Management module, a supporting document to the National Water Initiative Policy Guidelines for Water Planning and Management. The module describes a suite of options for managing climate risks, allowing water planners to develop an approach tailored to their local circumstances such as the type of water resource, and level of demand for water. As of 2017, all Victorian water corporations have developed 50-year Urban Water Strategies that examine the effect of climate change on water supply. To meet the challenge of future demand for water, the Australian Government has established long-term programmes in the Murray-Darling Basin, an important water source for Australia. In Perth, two desalination plants are operating. In addition, the Water Corporation has constructed a groundwater</p>

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Natural ecosystems	<p>replenishment scheme. Two new sources, including the Beenyup Groundwater Replenishment Scheme (2017–2019) are in development to provide a further 25 gigalitre per annum. Other climate change adaptation efforts include integrating water-sensitive urban design into strategic planning and incorporating future climate projections into water allocation plans.</p> <p><i>Vulnerability:</i> Natural systems such as the Great Barrier Reef, Tasmanian Wilderness World Heritage Area, mangroves in the Gulf of Carpentaria and alpine areas will be exposed to multiple impacts.</p> <p><i>Adaptation:</i> The ACT Nature Conservation Strategy 2013–23 sets priorities for conservation action, and the ACT Biosecurity Strategy 2015–2025 prioritizes threats to both biodiversity and productive landscapes. Australia plans to invest an estimated AUD 2 billion dollars in its Reef 2050 Long-Term Sustainability Plan which can be adapted to address particular challenges or changing priorities over time. The Tasmanian Government delivered an AUD 250,000 research project examining the impacts of a changing climate on bushfire risk in the Tasmanian Wilderness World Heritage Area and ways to improve Tasmania’s preparation for, and response to, bushfires. The NSW Government has developed a draft Climate Change Adaptation Strategy to assess climate change impacts in NSW alpine areas. Victoria’s biodiversity plan, Protecting Victoria’s Environment-Biodiversity 2037 (2017) sets out a long-term approach to protecting biodiversity and managing growing pressures caused by climate change and population growth.</p>
Health, well-being and disaster risk management	<p><i>Vulnerability:</i> Projected increase in the occurrence and severity of heatwaves, which could cause heat exhaustion, heat stroke and sometimes death.</p> <p><i>Adaptation:</i> Under the Victorian Public Health and Wellbeing Plan (2015–2019), climate change is considered in health and well-being plans. A pilot Adaptation Action Plan for the health and human services sector is currently under development. It includes a sector-wide risk analysis for built assets and services and community service organizations providing health and well-being services. It is expected to be completed in June 2018. Actions in the Adaptation Strategy build on existing government policies and programmes to foster healthy living and safety. The ACT Climate Change Adaptation Strategy – Living with a Warming Climate (2016–2020) build on existing government policies and programmes to foster healthy living and safety.</p>

114. Australia provided a detailed description of its climate finance commitment to help vulnerable nations reduce emissions, build resilience and reduce vulnerability to climate change. Australia also provided information on bilateral cooperation with developing countries on adaptation, such as: an environmental governance and climate change response programme in Indonesia to prevent smoke haze and emissions in the forestry and land use sectors; improving key roads at high risk of climate impacts in Vanuatu; support provided to Malaysia and the Philippines to manage their marine ecosystems and build their knowledge of marine ecosystem science; support provided to Tuvalu for an environment and climate change initiative that focused on improving agricultural food security and water management.

2. Assessment of adherence to the reporting guidelines

115. The ERT assessed the information reported in the NC7 of Australia and concluded that the information provide is complete and transparent and in adherence to the UNFCCC reporting guidelines on NCs.

F. Research and systematic observation

116. In contrast to the NC6, in the NC7 Australia has provided a structured section on major research programmes, including a change of title to reflect and capture the essence of general policy and funding of research and systematic observation as required by the UNFCCC Reporting guidelines on NCs; and the inclusion of case studies in the NC7.

1. Technical assessment of the reported information

117. Australia provided information on its general policy and funding relating to research and systematic observation on both domestic and international activities, including contributions to the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the IPCC. Australia did not provide information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.

118. During the review, Australia informed the ERT that the information provided by Australia on systematic observation on the Internet is free and advised that if additional work is needed on data a cost is charged. In its resubmission of its NC7 (15 May 2018), Australia included this clarification and provided a link to these data.

119. The Australian Government supports the development of mitigation and adaptation approaches including clean energy innovation across the spectrum of research and development, demonstration and deployment. In June 2017, the Australian Government released a Low Emissions Technology Roadmap that highlights opportunities to grow Australia's clean technology sector, to fast-track emission reductions and be part of future global supply chains. The roadmap considers the scope for new technology to reduce GHG emissions from the energy sector. ARENA promotes research, development and deployment grant funding to improve the affordability and increase the supply of renewable energy, and there is a AUD 200 million Clean Energy Innovation Fund. The Government also supports carbon capture and storage research, development and demonstration activities including the CarbonNet project. Key achievements thus far are: tighter energy standards for equipment; improved energy efficiency of residential buildings; expansion of the Commercial Building Disclosure programme; and robust energy-use data to understand energy consumption and influencing factors such as a change in climate, exponential growth in use of solar electricity, and increasing energy efficiency.

120. In addition, Australia has the LRET which aim to reduce emissions of GHGs in the electricity sector by encouraging the additional generation of electricity from renewable sources. CEFC supports early stage and emerging clean energy technologies across the economy, including the built environment, transport, manufacturing and agribusiness. The Government announced AUD 5 million for its International Climate Change Engagement Program in late 2017 to forge international collaborations between Australian scientists and industry experts and their international counterparts leading research, development, demonstration and deployment efforts overseas. The Program supports leading researchers and industry experts to participate in eligible International Energy Agency Technology Collaboration Programs and six of the seven global Mission Innovation Challenges which focus on accelerating renewable energy development.

121. Australia reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Australia's policies are aligned with those of the World Meteorological Organization. Planning is undertaken to ensure appropriate correlation between Australian and international needs and the data collected. The Bureau of Meteorology employs a comprehensive set of metadata practices, such as site and equipment documentation, overlap observations, instrument test reports and data management systems, to satisfy the Global Climate Observing System principles while keeping pace with changes in technology.

122. Australia also reported on challenges related to the maintenance of a consistent and comprehensive observation system. It cited several external factors that affect the integrity of long-term climate stations. The most important are changes in site exposure owing to natural environmental development and continuity of observations. The Bureau of Meteorology manages changes in site exposure where necessary and continues to transition manual stations to automated observations to support technology improvements and improved consistency. The World Meteorological Organization has established the concept and criteria for centennial observing stations which have a high-quality 100-year record of at least one climate variable.

123. Australia provided support for developing countries to establish and maintain observing systems and related data and monitoring systems to Pacific island countries to adapt to and mitigate the impacts of climate variability. A major part of Australia's assistance is the AUD 39 million Climate and Oceans Support Program in the Pacific 2012–2018 to build the capacity of government agencies and scientists in the islands to forecast and report on climate, tides and ocean, and determine how best to communicate this information to communities, businesses and governments. The programme built on research and systems established under the Pacific-Australia Climate Change Science and Adaptation Planning project that aimed at improving understanding of climate change in the Pacific island nations and Timor Leste, and which ran from 2011–2015, producing several major technical reports, including an update of a comprehensive report on climate change for the Pacific, as well as updated individual reports for 14 Pacific island countries and Timor Leste. The reports provide the most comprehensive assessment of historical and future climate change for the island nations published to date.

2. Assessment of adherence to the reporting guidelines

124. The ERT assessed the information reported in the NC7 of Australia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Education, training and public awareness

1. Technical assessment of the reported information

125. In the NC7 Australia provided information on its actions relating to education, training and public awareness at the domestic and international level. Australia provided information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials, resources or online information tools, the involvement of the public and NGOs and its participation in international activities.

126. Australia reports on its progress to increase the importance of sustainability in the education curriculum. In 2015 all education ministers endorsed the nationwide Australian curriculum. The Australian curriculum ensures consistency across states and territories in determining what students should know, understand and be able to do, regardless of where they go to school. Sustainability is one of three cross-curriculum priorities in the Australian curriculum, highlighting the importance the Australian Government places on ensuring young Australians develop the knowledge, skills, values and world views to contribute to more sustainable patterns of living. The Australian curriculum contains content relating to climate change and the impacts of GHG emissions.

127. The Australian Government is implementing Sustainable Futures, a teacher support programme developed by the CSIRO. Sustainable Futures encourages climate science and sustainability education in schools. Over 450 Australian schools (out of a total of 9,444 schools) are registered, with teachers receiving free access to digital teaching resources and professional development workshops. State governments are investing in digital education. Since the NC6, four state governments have developed programmes to increase the delivery of climate change and sustainability education in primary and secondary schools.

128. Since the NC6 submission, the Australian Government has created data sets and resources to help decision makers and communities understand and respond to the impacts of a change in climate. These include *The National Greenhouse Accounts* (a series of comprehensive reports and databases that estimate, and account for, Australia's GHG emissions on a national, state and territory basis), the *State of the Climate* (holding the latest monitoring, science and climate change projections to describe variability and changes in Australia's climate) and *State of the Environment* reports. A number of governmental user friendly tools and resources are developed, such as CoastAdapt (an online map-based tool and guidance material for coastal adaptation) and the "Your Home" and "Your Energy Savings"

websites, which are digital platforms tailored to encouraging household energy efficiency and sustainable living, while supporting climate change adaptation actions.

129. State and territory governments are promoting public awareness and participation in addressing climate change. Pledges, action plans and grant programmes, coupled with the provision of information, training and networking opportunities are helping to mobilize climate change action at the local level.

130. A broad range of research, environment, welfare and other NGOs promote public awareness and understanding of climate change through research, advocacy, education, training and media activities. These NGOs cover all sectors of the Australian economy, ranging from industry and business organizations to conservation, research and welfare organizations. In the NC7 Australia reported a selection of the ongoing actions including, among others, the green building programmes and the Learning to Adapt programme.

131. Australia actively partners with other nations and multilateral organizations to advance climate change knowledge, education and awareness. Australia shares its climate change expertise through research collaborations, scholarships and international partnerships, and as a provider of high-quality university education in climate change. During the review Australia informed the ERT that the total number of international students in higher education over the last five years was about 1.4 million. In 2017, the top five countries sending international students to Australia were: China, India, Brazil, Nepal and the Republic of Korea.

2. Assessment of adherence to the reporting guidelines

132. The ERT assessed the information reported in the NC7 of Australia and identified an issue relating to completeness, and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 18.

Table 18

Findings on education, training and public awareness from the review of the seventh national communication of Australia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	Australia provided a wealth of information and examples of public participation in actions and policy preparations on climate change. However it did not report on the extent of public participation in the preparation and/or domestic review of the national communication. The ERT encourages Australia, in its next NC to provide information on the extent of public participation in the preparation and/or domestic review of the national communication

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs.

III. Conclusions and recommendations

133. The ERT conducted a technical review of the information reported in the NC7 of Australia in accordance with the UNFCCC reporting guidelines on NCs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC7 provides an overview of the national climate policy of Australia.

134. The information provided in the NC7 includes most of the elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of information on PaMs in accordance with Article 2 of the Kyoto Protocol, legislative arrangements and enforcement and administrative procedures. 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 was provided by Australia in its 2017 annual submission.

135. Australia's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 30.7 per cent above its 1990 level, whereas total GHG emissions including LULUCF were 9.0 per cent below its 1990 level in 2016. Emissions are mostly driven by fossil fuel combustion for electricity generation (coal), transport and fugitive emissions from fuels, as well as emissions from the IPPU sector. The increase of emissions is offset by a reduction of emissions from the LULUCF sector, as well as from waste and agriculture, leading to an overall decrease of total emissions including LULUCF, or an overall increase of emissions for the total excluding LULUCF.

136. Australia is implementing a number of PaMs on energy and climate change. Among the key initiatives supporting Australia's climate change goals are the ERF and its Safeguard Mechanism, the LRET and SRES, the NEPP and a plan to phase down HFC imports by 85 per cent by 2036. The mitigation actions with the most significant reported mitigation impacts are the ERF, LRET and the NEPP. Additional PaMs are implemented by the federal, state, territory and local governments, as well as by the private sector.

137. Australia's total GHG emissions with LULUCF are projected to be 554,133 and 573,947 kt CO₂ eq in 2020 and 2030, respectively, under the WEM scenario. For reference, linearly projected emissions without LULUCF would be 13.8 per cent (2020) and 16.8 per cent (2030) above emissions from 2000. Based on its projections, Australia expects to overachieve its 2020 target by 166 Mt CO₂ eq.

138. Australia confirmed during the review that it retains its Kyoto Protocol target for the second commitment period of reducing its GHG emissions to 99.5 per cent of 1990 levels by 2020, and that this target is consistent with Australia's 2020 target. Based on this, it may be assumed that Australia can meet its Kyoto Protocol target for the second commitment period.

139. The NC7 contains information on how the Party's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Australia may use the Kyoto Protocol mechanisms to meet its Kyoto Protocol target, namely using both the carry-over of 127.7 Mt CO₂ eq of AAUs from the first commitment period of the Kyoto Protocol and 28.5 Mt CO₂ eq of CERs received through a voluntary Waste Industry Protocol.

140. Australia continued to provide climate financing to developing countries in line with its overarching aid policy and Aid Investment Plans developed in conjunction with developing country Parties. There is fluctuation in Australia's provision of climate-specific support to developing countries, although there is an increasing trend. The annual average support provided by Australia as reported in the NC7 increased by 36.2 per cent compared with the annual average as reported in the NC6, and its public financial support in 2015 and 2016 totalled USD 236.7 and 207.2 million per year, respectively. For those years reported in the NC7, Australia's support provided for adaptation action was 6.35 times higher on average than its support provided for mitigation, also, support that was regarded as cross-cutting and could not be confidently accounted for as being for either adaptation or mitigation. Almost all financial support went to cross-cutting projects, although some went to agriculture, forestry and infrastructure sectors. Australia participated in and supported various technology cooperation and transfer programmes, such as the Pacific Appliance Labelling and Standards Program, as well as promoted enhancement of endogenous technology and capacity (e.g. through the International Savanna Fire Management project), and strengthened the Pacific women's participation at the UNFCCC through capacity-building programmes.

141. Australia has responded with urgency and thoroughness to its State of the Climate 2016 report, which painted a consistent picture of ongoing, long-term climate change interacting with underlying natural variability, supported by case studies. The Party has developed a slate of PaMs at the state and territorial levels to adapt to the impacts of climate change. For adaptation in the forest sector, Australia created a country-specific National Fire Danger Rating System to help emergency managers in their decision-making processes and to integrate climate and energy with the support of public participation. In consideration of the health and well-being of its citizens, Victoria's state government is implementing a pilot Adaptation Action Plan for the health and human services sector, which includes a sector-

wide risk analysis for built assets and services and community service organizations providing health and well-being services. Australia has ongoing investments in climate science and data services to aid in good planning and hazards management in the Pacific and has been consistent in its multilateral contributions.

142. Australia continue to support research on extreme climate events, including fire weather. More recently, research has been directed to towards a Low Emissions Technology Roadmap, which highlights opportunities to grow Australia's clean technology sector. As of 2017, ARENA had committed around AUD 1billion to over 317 projects. Early stage and emerging clean energy technologies are funded through a AUD 200 million Clean Energy Innovation Fund. Investment in research infrastructure under the National Research Infrastructure Roadmap is a priority for Australia because it will increase capability in marine, climate and Antarctic science. Australia plans to invest AUD 1.9 billion over 12 years from 2017–18 in collaborative research infrastructure needed for climate science, such as ocean profiling floats and computing resources for climate modelling.

143. Australia provided information on its actions relating to education, training and public awareness at the domestic and international level. Australia provided, among other things, information on its progress to increase the importance of sustainability in the education curriculum, the Sustainable Futures, a teacher support programme encouraging climate science and sustainability education in schools. Australia also increased the data sets and resources to help decision makers and communities understand and respond to the impacts of a change in climate. Australia actively partners with other nations and multilateral organizations to advance climate change knowledge, education and awareness resulting in, among other things, there being about 1.4 million international students in higher education over the last five years, with a high rate of students from developing countries.

144. In the course of the review, the ERT formulated the following recommendations for Australia to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:⁷

145. To improve completeness of its reporting by communicating information on what "new and additional" financial resources to report on all 3-4 years since the previous NC (issue 2, table 15).

146. To improve transparency of its reporting by providing more explicit information on the national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources (see issue 1, table 5).

IV. Questions of implementation

147. During the review the ERT assessed the NC7, 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, transparency and adherence to the UNFCCC reporting guidelines on NCs. No question of implementation was raised by the ERT during the review.

⁷ The recommendations are given in full in the relevant sections of this report.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Australia. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php.

2018 GHG inventory submission of Australia. Available at <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018>.

BR3 of Australia. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

BR3 CTF tables of Australia. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

FCCC/SBSTA/2014/INF. Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention, available at: <https://unfccc.int/topics/mitigation/workstreams/pre-2020-ambition/compilation-of-economy-wide-emission-reduction-targets-to-be-implemented-by-parties-included-in-annex-i-to-the-convention>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf>.

“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 the information required under Article 7 of the Kyoto Protocol”. Annex to decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.]

“Guidelines for review under Article 8 of the Kyoto Protocol”. Annex to decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf>.

NC7 of Australia. Available at http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/10138.php.

Report on the individual review of the annual submission of Australia submitted in 2016. FCCC/ARR/2016/AUS. Available at <http://unfccc.int/resource/docs/2017/arr/aus.pdf>.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Australia. FCCC/IRR/2016/AUS. Available at <https://unfccc.int/sites/default/files/resource/docs/2017/irr/aus.pdf>.

Report of the technical review of the second biennial report of Australia.
FCCC/TRR.2/AUS. Available at <http://unfccc.int/resource/docs/2016/trr/aus.pdf>.

Report on the technical review of the sixth national communication of Australia.
FCCC/IDR.6/AUS. Available at <http://unfccc.int/resource/docs/2015/idr/aus06.pdf>.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to
decision 4/CMP.11. Available at
<http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to
decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Lyn Turner and Ms. Kate Sangster, Department of the Environment and Energy, including additional material. The following documents⁸ were provided by Australia:

OECD. Preliminary status of MDBs and other International Organisations’ reporting to the OECD/DAC, for 2016 flows. <http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/Imputed%20multilateral%20shares.xlsx>.

2017 Review of Climate Change Policies, December 2017, Department of Environment and Energy.

Methodology for the 2017 projections, available at
<https://www.environment.gov.au/system/files/resources/eb62f30f-3e0f-4bfa-bb7a-c87818160fcf/files/2017-projections-methodology.pdf>.

2017 Review of Climate Change Policies, December 2017, available at
<http://www.environment.gov.au/system/files/resources/18690271-59ac-43c8-ae1-92d930141f54/files/2017-review-of-climate-change-policies.pdf>.

¹ Reproduced as received from the Party.