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Report on the technical review of the fourth biennial report of Australia

Developed country Parties were requested by decision 2/CP.17 to submit their fourth biennial report to the secretariat by 1 January 2020. This report presents the results of the technical review of the fourth biennial report 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". The review took place from 16 to 20 March 2020 remotely.

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Contents

Abbreviations and acronyms

AR	Assessment Report of the Intergovernmental Panel on Climate Change
AUD	Australian dollars
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
DAC	Development Assistance Committee
DFAT	Department of Foreign Affairs and Trade of Australia
ERF	Emissions Reduction Fund of Australia
ERT	expert review team
FullCAM	Full Carbon Accounting Model
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
N_2O	nitrous oxide
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
SF_6	sulfur hexafluoride
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 centralized technical review of the BR4[1] of Australia. The review was organized 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 IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" (annex to decision 13/CP.20).

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

3. The review was conducted together with the review of five other Parties included in Annex I to the Convention from 16 to 20 March 2020 remotely[2] by the following team of nominated experts from the UNFCCC roster of experts: Parvana Babayeva (Azerbaijan), Souhila Bouilouta (Algeria), Hakima Chenak (Algeria), Kenel Delusca (Haiti), Ryan Deosaran (Trinidad and Tobago), Craig William Elvidge (New Zealand), Raul Jorge Garrido Vazquez (Cuba), Matej Gasperic (Slovenia), Liviu Gheorghe (Romania), Maria Ana Gonzalez Casartelli (Argentina), Yamikani Idriss (Malawi), Jean Claude Kabamba Lungenyi (Democratic Republic of the Congo), Christopher Manda (Malawi), Tendayi Marowa (Zimbabwe), Naoki Matsuo (Japan), Esther Mertens (Belgium), Detelina Petrova (Bulgaria), Mohan Poudel (Nepal), Janis Rekis (Latvia), Orlando Ernesto Rey Santos (Cuba), Kristina Saarinen (Finland), Mayuresh Sarang (Zimbabwe), Marina Shvangiradze (Georgia) and Robin White (Canada). Mr. Gasperic, Ms. Gonzalez Casartelli, Ms. Petrova, Mr. Rey Santos, Ms. Saarinen and Ms. Shvangiradze were the lead reviewers. The review was coordinated by Hajar Benmazhar, Veronica Colerio, Claudia do Valle Costa, Nalin Srivastava, Sevdalina Todorova and Sina Wartmann (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR4 of Australia in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR4 was submitted on 31 December 2019, before the deadline of 1 January 2020 mandated by decision 2/CP.17. The CTF tables were also submitted on 31 December 2019.

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 BR4 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1
Summary of completeness and transparency of mandatory information reported by Australia in its fourth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
GHG emissions and removals	Complete	Transparent	

[1] The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

[2] Owing to the circumstances related to the coronavirus disease 2019, the technical review of the BR4 submitted by Australia had to be conducted remotely.

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Mostly complete	Mostly transparent	Issues 1–2 in table 3
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1–3 in table 5 Issue 1 in table 7
Provision of support to developing country Parties	Mostly complete	Mostly transparent	Issues 1–2 and 5 in table 14

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

II. Technical review of the information reported in the fourth biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

7. Total GHG emissions[3] excluding emissions and removals from LULUCF increased by 31.8 per cent between 1990 and 2017, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 11.6 per cent over the same period, reflecting the substantial reduction in forest clearing for other land uses, the reduction in native forest harvesting and the increase in sequestration from expanding forest areas during this period. The increase in total GHG emissions excluding emissions and removals from LULUCF was underpinned by the increase in population and economic growth (see para. 8 below). Table 2 illustrates the emission trends by sector and by gas for Australia. Note that information in this paragraph and table 2 is based on Australia's 2019 annual submission, version 1.0, which has not yet been subject to review. All emission data in subsequent chapters are based on Australia's BR4 CTF tables unless otherwise noted. The emissions reported in the 2019 annual submission are the same as reported in CTF table 1.

Table 2
Greenhouse gas emissions by sector and by gas for Australia for 1990–2017

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2016*	*2017*	*1990–2017*	*2016–2017*	*1990*	*2017*
Sector									
1. Energy	294 010.18	364 291.34	420 136.76	432 094.82	435 648.63	48.2	–1.1	69.9	78.6
A1. Energy industries	143 099.58	192 159.28	225 754.79	219 929.53	218 064.26	52.4	2.5	34.0	39.4
A2. Manufacturing industries and construction	36 256.19	38 952.22	41 435.58	41 775.45	41 328.38	14.0	1.5	8.6	7.5
A3. Transport	61 394.56	74 127.58	88 777.53	96 353.69	98 731.78	60.8	2.4	14.6	17.8
A4. and A5. Other	16 027.39	18 857.78	21 800.33	25 303.40	25 683.41	60.2	–17.8	3.8	4.6
B. Fugitive emissions from fuels	37 232.46	40 194.48	42 368.54	48 732.75	51 840.81	39.2	6.4	8.9	9.4
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	26 031.43	26 683.68	35 645.61	32 995.17	33 686.46	29.4	2.1	6.2	6.1

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

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2016*	*2017*	*1990–2017*	*2016–2017*	*1990*	*2017*
3. Agriculture	80 247.70	78 382.35	66 279.92	69 273.94	73 003.95	–9.0	5.4	19.1	13.2
4. LULUCF	184 588.46	51 135.08	48 680.18	–16 341.23	–19 431.11	–110.5	18.9	NA	NA
5. Waste	20 026.01	15 661.25	15 212.96	12 407.84	11 787.52	–41.1	–5.0	4.8	2.1
6. Other[a]	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas[b]									
CO_2	278 424.38	350 194.58	406 425.94	413 157.39	417 041.28	49.8	0.9	66.2	75.3
CH_4	120 080.86	112 760.68	102 500.68	102 048.50	103 602.32	–13.7	1.5	28.6	18.7
N_2O	15 557.84	18 949.91	19 311.91	19 172.50	20 851.18	34.0	8.8	3.7	3.8
HFCs	1 424.68	1 613.95	8 610.66	11 982.60	12 252.94	760.0	2.3	0.3	2.2
PFCs	4 607.01	1 287.06	283.32	224.92	202.63	–95.6	–9.9	1.1	0.0
SF_6	220.56	212.43	142.74	185.85	176.22	–20.1	–5.2	0.1	0.0
NF_3	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	**420 315.32**	**485 018.62**	**537 275.25**	**546 771.76**	**554 126.56**	**31.8**	**1.3**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**604 903.78**	**536 153.69**	**585 955.43**	**530 430.53**	**534 695.45**	**–11.6**	**0.8**	**NA**	**NA**

Source: GHG emission data: Australia's 2019 annual submission, version 1.0.
[a] Emissions and removals reported under the sector other (sector 6) are not included in the total GHG emissions.
[b] Emissions by gas without LULUCF. The Party did not report indirect CO_2 emissions.

8. The increase in total emissions was driven mainly by factors such as the growth in emissions from the energy sector, attributable to stationary energy production, fugitive emissions and transport, and from the IPPU sector, attributable to HFCs in refrigeration and air-conditioning units, which was offset to some extent by decreases in emissions from the agriculture, LULUCF and waste sectors. The main driver of emissions in the energy sector was electricity generation from brown and black coal, although such emissions have decreased from their peak in 2008–2009 owing to an increase in the share of renewables in the energy mix and an increase in the use of natural gas to generate electricity. Emissions from road transport have also increased substantially since 1990 owing primarily to continued growth in diesel fuel consumption. The increase in fugitive emissions up until 2017 was driven mainly by coal mining and, from 2013, by an increase in liquefied natural gas production. The increase in emissions from the IPPU sector driven primarily by growth in HFC use was partially offset by declining emissions from other activities, including nitric acid and aluminium production.

9. The decrease in emissions from the agriculture sector was driven primarily by prolonged and widespread drought conditions in 2002–2012, which contributed to reductions in animal population, crop production, fertilizer use and the associated emissions. The decrease in emissions from the LULUCF sector was driven mainly by a fall in emissions from land clearing and the increase in forest cover from 1990. The decrease in emissions from the waste sector was driven by the increase in CH_4 recovery, which was offset, to some extent, by the increase in waste generation associated with population growth and industrial production.

10. In brief, Australia's national inventory arrangements were established in accordance with the guidelines for national systems (decision 19/CMP.1, annex, para. 12(a), and decision 3/CMP.11). The Australian Department of the Environment and Energy is the agency with overall responsibility for compiling the national inventory in accordance with the Australian Administrative Arrangements Order, including collecting activity data, estimating emissions, quality control, improvement planning, and preparing and submitting reports to the UNFCCC on behalf of the Australian Government. There have been no changes in these arrangements since the Party's BR3.

2. Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the BR4 of Australia and recognized that the reporting is complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

12. For Australia the Convention entered into force on 21 March 1994. Under the Convention Australia committed to reducing its GHG emissions by 5 per cent below the base-year (2000) level by 2020. The target includes all GHGs included in the "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", namely CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3. It also includes all Intergovernmental Panel on Climate Change sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Emissions and removals from the LULUCF sector are included in the target and are accounted using a net-net approach.

13. The emission budget approach adopted by Australia in accounting for its target sets the total volume of emissions permitted for 2013–2020. To calculate the emission budget, a trajectory is plotted by taking a linear decrease from 2010 to 2020. The emission budget represents cumulative emissions below the trajectory starting from the target level under the first commitment period of the Kyoto Protocol (8 per cent above the 1990 level) and ending at 5 per cent below the 2000 level over the 2013–2020 period. The estimated emission budget is 4,508 Mt CO_2 eq. Australia's progress towards the 2020 target is assessed as the difference in cumulative emissions between the projected emissions and the emission budget.

14. Under the Paris Agreement, Australia has committed to an economy-wide emission reduction target of 26–28 per cent below the 2005 level by 2030. To assess progress towards its 2030 target, it will compare the emission budget for the period with cumulative emissions for 2021–2030. A trajectory for the emission budget evaluation is calculated by assuming a linear decline from 2020 to 2030, starting from the 2020 target of 5 per cent below the 2000 level and ending at 26–28 per cent below the 2005 level in 2030.

2. Assessment of adherence to the reporting guidelines

15. The ERT assessed the information reported in the BR4 of Australia and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

Table 3
Findings on the assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target from the review of the fourth biennial report of Australia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 5 Issue type: completeness Assessment: recommendation	Australia did not mention in its BR4 (section 3.1) whether it includes use of market-based mechanisms towards achieving its target. Australia did not provide any information on the scale of possible contribution of market-based mechanisms in CTF tables 2(e)I and 2(e)II, or any explanation for not doing so in the BR4 or CTF tables, although Australia did report certified emission reductions or carry-over units in CTF table 2(e)I in its BR3. During the review, Australia explained that it included information on the use of market-based mechanisms in CTF table 2(e)I in its BR4 (appendix 1), and in the Excel file of CTF tables 2(e)I and 2(f), by inserting brackets next to each of the market-based mechanisms in the first column of CTF table 2(e)I and footnotes to CTF table 2(f). Australia also explained that it did not report information in CTF table 2(e)II because it does not anticipate using any other market-based mechanisms,

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		and maintained that its approach of not reporting information where it had none was consistent with that followed for previous BRs. Australia further explained that it did not surrender any units from market-based mechanisms in 2017–2018 and that it will report any relevant surrender of units in its BR5 when it completes its report on its progress towards attaining its 2020 target. The ERT noted that the footnotes referred to above relate to the information included in CTF table 2(f), which does not clearly specify whether Australia accounts for use of market-based mechanisms towards achieving its target for 2020. The ERT recommends that the Party provide information on its use of international market-based mechanisms towards achieving its target and report the possible scale of the contribution of each market-based mechanism in CTF tables 2(e)I and 2(e)II, or clarify why it did not provide such information in the BR or CTF tables.
2	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Australia reported in CTF table 2(d) that it uses an activity-based approach for calculating the contribution of LULUCF towards achieving its target. However, in CTF table 4(a)I, it indicated "other" rather than "activity-based". During the review, Australia explained that it calculated the contribution of LULUCF towards the target using a budget approach ("other") consistent with that used for all other non-LULUCF inventory sectors. It also explained that, while it uses the land classification system prescribed for the reporting of LULUCF under the Kyoto Protocol, it does not use the associated accounting rules (gross-net and reference-level accounting) to calculate the contribution of LULUCF to its target under the Convention. The ERT recommends that the Party report "other" instead of "activity-based" in CTF table 2(d) for the approach used to calculate the contribution of LULUCF.

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

C. Progress made towards achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

16. 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. It reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs.

17. Australia provided information on a set of PaMs similar to those previously reported, with a few exceptions. It indicated during the review that, although not reported in its BR4, there have been no changes since its previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target.

18. In its reporting on its PaMs, Australia provided the estimated emission reduction impacts for some of them. Where estimated impacts were not provided, the Party did not provide an explanation (see issue 3 in table 5).

19. Australia reported on its self-assessment of compliance with its emission reduction targets and national rules for taking action against non-compliance. The Party reported that the Clean Energy Regulator is an independent statutory authority established in 2012 by the Clean Energy Regulator Act 2011. It administers the legislative framework underpinning the Australian Government's approach to its target, including the ERF, the Renewable Energy Target, the National Greenhouse and Reporting Scheme and the Safeguard Mechanism. The Clean Energy Regulator monitors compliance with climate change laws, including the ERF, and assesses whether any education or enforcement action is necessary by collecting

information, conducting independent audits and undertaking inspections. It also has enforcement powers that include accepting enforceable undertakings from a regulated entity, issuing infringement notices and pursuing legal action for breaches of civil penalty provisions. The Climate Change Authority, an independent statutory agency established in 2012 by the Climate Change Authority Act 2011, conducts periodic reviews of the Carbon Credits (Carbon Farming Initiative) Act 2011 (Commonwealth) and the National Greenhouse and Energy Reporting Act 2007 together with their associated instruments.

20. The key overarching cross-sectoral policy reported by Australia is the ERF, a voluntary scheme that provides incentives for a range of organizations and individuals to adopt new practices and technologies to reduce their emissions. The Safeguard Mechanism complements the ERF by providing a framework for Australia's largest emitters to measure, report and manage their emissions to help Australia to meet its emission reduction target for 2020. Under the Climate Active Carbon Neutral Standard, the Government certifies organizations, products, services, events, buildings and precincts as carbon-neutral on the basis of the reporting and offsetting of emissions. Eligible offsets are listed in the Climate Active Carbon Neutral Standard. The mitigation effect of the Renewable Energy Target is the most significant. Other mitigation measures that have delivered significant emission reductions include the activities undertaken by the Australian Renewable Energy Agency, the agency primarily responsible for providing funding for the research, development, demonstration, deployment and commercialization of renewable energy and related technologies, and the Equipment Energy Efficiency programme.

21. Australia highlighted the mitigation actions that were under development at the time of submission of its BR4, such as the Technology Investment Roadmap and the National Hydrogen Strategy. The Technology Investment Roadmap will inform the long-term low GHG emission strategy that Australia will take to the United Nations Climate Change Conference in Glasgow. The National Hydrogen Strategy provides an overarching framework for the use of hydrogen over the next 10 years. The Party explained during the review that the Strategy has been completed and was endorsed by the Council of Australian Governments at the end of 2019 and its implementation has commenced. Table 4 provides a summary of the reported information on the PaMs of Australia.

Table 4
Summary of information on policies and measures reported by Australia

Sector	*Key PaMs*	*Estimate of mitigation impact in 2020 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	ERF (crediting and purchasing)	5 053.00
	Emission Reduction Mechanism (Safeguards)	NE
	Clean Energy Finance Corporation	7 320.00
	Carbon Capture and Storage Flagships programme	NE
	Climate Active Carbon Neutral certification	NE
Energy		
Transport	National Electric Vehicle Strategy	NE
Renewable energy	Renewable Energy Target	19 838.00
	Australian Renewable Energy Agency	1 420.00
Energy efficiency	Equipment Energy Efficiency programme	6 227.00
	National Construction Code	NE
	Nationwide House Energy Rating Scheme	NE
	Commercial Building Disclosure programme	381.00
IPPU	Phasing down production and import of HFCs	NE
Other	National Australian Built Environment Rating System	NE

Note: The estimates of mitigation impact are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

22. The ERF offers carbon credits to a range of actors, including businesses, community organizations, local councils and farmers, as an incentive to undertake approved emission reduction activities. Participants receive one Australian carbon credit unit for every tonne of emissions they sequester. More than 780 emission reduction projects are registered under the ERF, with over 470 of them contracted to deliver abatement. Since 2015, the Government has contracted over 190 Mt CO_2 eq abatement through the ERF. To be eligible for Australian carbon credit units under the ERF, emission reduction activities must generate genuine and additional abatement. Activities are measured, verified, reported and monitored using methods that are compliant with legislated offsets integrity standards.

(b) Policies and measures in the energy sector

23. **Energy efficiency.** The Equipment Energy Efficiency programme is a cross-jurisdictional programme through which the Australian Government, states and territories and the New Zealand Government collaborate to deliver a single, integrated programme on energy efficiency standards and energy labelling for equipment and appliances. On 1 October 2012 the Greenhouse and Energy Minimum Standards Act 2012 came into effect, creating a national framework for product energy efficiency in Australia. The BR4 indicated that 22 products are regulated under the Greenhouse and Energy Minimum Standards Act through minimum performance standards and energy rating labels. A new Zoned Energy Rating Label, which was introduced for air conditioners in 2019, provides consumers with better information about the expected energy use of air conditioners based on where they live.

24. **Energy supply and renewables.** The Renewable Energy Target is an Australian Government scheme that promotes generation of electricity from renewable sources by creating a guaranteed market for additional renewable energy through tradable certificates created by renewable energy generators (such as wind farms) and owners of small-scale renewable energy (e.g. photovoltaic) systems. It is a legislated scheme designed to reduce GHG emissions in the electricity sector by encouraging additional electricity generation from renewable sources, and is expected to increase the share of renewables to over 23 per cent of Australia's total electricity production by 2020. The Renewable Energy Target operates as two schemes: the Large-scale Renewable Energy Target promotes investment in power stations to achieve 33,000 GWh additional electricity generation by renewable energy sources by 2020, while the Small-scale Renewable Energy Scheme helps households, small business and community groups with the upfront installation cost of small-scale renewable energy technologies such as rooftop solar photovoltaics and solar hot water systems. By August 2019, Australia had built sufficient large-scale renewable capacity to meet its Large-scale Renewable Energy Target in 2020, with nearly a third of Australia's electricity needs expected to be met by renewable energy sources in the early 2020s. The Australian Renewable Energy Agency, a statutory authority established by the Australian Renewable Energy Agency Act 2011, provides research, development and deployment grants to enhance the supply and competitiveness of renewable energy sources in Australia. The Clean Energy Finance Corporation, a statutory authority established under the Clean Energy Finance Corporation Act 2012, provides support for energy efficiency, renewables and low-carbon energy projects through loans and equity investments.

25. **Residential and commercial sectors.** The commercial buildings sector accounts for nearly 25 per cent of Australia's overall electricity use and 10 per cent of its total emissions. The energy efficiency requirements for new housing and non-residential buildings, set out in Australia's National Construction Code, have been steadily expanded. Stringency has increased considerably (up to 30 per cent improvement) in 2019 for commercial buildings and further increases in stringency for residential buildings are to be introduced in 2022. The Commercial Building Disclosure programme, which makes the provision of energy efficiency information obligatory for commercial office space of 1,000 m^2 or more offered for sale or lease, is expected to deliver 381.00 kt CO_2 eq emission reductions in 2020. It has proved effective at motivating owners to improve the energy efficiency of poorly performing office buildings and has delivered AUD 86 million in net benefits over eight years. The voluntary component of the National Australian Built Environment Rating System, which underpins the Commercial Building Disclosure programme, is being expanded to include other building types. Under the Nationwide House Energy Rating Scheme, which provides the methodology for estimating and rating the potential thermal performance of residential

buildings on a scale of 0 to 10, approximately 80 per cent of new houses and apartments are currently rated each year.

26. **Transport sector.** The Climate Solutions Fund, which forms part of the Climate Solutions Package announced in February 2019, is the only substantial policy in this sector, where emissions have grown steadily. The package also includes support for the development of a national electric vehicle strategy, among other measures.

27. **Industrial sector.** While none of the reported PaMs were exclusively targeted at the industrial sector, many of the cross-sectoral policies, in particular the ERF and the Safeguard Mechanism referred to in paragraphs 20 and 22 above, encompass mitigation measures that will have an impact on the industrial sector, particularly those relating to energy efficiency, fuel switching and renewable energy.

(c) Policies and measures in other sectors

28. **Industrial processes.** The main measure in this sector is phasing down production and import of HFCs, which Australia commenced a year ahead of the timeline set out in the Montreal Protocol on Substances that Deplete the Ozone Layer. Australia is committed to keeping its volume of imported HFCs to 25 per cent below the threshold permitted under the Montreal Protocol, reducing emissions by 23 Mt CO_2 eq between 2018 and 2036. With a view to meeting these obligations, Australia has put in place end-use controls to ensure that only licensed businesses and technicians with the skills to minimize preventable emissions can access and use synthetic GHGs. It has also introduced mandatory product stewardship for refrigerants and imposed bans on disposable cylinders.

29. **Agriculture.** The Party did not report PaMs specifically for the agriculture sector even though the emissions from the sector are high and have followed an increasing trend since 2010. The BR4 mentions only that the portfolio of projects under the ERF includes those targeting agriculture and savannah burning, which are expected to deliver total emission reductions amounting to 18.1 Mt CO_2 eq.

30. **LULUCF.** The Party did not report PaMs specifically for the LULUCF sector. The BR4 mentions only that the portfolio of projects under the ERF includes those targeting vegetation, which are expected to deliver total emission reductions amounting to 125.7 Mt CO_2 eq.

31. **Waste management.** The Party did not report PaMs specifically for the waste sector. The BR4 mentions that the portfolio of projects under the ERF includes those targeting landfill and waste, which are expected to deliver total emission reductions amounting to 25.3 Mt CO_2 eq, and explains that many Australian states and territories have put in place PaMs targeting waste management that are aligned with broader environmental policies. For example, South Australia's waste strategy outlines its objectives, priorities and targets for waste management and resource recovery. It is renewed every five years and a new strategy is being developed for 2020–2025. South Australia is also developing a food waste strategy to divert more organic matter away from landfill, where it generates GHG (CH_4) emissions.

(d) Response measures

32. Australia reported on its assessment of the economic and social consequences of its response measures. The Party presented several initiatives aimed at minimizing adverse impacts. Australia's policy development process involves consultation and impact assessment. A final statement on considered impact assessments and a regulatory impact assessment are included in any regulations tabled before the Australian Parliament. Regulatory impact assessments cover all measures where climate mitigation occurs in the context of multiple objectives to build on co-benefits and manage trade-offs of mitigation activities where appropriate. One such example is under the ERF, where the Government considers the potential for adverse economic, social and environmental impacts of projects when developing emission reduction methods. Where possible, measures to mitigate adverse impacts are incorporated into the methods themselves.

(e) Assessment of adherence to the reporting guidelines

33. The ERT assessed the information reported in the BR4 of Australia and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5
Findings on mitigation actions and their effects from the review of the fourth biennial report of Australia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	In its BR4, Australia did not report all the PaMs that had been reported in its BR3. Of those PaMs reported in the BR3, the BR4 did not include the Ministerial Forum on Vehicle Emissions, while the Small-Scale Renewable Energy Scheme and the National Energy Productivity Plan were described in the BR4 but were not included in CTF table 3. During the review, Australia explained that the Ministerial Forum on Vehicle Emissions is still in operation but is not a policy; rather, it is a ministerial forum established to coordinate a whole-of-government approach to addressing vehicle emissions, including testing and reporting arrangements. Policies relating to the reduction of emissions from the transport sector are included throughout the BR4, including in the projections chapter. The ERT recommends that the Party include all the mitigation actions reported in the BR in CTF table 3 and clearly explain in its BR why any previously reported mitigation actions are not reported in the BR.
2	Reporting requirement specified in paragraph 7 Issue type: completeness Assessment: recommendation	The Party did not provide information on changes to its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target. During the review, Australia explained that it did not report on such changes because there had not been any since its BR3. The ERT recommends that Australia provide information on the changes to its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target, or explain that there had been no such changes since its previous BR.
3	Reporting requirement specified in CTF table 3 Issue type: completeness Assessment: recommendations	Australia did not provide estimates of the mitigation impacts of the following actions in CTF table 3: the ERF (safeguards); the National Construction Code; the Nationwide House Energy Rating Scheme; the National Australian Built Environment Rating System; Climate Active Carbon Neutral certification; or the Carbon Capture and Storage Flagships programme. Australia did not provide a clear explanation for the lack of estimates for these mitigation actions in its BR4 or CTF table 3. During the review, Australia explained that it had not provided estimates of the mitigation impacts of those actions in CTF table 3 because certain PaMs overlapped (e.g. the National Construction Code, the Commercial Building Disclosure programme and the Equipment Energy Efficiency programme), while others were informative (Nationwide House Energy Rating Scheme, National Australian Built Environment Rating System) or research and development based with unquantifiable mitigation impacts. The ERT recommends that Australia provide in the BR or CTF table 3 either estimates of the mitigation impacts of all reported measures or a clear explanation as to why this may not be possible due to its national circumstances. In particular, the Party may consider estimating the impacts of mitigation actions with potentially significant mitigation impacts such as the ERF (safeguards), phasing down HFCs and the National Construction Code.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs or to the CTF table number from the common tabular format for the "UNFCCC biennial reporting guidelines for developed country Parties". The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

34. For 2016, Australia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 546,771.76 kt CO_2 eq, which is 12.7 per cent above the 2000 level.

35. For 2017, Australia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 554,126.56 kt CO_2 eq, which is 14.2 per cent above the 2000 level.

36. Australia reported in CTF tables 4 and 4(a) and explained during the review that, in 2016 and 2017, the contributions of the LULUCF sector were –16,839.88 kt CO_2 eq and –23,285.66 kt CO_2 eq, respectively. Australia did not clarify in its BR4 whether it intends to use units from market-based mechanisms under the Kyoto Protocol. Australia reported in CTF table 4 and explained during the review that it did not use any units from market-based mechanisms in 2016 or 2017. Table 6 illustrates Australia's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6
Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Australia to achieve its target

Year	*Emissions excluding LULUCF (kt CO_2 eq)*	*Contribution of LULUCF (kt CO_2 eq)*	*Use of units from market-based mechanisms (kt CO_2 eq)*	*Net emissions including LULUCF and market-based mechanisms (kt CO_2 eq)*
2000	485 018.62	55 363.54	NA	540 382.16
2010	537 275.25	43 194.54	0	580 469.79
2011	538 280.61	19 729.54	0	558 010.15
2012	540 615.86	17 499.36	0	558 115.22
2013	530 433.52	7 405.37	0	537 838.89
2014	524 957.10	7 141.69	0	532 098.79
2015	535 173.67	–7 120.08	0	528 053.59
2016	546 771.76	–16 839.88	0	529 931.88
2017	554 126.56	–23 285.66	0	530 840.90
2020 target	NA	NA	NA	513 363.05

Sources: Australia's BR4 and CTF tables 2(a), 4, 4(a)I, 4(a)II, 4(b) and 6(a).

37. In assessing the Party's progress towards achieving the 2020 target, the ERT noted that Australia's emission reduction target under the Convention is 5 per cent below the 2000 level (see para. 12 above). The ERT noted that, in 2017, the contribution of LULUCF was –23,285.66 kt CO_2 eq and the use of market-based mechanisms accounted for 0.00 kt CO_2 eq, resulting in net emissions of 530,840.90 kt CO_2 eq. Australia's cumulative emissions for 2013–2017 were 2,658.76 Mt CO_2 eq compared with an emission budget of 4,508 Mt CO_2 eq for 2013–2020.

38. The ERT noted that, on the basis of Australia's cumulative emissions between 2013 and 2017 as well as its projected emissions for 2020 compared with its emission budget for 2013–2020 of 4,508 Mt CO_2 eq, Australia is making some progress towards its emission reduction target by implementing mitigation actions that are delivering some emission reductions and through the contribution of LULUCF (see para. 52 below). The ERT noted that the mitigation measures in a major sector such as electricity have been successful in reversing the long-term trend in emissions for that sector, which have now fallen by 10.4 per cent since reaching their peak in 2009. However, in other sectors, such as transport, emissions have continued to increase over time, reflecting strong increases in Australia's population and vehicle fleet.

(b) Assessment of adherence to the reporting guidelines

39. The ERT assessed the information reported in the BR4 of Australia and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 7.

Table 7
Findings on estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry from the review of the fourth biennial report of Australia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 10 Issue type: completeness Assessment: recommendation	Australia did not report the contribution of LULUCF for 2017 in CTF table 4, leaving the cell blank without any explanation. The Party also did not report the units from market-based mechanisms used in 2017–2018 in CTF table 4(b), leaving the table blank without any explanation. During the review Australia explained that the value of the contribution of LULUCF for 2017 is –23,285.66 kt CO_2 eq, which was provided in CTF table 4, annexed to the BR4. The Party further explained that it did not surrender any units from market-based mechanisms in 2017–2018, and thus did not use any units from market-based mechanisms in 2017–2018, and that it will report any relevant surrender of units in its BR5 when it completes its reporting on its achievement of the 2020 target. The ERT recommends that the Party report the contribution of the LULUCF sector for 2017 in CTF table 4 in accordance with the information reported in the BR and report the units from market-based mechanisms used in CTF table 4(b) or provide a transparent explanation in the BR or CTF table 4(b) for not reporting such information.

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

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

40. Australia reported updated projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The WEM scenario reported by Australia includes PaMs implemented and adopted until October 2019. The ERT noted that for both the historical GHG inventory data and the projections presented in CTF table 6, the LULUCF contribution to the total emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework.

41. Australia provided a definition of its WEM scenario, which includes PaMs adopted and implemented as at October 2019, as listed in CTF table 3. The BR4 mentions that the WEM scenario does not include PaMs currently under development, such as the National Electric Vehicle Strategy.

42. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 1990–2030. The projections provided in the BR4 are divided into the following sectors: energy (subdivided into electricity, direct combustion, transport and fugitive emissions), IPPU, agriculture, waste and LULUCF. They are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Australia reported on factors and activities affecting emissions for each sector and included a reference to a 2019 methodology report published separately.[4]

43. Australia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.

[4] See https://publications.industry.gov.au/publications/climate-change/system/files/resources/4aa/methodology-2019-projections.pdf.

44. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals.

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

45. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. Australia reported supporting information further explaining the methodologies and the changes made since the NC7 (see para. 48 below). For the projections, a combination of top-down and bottom-up sectoral models was used, largely the same as those used for the NC7. Australia used a market simulation model known as PLEXOS for the electricity sector[5] and its own purpose-built bottom-up models for direct combustion, fugitive emissions, IPPU, agriculture and waste sectors. The Party used the modelling framework FullCAM[6] for LULUCF and an economic partial equilibrium energy sector model for the transport sector. As inputs to sectoral models, Australia used estimates of activity based on publicly available data in combination with the most up-to-date emission factors. During the review, Australia explained that the models currently used to prepare projections for agriculture, waste and HFCs are able to distinguish by gas. Where the model outputs are in CO_2 eq, the emission projections cover CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 on the basis of the corresponding inventory estimates and taking into account any PaMs that have an impact on the emissions of specific gases. Australia indicated that it is continuing to improve models for estimating GHG emissions by gas for future emission projections.

46. To prepare its projections, Australia relied on key underlying assumptions relating to population, energy (oil) prices and economic development indicators (real gross domestic product (i.e. inflation adjusted)) together with assumptions on sector-specific production and other activity data. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. While the assumptions regarding population are nearly the same as those reported in the BR3, the annual growth rates for real gross domestic product and the oil price assumed for 2020–2030 are lower than the values given in the BR3. Among the sectoral factors, the annual growth rates in net electricity generation, coal production, commercial gas consumption, beef cattle, dairy cattle and solid waste disposal assumed for 2020–2030 reported in the BR4 are lower than those reported in the BR3. However, the annual growth rates reported in the BR4 for the production of liquefied natural gas, iron ore, aluminium, iron and steel and consumption of residential gas are higher than those reported in the BR3.

47. During the review, Australia provided information on important additional factors and activities, including on annual road transport activity (in billion km travelled) and vehicle stocks for 2020–2030, as well as information on model outputs including electricity generation by fuel. The ERT noted that the transparency of the reported information could be improved if Australia included in the BR and CTF tables the information provided during the review.

48. Australia provided information in the BR4 (section 5.6) on the changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used in the projection scenarios. The Party provided supporting documentation to explain the changes, which include improvements to the direct combustion and fugitive gas emission sectoral models used for generating more disaggregated emission projections. Australia reported in CTF table 5 the key variables and assumptions used in the preparation of the projection scenarios as well as summary information on factors and activities considered in the sectoral projections.

49. Australia also provided information on sensitivity analyses. Sensitivity analyses were conducted for a number of important assumptions, such as economic growth and penetration of new technology. To assess how the emission projections under the WEM scenario (baseline) are influenced by these factors, sensitivity analyses were performed for total GHG emissions with LULUCF for certain sectors for three different scenarios: low economic

[5] See https://www.reeem.org/plexos/.

[6] See https://publications.industry.gov.au/publications/climate-change/climate-change/climate-science-data/greenhouse-gas-measurement/land-sector.html.

growth, high economic growth and strong technology uptake. During the review, Australia clarified that sensitivity analyses were completed for all sectors except agriculture and LULUCF under the strong technology uptake scenario, and discussed the main sectoral drivers and key activity inputs and assumptions for each sector and sensitivity analysis. The projections under the low and high economic growth scenarios for all sectors except LULUCF were lower (by 1–20 per cent) and higher (by 1–13 per cent), respectively, for both 2020 and 2030 than under the WEM scenario. The projected emissions for all sectors except LULUCF under the strong technology uptake scenario were lower (by 0–18 per cent) than under the WEM scenario.

(c) Results of projections

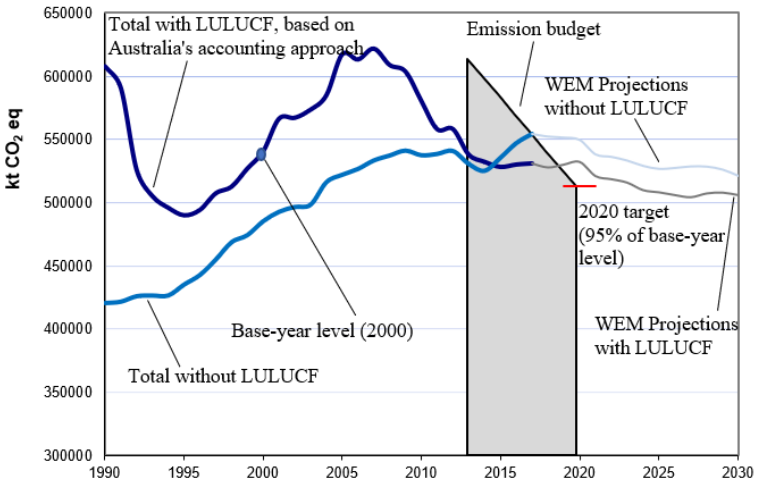
50. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 8 and figure 1.

Table 8
Summary of greenhouse gas emission projections for Australia

	GHG emissions (kt CO_2 eq per year)	*Change in relation to base-year level (%)*	*Change in relation to 1990 level (%)*
Quantified economy-wide emission reduction target under the Convention	513 363.05	–5.0	–15.6
Inventory data 2000 (base year)	540 382.16	NA	–11.1
Inventory data 2017	530 840.90	–1.8	–12.7
WEM projections for 2020	532 015.50	–1.5	–12.5
WEM projections for 2030	505 539.80	–6.4	–16.8

Source: Australia's BR4 and CTF tables 1, 4 and 6 and information provided by the Party during the review.
Note: The projections are for GHG emissions with LULUCF. For both historical inventory data and projections, the LULUCF contribution to the total GHG emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework.

Figure 1
Greenhouse gas emission projections reported by Australia



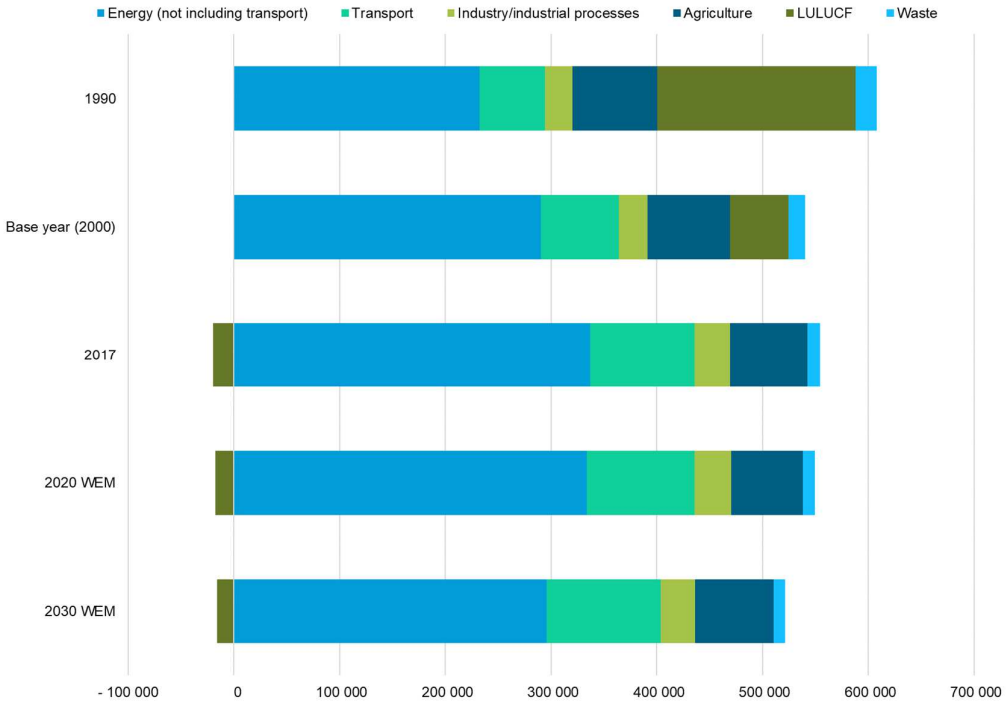
Source: Australia's BR4 and CTF tables 1 and 6 and information shared by the Party during the review. The LULUCF contribution to the total emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework in the case of both historical inventory data and projections.

51. Australia's total GHG emissions including LULUCF are projected to be 532,016.00 and 505,540.00 kt CO_2 eq in 2020 and 2030, respectively, under the WEM scenario, which is a decrease of 1.5 per cent and 6.4 per cent, respectively, below the 2000 level.

52. The WEM scenario projections suggest that Australia can be expected to achieve its 2020 target under the Convention without the use of market-based mechanisms, since cumulative emissions from 2013 to 2020 (4,243 Mt CO_2 eq) are projected to be lower than the emission budget of 4,508 Mt CO_2 eq (see para. 13 above). The ERT noted that a large part of the actual and expected emission reductions stem from the LULUCF sector because, as noted in paragraph 51 above, Australia's total GHG emissions excluding LULUCF in both 2020 and 2030 are projected to be well above the 2000 level excluding LULUCF.

53. Australia presented the WEM scenario by sector for 2020 and 2030, as summarized in figure 2 and table 9.

Figure 2
Greenhouse gas emission projections for Australia presented by sector



Source: Australia's BR4 CTF table 6 and information shared by the Party during the review. The LULUCF contribution to the total emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework in the case of both historical inventory data and projections.

Table 9
Summary of greenhouse gas emission projections for Australia presented by sector

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
Sector	*2000*	*2020 WEM*	*2030 WEM*	*2000–2020 WEM*	*2000–2030 WEM*
Energy (not including transport)	290 163.76	333 849.84	295 622.78	15.1	1.9
Transport	74 127.58	101 610.77	108 224.26	37.1	46.0
Industry/industrial processes	26 683.68	34 992.44	32 337.23	31.1	21.2
Agriculture	78 382.35	67 277.98	74 386.44	–14.2	–5.1
LULUCF	55 363.53	–17 434.34	–15 763.36	–131.5	–128.5
Waste	15 661.25	11 718.81	10 732.45	–25.2	–31.5
Other (specify)	–	–	–	–	–

Sector	GHG emissions and removals (kt CO_2 eq)			Change (%)	
	2000	2020 WEM	2030 WEM	2000–2020 WEM	2000–2030 WEM
Total GHG emissions including LULUCF	**540 382.16**	**532 015.50**	**505 539.80**	**–1.5**	**–6.4**

Source: Australia's BR4 CTF table 6 and information shared by the Party during the review. The LULUCF contribution to the total emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework in the case of both historical inventory data and projections.

54. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the LULUCF and agriculture sectors, amounting to projected reductions of 72,797.87 kt CO_2 eq (131.5 per cent) and 11,104.37 kt CO_2 eq (14.2 per cent), between 2000 and 2020, respectively. The pattern of projected emissions reported for 2030 remains the same, with emission reductions in the LULUCF and agriculture sectors of 71,126.89 kt CO_2 eq (128.5 per cent) and 3,995.91 kt CO_2 eq (5.1 per cent), respectively. Compared with the projections for 2020, which are 43,686.08 kt CO_2 eq (15.1 per cent) above the 2000 level, energy sector emissions are projected to increase by a smaller amount of 5,459.02 kt CO_2 eq (1.9 per cent). However, transport sector emissions are projected to continue to increase significantly by 2020 and 2030, by 27,483.19 kt CO_2 eq (37.1 per cent) and 34,096.68 kt CO_2 eq (46.0 per cent), respectively.

55. Australia presented the WEM scenario 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 (%)	
	2000	2020 WEM	2030 WEM	2000–2020 WEM	2000–2030 WEM
CO_2	389 107.21	390 106.14	360 943.81	0.3	–7.2
CH_4	125 331.10	109 590.31	113 518.04	–12.6	–9.4
N_2O	22 830.40	19 571.81	21 533.12	–14.3	–5.7
HFCs	1 613.95	1 246.98	9 134.72	665.0	466.0
PFCs	1 287.06	214.09	219.35	–83.4	–83.0
SF_6	212.43	186.18	190.76	–12.4	–9.9
NF_3	–	–	–	–	–
Total GHG emissions including LULUCF	**540 382.16**	**532 015.50**	**505 539.80**	**–1.5**	**–6.4**

Source: Australia's BR4 CTF table 6 and information shared by the Party during the review. The LULUCF contribution to the total emissions with LULUCF has been calculated using a net-net approach together with the Kyoto Protocol reporting framework in the case of both historical inventory data and projections.

56. For 2020, the most significant reductions are projected for CH_4, N_2O and PFC emissions: 15,740.79 kt CO_2 eq (12.6 per cent), 3,258.59 kt CO_2 eq (14.3 per cent) and 1,072.97 kt CO_2 eq (83.4 per cent), respectively.

57. The pattern of projected emissions reported for 2030 under the same scenario changes, with the most significant projected reductions in CO_2, CH_4 and N_2O emissions, of 28,163.40 kt CO_2 eq (7.2 per cent), 11,813.06 kt CO_2 eq (9.4 per cent) and 1,297.28 kt CO_2 eq (5.7 per cent), respectively, owing to significant reductions in the energy sector, which accounts for the largest share of the CO_2 emissions.

(d) Assessment of adherence to the reporting guidelines

58. The ERT assessed the information reported in the BR4 of Australia and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11
Findings on greenhouse gas emission projections reported in the fourth biennial report of Australia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 28 Issue type: completeness Assessment: encouragement	Australia did not report WOM or WAM projections in its BR4, although the BR4 does mention that some PaMs, such as the National Hydrogen Strategy and the National Electric Vehicle Strategy, are currently under development. During the review, Australia explained that, while it is currently focused on preparing WEM projections, it may consider preparing WOM and WAM projections in the future. It may prepare WAM projections once it has planned policies with sufficient detail to be modelled in emission projections (it considers that it is not currently feasible to estimate the effect of all PaMs owing to the uncertainty in estimating the impact of a large number of interlinked PaMs at the State and territory level). The ERT reiterates the encouragement from the previous review report for the Party to report WOM and WAM projections.
2	Reporting requirement specified in paragraph 35 Issue type: completeness Assessment: encouragement	Australia did not report projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides. During the review, Australia explained that for now it has prioritized use of resources for activities that improve the projection of direct GHG emissions. The ERT reiterates the encouragement from the previous review report for Australia to provide projections of indirect GHG emissions.
3	Reporting requirement specified in paragraph 43 Issue type: completeness Assessment: encouragement	In its BR4, the Party reported on the methodology used for preparing projections for each sector, briefly explaining the model and approach. However, the ERT noted that the BR4 did not include transparent information on the gases for which projections were derived using the specific models or approaches described. During the review, the Party provided information on the gases for which the specific models or approaches described in the BR4 were used to develop projections. The Party explained that the models currently used to prepare emission projections for agriculture, waste and HFCs are able to distinguish by gas. Where the model outputs are in CO_2 eq, the emission projections cover CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 on the basis of the corresponding inventory estimates and taking into account any policies that have an impact on the emissions of specific gases. Australia also explained that, in line with the BR4 reporting requirements, it provided a detailed breakdown of emissions from all sectors by gas and was continuing to improve models for estimating GHG emissions by gas for future emission projections. This includes enabling the Australian Greenhouse Emissions Information System to provide emission projection data, including emissions by gas, in addition to detailed GHG emissions inventory data. The ERT encourages Australia to provide information on the gases for which specific sectoral models or approaches were used.
4	Reporting requirement specified in paragraph 46 Issue type: transparency Assessment: encouragement	The Party reported sensitivity analyses for the WEM scenario (baseline) in its BR4 for total GHG emissions with LULUCF for three different scenarios: low economic growth, high economic growth and strong technology uptake. However, the ERT noted that the Party did not provide transparent information on the sectors for which sensitivity analyses were performed, the factors considered in the sensitivity analyses or the sensitivity of the sectoral projections to those factors. During the review, Australia elaborated on the sensitivity of the projections to underlying assumptions by specifying the sectors for which the sensitivity analyses were performed and providing tables with emission projections for 2020, 2025 and 2030 and for each sector and sensitivity scenario. The Party referred to the main drivers for the different sensitivity scenarios, providing a summary of the key activity inputs and assumptions for each sector and scenario. The Party further explained that it would provide further information on sensitivity analyses of the emissions projections in future BRs. The ERT encourages Australia to provide qualitative, and where possible quantitative, information on the sensitivity of the projections to underlying assumptions in its next BR, namely by providing transparent information on the

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		sectors for which sensitivity analyses were performed and the sensitivity of sectoral projections to the factors considered, and quantitative information on the factors characterizing the sensitivity scenarios.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on NCs and on BRs.

D. Provision of financial, technological and capacity-building support to developing country Parties

Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

59. In its BR4, Australia reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

60. Australia provided details on how the support it has provided is "new and additional", including how it has determined resources as being "new and additional". Australia's definition is support sourced from new and additional aid budget appropriations and allocations passed by the Australian Parliament on an annual basis. The Party applies this definition to determine resources allocated for climate change as "new and additional".

61. Australia reported the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support as a priority area. According to the information provided in the BR4, the tracking of climate change effects for bilateral, regional and global programmes is based on OECD DAC guidance (the Rio markers) and is managed domestically by the aid management system (Aidworks) of DFAT. This includes climate change markers based on the Rio markers for adaptation and mitigation. The level of climate change allocations in each programme is also tracked.

62. The BR4 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked; however, it does not include information on changes to the national approach because the Party did not make any such changes. Australia also did not include information on how it has refined its approach to tracking climate support and methodologies compared with what was reported in its NC7.

63. Australia described the methodology and underlying assumptions used for collecting and reporting information on financial support, including underlying assumptions, guidelines, eligibility criteria and indicators. The methodology used for preparing information on international climate support is based on OECD DAC guidance and the Rio markers. The same principles apply to the domestic monitoring system, Aidworks. Australia tracks its official development assistance through Aidworks together with databases for the Australia Awards, Australian Volunteers and Australian non-governmental organization cooperation programmes. Australia counts a percentage of its core contributions to multilateral development organizations according to the imputed shares calculated by the OECD DAC. For bilateral, regional and global programmes Australia assesses each activity on the basis of the OECD DAC guidance, to determine if it has an explicit climate change objective and whether that is a primary or secondary objective.

64. In its BR4, Australia reported on its priorities in providing financial, technological and capacity-building support. In particular, it recognizes the need for further integration of climate change adaptation and disaster risk reduction in sustainable development and a stronger engagement of the private sector. Australia's support through bilateral, regional and other channels in 2017–2018 prioritized adaptation activities, which accounted for 74 per cent of support, while only 18 per cent of support was allocated to mitigation activities. Australia considers the climate change vulnerability of a country or region as the key criterion

in providing bilateral, regional and global financial, technological or capacity-building support, and, as a consequence, focuses strongly on the neighbouring Pacific and Oceania region, small island developing States and the least developed countries. Australia also provides a limited amount of support to South-West and South-East Asia and to some other countries through global programmes and multilateral funds.

65. During the review, the Party provided additional information on its performance monitoring system, Enhancing the Accountability and Effectiveness of Australian Aid, which establishes an assessment system at all levels to measure the performance of Australia's aid programme, including measurement of the quality of individual aid investments. The Aid Quality Checks system is used for assessing investments against a number of quality criteria, including relevance, effectiveness, efficiency, monitoring and evaluation, sustainability, gender, risk management and safeguards, as well as alignment with key policy priorities (such as innovation, private sector engagement, climate change and disaster, and disability inclusion). DFAT assesses the performance of multilateral organizations separately. The ERT noted the usefulness of the information on performance indicators provided by the Party.

(b) Financial resources

66. Australia reported information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions.

67. Australia described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties in mitigating GHG emissions and adapting to the adverse effects of climate change, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

68. 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 through the development assistance programme, which is the country's main programme for foreign assistance. This is reflected in a foreign policy white paper released in 2017, in which climate change was recognized as one of the challenges in Australia's immediate region (i.e. the Pacific and Oceania region). Priority sectors for support, as identified in the white paper on the basis of the expertise available in Australia, include climate-resilient agriculture and infrastructure (mainly roads), water management and renewable energy (hydro and solar). Table 12 summarizes the information reported by Australia on its provision of financial support.

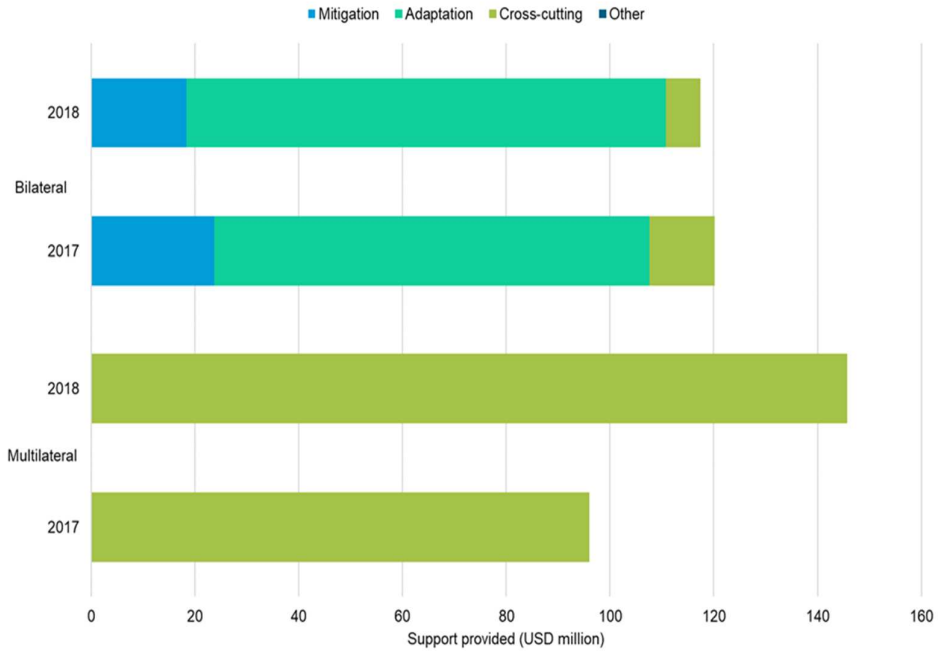
Table 12
Summary of information on provision of financial support by Australia in 2017–2018
(Millions of United States dollars)

Allocation channel of public financial support	*Year of disbursement*	
	2017	*2018*
Official development assistance	3 180.59	3 312.00
Total climate-specific contributions	216.21	260.07
Climate-specific contributions through multilateral channels, including:	96.00	142.64
Global Environment Facility	10.26	10.42
Green Climate Fund	27.62	16.23
Financial institutions, including regional development banks	53.52	108.53
United Nations bodies	4.60	7.46
Climate-specific contributions through bilateral, regional and other channels	120.21	117.43

Sources: BR4 CTF tables and *Australia's Official Development Assistance Statistical Summary, 2017–18* (Commonwealth of Australia, DFAT, 2018), with exchange rates applied as per the BR4.

69. Australia reported on its climate-specific public financial support, totalling USD 216.20 million in 2017 and USD 263.12 million in 2018. It has increased its contributions (as reported in its local currency) by 12.9 per cent since the BR3. With regard to future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Australia has committed to providing AUD 1 billion by 2020. During the reporting period, Australia placed a particular focus on the most vulnerable developing countries in the Pacific and Oceania region. During the review, the Party explained that it has pledged climate-specific public financial support for this region amounting to AUD 300 million and 500 million for 2016–2020 and 2020–2025, respectively. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 13.

Figure 3
Provision of financial support by Australia in 2017–2018



Source: Australia's BR4 CTF tables 7, 7(a) and 7(b) included in the textual part of the BR4.

Table 13
Summary of information on channels of financial support used in 2017–2018 by Australia
(Millions of United States dollars)

	Year of disbursement				*Share (%)*	
Allocation channel of public financial support	*2017*	*2018*	*Difference*	*Change (%)*	*2017*	*2018*
Detailed information by type of channel						
Multilateral channels						
Mitigation	–	–	–	–	–	–
Adaptation	–	–	–	–	–	–
Cross-cutting	96.00	145.69	49.70	51.8	100.0	100.0
Other	–	–	–	–	–	–
Total multilateral	**96.00**	**145.69**	**49.70**	**51.8**	**100.0**	**100.0**
Bilateral channels						
Mitigation	23.74	18.29	–5.45	–23.0	19.7	15.6
Adaptation	83.90	92.46	8.56	10.2	69.8	78.7
Cross-cutting	12.57	6.68	–5.89	–46.8	10.5	5.7
Other	–	–	–	–	–	–

Allocation channel of public financial support	Year of disbursement		Difference	Change (%)	Share (%)	
	2017	2018			2017	2018
Total bilateral	**120.21**	**117.43**	**–2.78**	**–2.3**	**100.0**	**100.0**
Total multilateral and bilateral	**216.20**	**263.12**	**46.92**	**21.7**	**100.0**	**100.0**

Source: Australia's BR4 CTF tables 7, 7(a) and 7(b) included in the textual part of the BR4.

70. The BR4 includes detailed information on the financial support provided through multilateral, bilateral and regional channels in 2017 and 2018. More specifically, Australia contributed through multilateral channels, as reported in the BR4 and in CTF table 7(a), USD 96.00 million and 145.69 million for 2017 and 2018, respectively. The contributions were made to specialized multilateral climate change funds, such as: the Global Environment Facility, the Green Climate Fund and multilateral financial institutions, including regional development banks.

71. The BR4 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral and regional channels (USD 120.21 million and 117.43 million in 2017 and 2018, respectively). The Party provides support through bilateral channels using a wide range of programmes, as identified in CTF table 7(b).

72. The BR4 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2017, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 11.0, 38.8, and 50.2 per cent, respectively. In addition, 44.4 per cent of the total public financial support was allocated through multilateral channels and 55.6 per cent through bilateral, regional and other channels. In 2018, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 6.9, 35.1 and 57.9 per cent, respectively. Furthermore, 55.3 per cent of the total public financial support was allocated through multilateral channels and 44.7 per cent through bilateral, regional and other channels. The largest contribution through multilateral channels was provided to multilateral financial institutions, including regional development banks. This amount has almost doubled, from USD 53.52 million in 2017 to USD 108.53 million in 2018.

73. The ERT noted that, in 2017, all financial contributions made through multilateral channels were allocated to cross-cutting projects, as reported in CTF table 7(a). The corresponding allocations for 2018 are also reported as cross-cutting. In 2017, a majority of financial contributions made through bilateral and regional channels were allocated to agriculture, energy, transport, water and sanitation, and disaster prevention and preparedness, as reported in CTF table 7(b). The corresponding allocations for 2018 were directed mostly to the same sectors.

74. CTF tables 7(a) and 7(b) include information on the types of financial instrument used for providing assistance to developing countries in 2017 and 2018, namely grants. Thus, the grants provided in 2017 and 2018 accounted for 100 per cent of total public financial support.

75. In the BR4 and during the review Australia clarified that it does not have a methodology for tracking and reporting the mobilization of private finance through public funds, but was engaged in discussions with OECD and multilateral development banks with a view to developing one. Australia reported on how it uses public funds to promote private sector financial support for developing countries to increase mitigation and adaptation efforts in developing countries by ensuring the maximum involvement of the local private sector, establishing an enabling environment and building local capacities for technology transfer. Public funds are provided primarily for building the capacity of the local private sector and for results-based awards. Australia explained during the review that it would contribute AUD 140 million to a new private sector mobilization climate fund specifically designed to scale up private sector investment in low-emission climate-resilient solutions for the Pacific and South-East Asia.

(c) Technology development and transfer

76. 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. It provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties, such as through the AgResults programme, which promotes the uptake of innovative technologies by smallholders on such a scale as to incentivize private sector engagement and investment to fund results-based awards. A pilot of this programme was launched in Viet Nam to reduce GHG emissions in the country while increasing rice yields through improved farm management.

77. The ERT took note of the information provided in CTF table 8 on recipient countries, target areas, measures and focus sectors of technology transfer programmes. The examples of technology transfer provided in CTF table 8 reflect Australia's focus on climate change assistance to the Pacific and Oceania region, notably Pacific island countries. Key target sectors include renewable energy (hydro and solar), climate-resilient agriculture, transport and infrastructure. In addition, Australia actively participates in international processes for the establishment of effective and efficient technology transfer with the active participation of the private sector. Australia's approach to technology transfer focuses on the development of local enabling environments and the facilitation of private sector involvement in the implementation process. Although all technology transfer activities in CTF table 8 are reported as public sector funded, each of them also involves the private sector in some capacity. During the review, Australia explained that it has a dedicated policy to encourage private sector involvement and investment in the technology transfer process through results-based grants and concessions.

78. Australia reported on its measures and activities, including on activities implemented since its NC7 and BR3, in relation to technology transfer. However, Australia did not clearly specify whether these activities were a success or failure (see issue 4 in table 14). Noteworthy projects relating to technology transfer include a programme to promote sustainable hydropower development in the Mekong region encompassing the development of regulatory and technical guidelines, revision of water laws and strategic environmental and social assessment; a programme to establish affordable and reliable solar energy in Papua New Guinea through private sector participation and matched contributions in the form of grants directly payable to private sector partners; and a programme for the construction and sustainable maintenance of resilient urban infrastructure in Port Vila, Vanuatu, which is being implemented through the Business Partnerships Platform.

(d) Capacity-building

79. In its BR4 and CTF table 9, Australia supplied information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. The Party described various measures and activities related to capacity-building support in textual and tabular format. These include the provision of support to Thailand for the preparation of its GHG inventory and third biennial update report, and the provision of assistance by the Department of the Environment and Energy to the Ministry of Environment and Forestry of Indonesia for improving the country's ability to measure, report and verify GHG emission trends, and for new technology for providing information on actions related to the country's nationally determined contribution.

80. Australia reported that it has supported climate-related capacity development activities relating to adaptation, mitigation, climate financing and cross-cutting sectors. Australia also reported on how it has responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership and priorities and a country-driven approach to delivery of support. Australia supports institutional, technical capacity-building and policy capacity-building of partner countries in the Pacific and Oceania region to address their domestic climate change priorities. Among the priorities are climate science and meteorology, measurement reporting and verification systems for emission reductions and management, energy, water, agriculture, infrastructure, adaptation, disaster preparedness and response. A growth and economic management

programme implemented in Kiribati has built the capacity of the Government to mainstream climate change in the national development plan. Moreover, Australia provided capacity-building support to utility companies in Tonga by training staff to install and maintain renewable energy systems on remote outer islands. Under the Climate and Oceans Support Programme in the Pacific, Australia is helping 14 countries to monitor, analyse and communicate information on the climate and ocean, including seasonal forecasts and sea-level measurements. Lastly, Australia is a partner in Pacific Women Climate Change Negotiators, a training programme launched in 2015 to strengthen the capacity of 45 women delegates to engage in the UNFCCC negotiation process.

(e) Assessment of adherence to the reporting guidelines

81. The ERT assessed the information reported in the BR4 of Australia and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 14.

Table 14
Findings on provision of support to developing country Parties from the review of the fourth biennial report of Australia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 17 Issue type: completeness Assessment: recommendation	The Party reported information on the financial support provided, committed or pledged for assistance in mitigating GHG emissions and adapting to the adverse effects of climate change. However, the Party did not provide information in its BR4 on the financial support provided to non-Annex I Parties to help them to adapt to any economic and social consequences of response measures or explain why it did not provide this information. During the review, Australia explained that, although it does not explicitly track support provided to non-Annex I Parties to help them to adapt to the economic and social consequences of response measures, its integrated approach to assistance programmes fostered such adaptation. Sustainable economic growth, poverty reduction and promotion of prosperity underpin Australia's entire development assistance programme, which includes mandatory safeguards for all aid investments, including under its bilateral climate finance programmes. These safeguards ensure that potential adverse social and environmental impacts are identified and addressed. The ERT recommends that the Party provide information on the financial support provided to assist non-Annex I Parties to adapt to any economic and social consequences of response measures or explain in its BR why it did not provide such information.
2	Reporting requirement specified in paragraph 18 Issue type: transparency Assessment: recommendation	The Party reported information on bilateral and multilateral financial support in CTF tables 7, 7(a) and 7(b) and in textual format in its BR4. However, while the Party reported on its mitigation activities in CTF tables 8 (provision of technology development and transfer support) and 9 (provision of capacity-building support), it did not report the corresponding financial support in CTF tables 7, 7(a) and 7(b) or provide relevant explanations in either the BR4 or the CTF tables. During the review, Australia explained that it reported the information on the climate finance provided for mitigation in textual format in the BR4 but did not report information on climate finance provided for mitigation separately in CTF tables 7, 7(a) and 7(b) because the BR4 CTF reporter software only allows one type of support to be selected for each line item, whereas the climate finance reported by Australia at different levels (bilateral, regional and global) may include many different activities providing adaptation, mitigation or cross-cutting support, or a combination of these (e.g. those listed in the additional information column in CTF table 7(b) for bilateral support). Australia therefore described programmes as cross-cutting where they comprised a mix of adaptation and mitigation activities. The ERT recommends that Australia report its financial support for mitigation activities separately in CTF tables 7, 7(a) and 7(b) or provide a transparent explanation in the BR or CTF tables 7, 7(a) and 7(b).

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
3	Reporting requirement specified in paragraph 19 Issue type: completeness Assessment: encouragement	In its BR4, the Party did not report on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties. The ERT noted that this issue was also raised in the previous review report. The BR4 mentions that Australia recognizes the need to strengthen and monitor climate contributions from the private sector and is working with international partners and local stakeholders to develop a methodology for tracking non-grant financing instruments and private sector mobilization. During the review, Australia explained that mobilizing private finance for climate mitigation and adaptation is an emerging focus for Australia and, as such, it would contribute AUD 140 million to a new private sector mobilization climate fund specifically designed to mobilize private sector investment in low-emission climate-resilient solutions for the Pacific and South-East Asia. DFAT, the body responsible for accounting and tracking Australia's climate finance, is currently developing its approach to reporting on private finance mobilized across Australia's international development programme. Australia referred to ongoing discussions with OECD, multilateral development banks and other development partners on methods for calculating and reporting on mobilized private finance. Australia hopes to report on mobilized private finance from 2020–2021 onward. The ERT reiterates the encouragement from the previous review report for the Party to report, to the extent possible, on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties.
4	Reporting requirement specified in paragraph 21 Issue type: transparency Assessment: encouragement	The Party did not provide information on whether the cases of technology transfer reported in its BR4 were characterized as success or failure stories. During the review, Australia explained that, although it had not undertaken a systematic review of successes and failures in relation to technology development and transfer, an assessment conducted by the Office of Development Effectiveness (an independent unit of DFAT that monitors the quality and assesses the impact of the Australian aid programme) covers success criteria or conditions in technology transfer processes, such as longer-term engagements (more than five years) that facilitate and support longer-term partnerships and relationships; use a development-first approach to climate and disaster risk management (rather than a hazard-first approach); mainstream climate considerations in existing development priorities and associated planning and decision-making; are implemented by partners with experience in using science to drive development outcomes and are explicitly linked to partner country needs; have explicit climate- or disaster-related outcomes; and are supported by appropriate technical expertise (mix of internal and external). The ERT encourages the Party to provide transparent information on the success or failure stories related to technology transfer by indicating whether the technology transfer cases described are characterized as success or failure stories.
5	Reporting requirement specified in paragraph 22 Issue type: transparency Assessment: recommendation	In its BR4, Australia did not provide the information on measures and activities related to technology transfer distinguishing between activities undertaken by the public and private sectors: rather, Australia provided information on the technology transfer related activities in which the private sector is involved together with the public sector. In addition, only public sources of funding providing full grants for technology transfer were reported in CTF table 8. During the review, Australia provided information on the local private sector development strategy, which forms part of the Party's technology transfer policy, the strategic objectives of which are to build better business and investment environments, support growth in specific markets and maximize the development impact of businesses. This strategy covers all sectors and is supported by a ministerial statement on engaging the private sector in aid and development, as well as an operational framework for private sector engagement in Australia's aid programme. The ERT recommends that for public funding sources where activities are undertaken by both the public and private sector Australia clearly describe which technology transfer activities are undertaken by the public and private sector.

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

III. Conclusions and recommendations

82. The ERT conducted a technical review of the information reported in the BR4 and CTF tables of Australia in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of Australia towards achieving its target; and the Party's provision of support to developing country Parties.

83. Australia's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 31.8 per cent above its 1990 level, whereas total GHG emissions including LULUCF were 11.6 per cent below its 1990 level, in 2017. Emission increases were driven by factors such as the growth in emissions from the energy sector, attributable to stationary energy production, fugitive emissions and transport, and from the IPPU sector, attributable to HFCs in refrigeration and air-conditioning units. However, the ERT noted that mitigation measures for electricity, which is a major source of emissions, have been successful in reversing the long-running trend in emissions for that sector (emissions had fallen by 10.4 per cent in 2017 since reaching their peak in 2009). In addition, emissions from the agriculture, LULUCF and waste sectors have decreased owing to a decrease in land clearing and an increase in forest cover and CH_4 recovery.

84. Under the Convention Australia committed to achieving a quantified economy-wide emission reduction target of 5 per cent below the 2000 level by 2020. The target covers CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3, expressed using GWP values from the AR4, and all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector are included in the target. Australia follows an emission budget approach to achieving its target under the Convention for 2020, which sets the total amount of emissions for 2013–2020, consistent with a straight-line trajectory beginning from Australia's previous target and finishing at 5 per cent below the 2000 level in 2020. The estimate of the emission budget is 4,508 Mt CO_2 eq. Australia did not surrender any units from market-based mechanisms in 2017–2018 and intends to report any relevant surrender of units in its BR5 when it completes its estimates of the emission budget used to report its achievement of the 2020 target.

85. Under the Paris Agreement, Australia has committed to an economy-wide emission reduction target of 26–28 per cent below the 2005 level by 2030. To assess progress towards its 2030 target, it will compare the emission budget for the period with cumulative emissions for 2021–2030.

86. In assessing the Party's progress towards achieving the 2020 target, the ERT noted that Australia's emission reduction target under the Convention, which is 5 per cent below the 2000 level by 2020 (see para. 12 above), takes the form of an emission budget for 2013–2020. In 2017 Australia's annual total GHG emissions including LULUCF were 530,840.90 kt CO_2 eq. Australia's cumulative emissions for 2013–2017 were 2,658.76 Mt CO_2 eq compared with an emission budget of 4,508 Mt CO_2 eq for 2013–2020.

87. The GHG emission projections provided by Australia in its BR4 correspond to the WEM scenario. Under this scenario, emissions are projected to be 1.5 per cent above the 2000 level by 2020. The WEM scenario projections suggest that Australia can be expected to achieve its 2020 target under the Convention without the use of market-based mechanisms because cumulative emissions from 2013 to 2020 are projected to be 4,243 Mt CO_2 eq, which is lower than the emission budget of 4,508 Mt CO_2 eq.

88. Australia's main policy framework relating to energy and climate change is the ERF, a voluntary scheme that provides incentives for a range of organizations and individuals to adopt new practices and technologies to reduce their emissions. The Safeguard Mechanism complements the ERF by providing a framework for Australia's largest emitters to measure, report and manage their emissions to help Australia meet its emission reduction target for 2020. The mitigation actions with the most significant impact are the activities undertaken by the Australian Renewable Energy Agency, which is the agency primarily responsible for

providing funding for the research, development, demonstration, deployment and commercialization of renewable energy and related technologies, and the Equipment Energy Efficiency programme. The ERT noted that the mitigation measures in a major sector such as electricity have been successful in reversing the long-term trend in emissions for that sector, which have decreased by 10.4 per cent since reaching their peak in 2009. However, in other major sectors such as transport, emissions have continued to increase over time, reflecting an increase in Australia's population and vehicle fleet.

89. Australia continues to provide climate financing to developing countries through the development assistance programme, which is the country's main programme for foreign assistance. It has increased its contributions by 12.9 per cent since the BR3; its public financial support in 2017 and 2018 totalled USD 216.21 million and 260.07 million per year, respectively. For those years, Australia provided more support for adaptation than for mitigation. Overall, the majority of financial support was cross-cutting. For contributions through bilateral, regional and other channels, the biggest share of financial support went to adaptation projects. A majority of the financial contributions made through bilateral and regional channels were allocated to agriculture, energy, transport, water and sanitation, and disaster prevention and preparedness.

90. Australia also continues to provide support for technology development and transfer and capacity-building, which focuses on developing climate-resilient agriculture and infrastructure, managing water resources and increasing the share of renewables in energy generation. Priority in technological support was given to projects that scale up private capital and involve the private sector in technology transfer to ensure the long-term sustainability of implemented programmes and projects targeting adaptation and mitigation activities in neighbouring countries of the Pacific and Oceania region. A notable programme is one that aims to establish affordable and reliable solar energy in Papua New Guinea through private sector participation and matched contributions in the form of grants directly payable to private sector partners.

91. Priority in providing capacity-building support was given to projects and programmes aimed at institutional, technical capacity-building and policy capacity-building of partner countries in the Pacific and Oceania region to address their domestic climate change priorities. Among the priorities are climate science and meteorology, measurement reporting and verification systems for emission reductions and management, energy, water, agriculture, infrastructure, adaptation, disaster preparedness and response. A good example of support for capacity-building is a growth and economic management programme implemented in Kiribati that has built the capacity of the Government to mainstream climate change in the national development plan.

92. In the course of the review, the ERT formulated the following recommendations for Australia to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:

(a) To improve the completeness of its reporting by:

(i) Providing information on its use of international market-based mechanisms towards achieving its target and reporting the possible scale of the contribution of each market-based mechanism in CTF tables 2(e)I and 2(e)II or clarifying why it did not provide such information in the BR or CTF tables (see issue 1 in table 3);

(ii) Providing information on the changes to its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target or explaining that there had been no such changes since its previous BR (see issue 2 in table 5);

(iii) Providing estimates of the mitigation impact of all measures in CTF table 3 or providing a clear explanation in the BR or CTF table 3 as to why this may not be possible due to its national circumstances (see issue 3 in table 5);

(iv) In relation to tracking progress towards achieving the target, reporting the contribution of the LULUCF sector for 2017 in CTF table 4 in accordance with the

information reported in the BR and reporting the units from market-based mechanisms used in CTF table 4(b) or providing a transparent explanation in the BR or CTF tables for not reporting such information (see issue 1 in table 7);

(v) Providing information on the financial support provided to assist non-Annex I Parties in adapting to any economic or social consequences of response measures, or explaining in its BR why it did not provide such information (see issue 1 in table 14);

(b) To improve the transparency of its reporting by:

(i) In relation to its assumptions, conditions and methodologies related to its quantified economy-wide emission reduction target, reporting "other" instead of "activity-based" in CTF table 2(d) for the approach used to calculate the contribution of LULUCF (see issue 2 in table 3);

(ii) Including all the mitigation actions reported in the BR in CTF table 3 and clearly explaining in the BR if any PaMs that were reported in previous BRs are no longer being implemented by Australia and thus not included in the BR (see issue 1 in table 5);

(iii) Reporting its financial support for mitigation activities separately in CTF tables 7, 7(a) and 7(b) or providing a transparent explanation in the BR or CTF tables 7 (see issue 2 in table 14);

(iv) For public funding sources where activities are undertaken by both the public and private sector, clearly describing which activities related to technology transfer are undertaken by the public and private sector.

Annex

Documents and information used during the review

A. Reference documents

2019 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-2019.

BR4 of Australia. Available at https://unfccc.int/BRs.

BR4 CTF tables of Australia. Available at https://unfccc.int/BRs.

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 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.

Report on the technical review of the BR3 of Australia. FCCC/TRR.3/AUS. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports--annex-i-parties/international-assessment-and-review/review-reports.

"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 Daniela Croce (Australian Department of the Environment and Energy), including additional material. The following document[1] was provided by Australia:

Commonwealth of Australia, DFAT. 2018. *Australia's Official Development Assistance, Statistical Summary, 2017-18*. Available at https://www.dfat.gov.au/sites/default/files/australias-official-development-assistance-statistical-summary-2017-18.pdf.

[1] Reproduced as received from the Party.