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Report on the technical review of the fourth biennial report of New Zealand

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 New Zealand, 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 26 to 30 October 2020 remotely.



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Abbreviations and acronyms

AAU	assigned amount unit
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
GCF	Green Climate Fund
GDP	gross domestic product
GHG	greenhouse gas
GRA	Global Research Alliance on Agricultural Greenhouse Gases
GWP	global warming potential
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
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 ₂ O	nitrous oxide
NZD	New Zealand dollar(s)
NZ ETS	New Zealand Emissions Trading Scheme
ODA	official development assistance
PaMs	policies and measures
PFC	perfluorocarbon
SADEM	Supply and Demand Energy Model
SF ₆	sulfur hexafluoride
SIDS	small island developing State(s)
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’
ZCA	Climate Change Response (Zero Carbon) Amendment Act 2019 (New Zealand)

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR4¹ of New Zealand. 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 New Zealand, 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 another Party included in Annex I to the Convention from 26 to 30 October 2020 remotely² by the following team of nominated experts from the UNFCCC roster of experts: Roberto Acosta Moreno (Cuba), Oksana Butrym (Ukraine), Gilles Croquette (France), Lawrence Ibhafidon (Nigeria), Theodore Kasanda Kalonji (Democratic Republic of the Congo), Roman Kazakov (Russian Federation), Mahendra Kumar (Marshall Islands), Philippe Missi Missi (Cameroon), Valentyna Slivinska (Ukraine) and Christoph Streissler (Austria). Mr. Acosta Moreno and Mr. Streissler were the lead reviewers. The review was coordinated by Karin Simonson and Nalin Srivastava (secretariat).

B. Summary

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

1. Timeliness

5. The BR4 was submitted on 19 December 2019, before the deadline of 1 January 2020 mandated by decision 2/CP.17. The BR4 CTF tables were also submitted on 19 December 2019. The BR4 and CTF tables were resubmitted on 13 November 2020 to address issues raised during the review. The resubmission included additional information on the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies, and on progress made towards achievement of the quantified economy-wide emission reduction target. Unless otherwise specified, the information and values from the latest submission are used in this report.

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 New Zealand in its BR4 mostly adheres to the UNFCCC reporting guidelines on BRs.

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 BR submitted by New Zealand had to be conducted remotely.

Table 1

Summary of completeness and transparency of mandatory information reported by New Zealand in its fourth biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation(s)</i>
GHG emissions and removals	Complete	Transparent	
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	
Progress in achievement of targets	Complete	Mostly transparent	Issue 1 in table 4 Issues 1 and 4 in table 9
Provision of support to developing country Parties	Complete	Transparent	

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chap. 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 emissions³ excluding emissions and removals from LULUCF increased by 24.0 per cent between 1990 and 2018, whereas total GHG emissions including net emissions or removals from LULUCF increased by 57.2 per cent over the same period. Emissions (excluding LULUCF) peaked in 2006 and gradually decreased (by 3.2 per cent) thereafter. The changes in total emissions were driven mainly by increases in CH₄ emissions from dairy cattle, CO₂ emissions from road transportation and N₂O emissions from agricultural soils. The increase in consumption of HFCs by industrial and household refrigeration equipment and air-conditioning systems also contributed towards the increase in total emissions from 1990 to 2018. During this period, CO₂ emissions from manufacturing industries and construction (mainly the chemicals category and the food processing, beverages and tobacco category) increased. Although New Zealand continues to maintain a considerable net sink in its LULUCF sector (equivalent to 29.7 per cent of its total emissions in 2018), the net sink decreased in 1990–2018 as a result of increased forest harvesting.

8. Table 2 illustrates the emission trends by sector and by gas for New Zealand. Note that information in this paragraph and table 2 is based on New Zealand’s 2020 inventory submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on New Zealand’s BR4 CTF tables unless otherwise noted. The total emissions reported in the 2020 inventory submission do not differ significantly from those reported in CTF table 1. However, in addition to the inclusion of emissions from Tokelau,⁴ the latest inventory submission reveals some significant changes in category-level emissions, including for categories under the agriculture sector (e.g. manure management, urea application and enteric fermentation) and subcategories under the LULUCF sector (e.g. grassland, wetlands, other land, and harvested wood products).

³ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF and including indirect CO₂ emissions, unless otherwise specified.

⁴ Tokelau is a non-self-governing territory of New Zealand.

Table 2
Greenhouse gas emissions by sector and by gas for New Zealand for 1990–2018

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2017	2018	1990–2018	2017–2018	1990	2018
<i>Sector</i>									
1. Energy	23 778.32	29 932.21	32 129.61	33 004.61	31 946.16	34.3	–3.2	37.4	40.5
A1. Energy industries	6 003.90	6 462.11	6 811.79	4 767.74	4 355.41	–27.5	–8.6	9.4	5.5
A2. Manufacturing industries and construction	4 760.28	6 340.72	5 528.38	7 090.31	6 390.37	34.2	–9.9	7.5	8.1
A3. Transport	8 764.91	12 417.75	14 399.64	16 254.63	16 624.72	89.7	2.3	13.8	21.1
A4. and A5. Other	2 912.11	3 071.14	2 744.94	2 951.84	2 796.07	–4.0	–5.3	4.6	3.5
B. Fugitive emissions from fuels	1 337.12	1 640.49	2 644.87	1 940.09	1 779.60	33.1	–8.3	2.1	2.3
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	3 579.87	3 426.15	4 536.01	5 121.35	5 158.12	44.1	0.7	5.6	6.5
3. Agriculture	32 181.96	36 007.09	36 079.81	37 418.76	37 696.96	17.1	0.7	50.6	47.8
4. LULUCF	–28 297.04	–28 113.51	–27 907.43	–22 710.11	–23 394.07	–17.3	3.0	NA	NA
5. Waste	4 047.61	4 734.14	4 517.85	4 092.63	4 057.43	0.2	–0.9	6.4	5.1
6. Other ^a	3.17	3.49	4.52	3.52	3.62	14.2	2.8	0.0	0.0
<i>Gas^b</i>									
CO ₂	25 446.29	32 281.35	34 957.78	36 153.33	35 080.34	37.9	–3.0	40.0	44.5
CH ₄	32 287.60	35 341.16	34 319.96	34 254.96	34 286.23	6.2	0.1	50.8	43.5
N ₂ O	4 927.11	6 176.74	6 873.63	7 498.68	7 592.45	54.1	1.3	7.7	9.6
HFCs	NO, NA	216.65	1 046.03	1 658.64	1 816.15	–	9.5	–	2.3
PFCs	909.95	67.61	47.56	60.46	72.40	–92.0	19.7	1.4	0.1
SF ₆	19.97	19.56	22.84	14.80	14.71	–26.3	–0.5	0.0	0.0
NF ₃	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	–	–	–	–
Total GHG emissions excluding LULUCF	63 590.93	74 103.08	77 267.81	79 640.86	78 862.29	24.0	–1.0	100.0	100.0
Total GHG emissions including LULUCF	35 293.89	45 989.57	49 360.38	56 930.75	55 468.22	57.2	–2.6	NA	NA

Source: GHG emission data: New Zealand's 2020 annual submission, version 1.

^a Emissions and removals reported under the sector other (sector 6) are included in the total GHG emissions. New Zealand reported that emissions in the category other are from the territory of Tokelau, which was not included in the national territory when New Zealand ratified the Convention in 1993, and include CO₂ from boats and other vehicles; CO₂ from backup power generators; fluorinated gases from the use of refrigerants; CH₄ and N₂O from livestock; and CO₂, CH₄ and N₂O from waste.

^b Emissions by gas excluding LULUCF. The Party did not report indirect CO₂ emissions.

9. In brief, New Zealand's national inventory arrangements were established in accordance with the Climate Change Response Act 2002, which was enacted to enable New Zealand to meet its obligations under the Convention and its Kyoto Protocol. The Act establishes a national system, including institutional, legal and procedural arrangements, for estimating GHG emissions and removals and for reporting and archiving inventory information. The Act names the Ministry for the Environment as New Zealand's central inventory agency, responsible for compliance with reporting obligations and for coordinating the overall national inventory process – from the collection of information to the development and compilation of the inventory and its submission to the secretariat.

10. New Zealand extended its ratification of the Convention and the Paris Agreement to include Tokelau as of 13 November 2017. Emissions from Tokelau were included in the inventory for the first time in New Zealand's 2019 submission, requiring the development of additional estimation and reporting capabilities, for which the Tokelau Ministry for Climate, Oceans and Resilience is responsible. Apart from the procedural changes allowing inclusion

of emissions from Tokelau, there have been no changes to the national inventory arrangements since the BR3.

2. Assessment of adherence to the reporting guidelines

11. The ERT assessed the information reported in the BR4 of New Zealand 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 New Zealand the Convention entered into force on 16 September 1993. Under the Convention New Zealand committed to reducing its GHG emissions by 5.0 per cent below the 1990 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 CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃. It also includes all IPCC sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4.

13. Emissions and removals from the LULUCF sector are excluded from the base year but the contribution from LULUCF is counted towards the target using an activity-based approach (see para. 16 below). New Zealand reported that it plans to make use of market-based mechanisms for achieving its target (see para. 48 below). In absolute terms this means that, under the Convention, New Zealand would be required to reduce its emissions from 65,668.25 kt CO₂ eq (in 1990) to 62,384.84 kt CO₂ eq by 2020. In the BR4, New Zealand clarified that its 2020 target was established prior to the inclusion of the emissions of Tokelau in the national inventory; however, as the total emissions from Tokelau constituted only 0.004 per cent of the total emissions of New Zealand in 2017, their inclusion would not have had an appreciable effect on the calculation of the target.

14. New Zealand’s 2020 target of reducing emissions to 5.0 per cent below the 1990 level is equivalent to a reduction of 96.8 per cent in 1990 gross emissions (excluding LULUCF) and is expressed as a carbon budget for 2013–2020. Based on the gross emissions for 1990 included in the Party’s 2016 inventory submission, which was used to calculate the carbon budget, New Zealand’s total estimated emission budget for 2013–2020 is 509,774.98 kt CO₂ eq. This would be equivalent to average annual emissions of 63,721.87 kt CO₂ eq for that period (see figure 1).

15. New Zealand reported that it will apply the Kyoto Protocol’s second commitment period accounting rules to its 2020 target under the Convention. The Party noted, however, that in practice some technical changes may be required to reflect the status of New Zealand’s target (which is not inscribed in the third column of Annex B of the Doha Amendment to the Kyoto Protocol), and that, therefore, it reserves the right to review the accounting rules it applies to ensure alignment with the Kyoto Protocol and to support a smooth transition to the Paris Agreement. In its BR4, New Zealand reported that it intends to meet its emission budget for 2021–2030 through a combination of the following actions:

(a) Reducing domestic emissions, including all sectors and all GHGs, as reported under Paris Agreement following methodologies from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*;

(b) Using market mechanisms and cooperative approaches while ensuring environmental integrity, avoidance of double counting, and transparency;

(c) Including the removal of CO₂ by forests, using an accounting approach based on a long-term average carbon stock for plantation forests.

16. New Zealand has excluded the LULUCF sector from its base-year emissions for the purpose of calculating its economy-wide emission reduction target in 2020. However, the

LULUCF contribution from eligible activities will be counted towards the target. The eligible activities include emissions/removals from afforestation, reforestation and deforestation (Article 3, para. 3, of the Kyoto Protocol) and forest management (Article 3, para. 4, of the Kyoto Protocol), and follow the LULUCF accounting rules for the second commitment period (2013–2020). However, at present, emissions/removals from forest management are not currently included in the LULUCF contribution; the final contribution from forest management will be determined at the end of the 2013–2020 period.

17. In addition to its 2020 target, New Zealand has a target under the Paris Agreement that includes a commitment to reduce emissions by 30.0 per cent below the 2005 level (equivalent to 11.0 per cent below the 1990 level) by 2030. This 2030 target is expressed as a carbon budget for 2021–2030 amounting to approximately 601.00 Mt CO₂ eq. New Zealand indicated in its BR4 that the scope of the 2030 target includes all sectors and gases (as reported in the nationally determined contribution under the Paris Agreement), as well as the contribution from carbon sequestration in forests, and that it intends to use market-based mechanisms and cooperative approaches to reach the target. Emissions from Tokelau are not included in the nationally determined contribution.

18. New Zealand also has a domestic target for 2050. The ZCA, which is the 2019 amendment to the Climate Change Response Act 2002, provides the framework for New Zealand's contribution to global efforts to limit the temperature increase to 1.5 °C above pre-industrial levels. In addition, the ZCA established an independent Climate Change Commission to provide expert advice and monitoring, with the goal of helping to keep successive governments on track in the longer term. There are three main elements of the ZCA:

(a) A domestic target to reduce net GHG emissions (excluding biogenic CH₄) to zero by 2050, and to reduce emissions of biogenic CH₄ to between 24.0 and 47.0 per cent below the 2017 level by 2050, including an interim target of 10.0 per cent below the 2017 level by 2030;

(b) A framework to produce a series of emission budgets, which is part of an effort to clarify the trajectory towards the long-term 2050 target, as well as the plans and policies required to achieve the target;

(c) A national climate change risk assessment and a national adaptation plan, to ensure that the impacts of climate change are addressed in a coordinated way.

2. Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the BR4 of New Zealand 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.

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

20. New Zealand 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. New Zealand 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.

21. New Zealand's set of PaMs is similar to that previously reported, with a few exceptions. The ERT noted that some PaMs that had been included in the BR3 were excluded from or revised in the BR4. During the review, New Zealand clarified changes to the following PaMs: the Low Emissions Economy Transition Hub has shifted its focus to implementation of the emission reduction plan under the ZCA; the EnergyWise campaign

has been renamed Engaging Hearts and Minds, reflecting a revised approach; the energy efficiency in government–government procurement and property initiative has been updated and renamed Sustainable Government Procurement and Property in 2019; the voluntary biofuel sustainability reporting scheme has been discontinued; the Biological Emissions Reference Group has concluded its work and published its final report in 2018; and the Climate Change Forestry Reference Group has concluded its work and published its final report in 2018.

22. New Zealand also provided information on 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. As of November 2019, central government agencies are required to conduct an assessment of the GHG impact of policy proposals where such proposals have an emission reduction objective or where the impact is likely to exceed a pre-determined sector-specific CO₂ threshold over a set period. With the implementation of the Climate Implications of Policy Assessment requirement, the Party aims to improve its capacity to measure, monitor and report on the GHG impact on New Zealand's GHG emissions of activities undertaken by central government agencies.

23. In its reporting on its PaMs, New Zealand provided the estimated emission reduction impacts for many of its PaMs. Where estimated impacts were not provided, the Party supplied an explanation specific to individual PaMs. The Party explained in CTF table 3 that estimated impacts were not provided for some PaMs because (1) the policy had not yet been implemented or was in the early stages of implementation; (2) insufficient data were available; or (3) the impact was considered negligible.

24. New Zealand's self-assessment of compliance with its emission reduction targets includes periodically producing a net position report, which outlines historical and projected emissions and removals for the target period 2013–2020 as well as any units obtained through market-based mechanisms. The latest net position report (April 2020),⁵ which is based on 2018 inventory data, indicates that New Zealand is projected to exceed its 2013–2020 carbon budget by 2.9 per cent, including the currently estimated LULUCF contribution, but is still projected to reach its target by including net removals from forest management that have not yet been accounted, in combination with retiring carry-over AAUs from the first commitment period of the Kyoto Protocol.

25. New Zealand has established measures to ensure it meets its 2050 target as part of the ZCA (see para. 18 above). The NZ ETS (see paras. 27–28 below) includes a number of obligations for participants in line with the overall management of allocations, as well as rules for taking action against non-compliance. For example, the failure to surrender or repay units within the NZ ETS by the due date results in a cash penalty of three times the current market price of the units. There are also penalties for reporting failures under the NZ ETS.

26. The key overarching cross-sectoral policy reported by New Zealand is the Climate Change Response Act 2002 and its 2019 amendment (ZCA). Together, these provide the framework for future climate policy and for New Zealand meeting its emission reduction target for 2020 and longer-term targets.

27. The key cross-sectoral measure is the NZ ETS. This scheme was initially established in 2008, and has since 2010 covered all sectoral emissions apart from CH₄ and N₂O emissions from agriculture.

28. Businesses in the sectors covered by the NZ ETS are required to monitor and report on GHG emissions and surrender sufficient units to cover their emissions. Unit price is determined by the market, which provides an incentive for large emitters to reduce emissions and encourages landowners to plant trees and generate removals that can be used as offsets. Until 2015, the NZ ETS allowed the use of international units under the Kyoto Protocol; since then, the scheme has allowed only domestic units. However, there is ongoing consideration of how to address international units should the NZ ETS be linked to

⁵ The previous net position report was published in December 2017. Both reports are available on the Ministry for the Environment website: <https://www.mfe.govt.nz/climate-change/climate-change-and-government/emissions-reduction-targets/reporting-our-targets-0>.

international carbon markets. Following reviews of the NZ ETS in 2015 and 2017, New Zealand decided on reforms to the scheme with a view to improving the overall management of units (including through the establishment of a cap guided by emission budgets), scaling down the allocation of units to emission-intensive and trade-exposed industries (starting in 2021), introducing new approaches for forestry accounting and strengthening the scheme's compliance regime. These reforms are set out in the Climate Change Response (Emissions Trading Reform) Amendment Act 2020. The mitigation effect of the NZ ETS is the most significant of the Party's PaMs. Other policies that have delivered significant emission reductions include the Erosion Control Funding Programme and the National Environmental Standard for Air Quality.

29. During the review, New Zealand clarified that other PaMs are also expected to result in significant emission reductions, including the Engaging Hearts and Minds campaign, the Energy Transition Accelerator Programme, vehicle fuel economy labelling, the efficient and low-emission transport programme, and the Low-emissions Vehicle Package (as part of clean car reforms). However, the Party reported that the impact of these PaMs could not be quantitatively estimated either because they were in the early stages of implementation or because there were insufficient data.

30. New Zealand reported information on planned PaMs in its BR4 in response to a recommendation in the previous review report. New Zealand highlighted a number of mitigation actions that are under development, such as implementation of the Energy Transition Accelerator Programme and the Low-emissions Vehicle Package; establishment of the National New Energy Development Centre; and development of pricing on agricultural emissions, renewable energy generation and process heat, green hydrogen and green freight. Among the mitigation actions that provide a foundation for significant additional action is pricing on agricultural emissions (see para. 39 below), with an estimated mitigation impact of 95.00 kt CO₂ eq by 2030. The mitigation impacts of other planned PaMs are reported as not estimated. Table 3 provides a summary of the reported information on the PaMs of New Zealand.

Table 3

Summary of information on policies and measures reported by New Zealand

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact in 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	NZ ETS	2 935.00	9 640.00
Energy			
Energy efficiency	Efficient products programme	240.00	234.00
	Productive and low-emission business programme (formerly the large energy user programme)	211.00	391.00
Energy supply and renewables	Energy Transition Accelerator Programme	NE	NE
	Renewable energy generation and process heat	NE	NE
Transport	Efficient and low-emission transport programme	NE	NE
IPPU	Kigali Amendment to the Montreal Protocol	2.00	550.00
Agriculture	Pricing on agricultural emissions	NE	95.00
	National Policy Statement for Freshwater Management	9.00	440.00
LULUCF	Erosion Control Funding Programme (formerly the East Coast Forestry Project)	1 493.00	575.00
	Afforestation Grant Scheme	467.00	712.00
	Sustainable Land Management Hill Country Erosion Programme	244.00	639.00
Waste	National Environmental Standard for Air Quality (landfill CH ₄)	687.00	1 040.00

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact in 2030 (kt CO₂ eq)</i>
Other	Tokelau Renewable Energy Project	1.00	1.00

Note: The estimates of mitigation impact are estimates of emissions of CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

(b) Policies and measures in the energy sector

31. **Energy efficiency.** New Zealand has developed a suite of PaMs aimed at improving the energy efficiency of homes, businesses and commercial buildings. Implemented measures include grants to improve insulation and heating. For example, the Warm Up New Zealand programme, which began in 2018, and the Warmer Kiwi Homes programme, which supersedes it, offer support to retrofit homes. The productive and low-emissions business programme (formerly the large energy user programme) has been in place since 2012, with the aim of promoting best practices in energy efficiency and fuel switching in industry. Labelling measures and mandatory performance standards have also been implemented, with the aim of improving customer awareness of low-energy solutions. For example, the efficient products programme, developed in collaboration with Australia, has been in place since 2012.

32. **Energy supply and renewables.** New Zealand has a goal of achieving 100 per cent renewable electricity by 2035 in a normal hydrological year. This is comparable with an 82.0 per cent share of total electricity from renewable sources in 2017 (New Zealand, 2019b). To achieve this goal, a measure relating to renewable energy generation and process heat has been planned by the New Zealand Government and will be implemented by the Ministry of Business, Innovation and Employment. New Zealand aims to assess its progress towards the goal through a series of five-year assessments of supply and affordability. Further, it aims to support accelerated uptake of renewable electricity, energy efficiency and renewable energy in process heat by ensuring the electricity market is charging fair, affordable prices; and encouraging energy efficiency and the use of renewable fuels in industry. The mitigation impact of the 100 per cent renewable electricity goal has not yet been estimated. In parallel with this goal, New Zealand has planned measures such as the development of green hydrogen as a future fuel and the further decarbonization of certain sectors of the economy.

33. **Residential and commercial sectors.** Emissions from the residential and commercial sectors comprised about 10.0 per cent of emissions from the energy sector and 4.0 per cent of New Zealand's total GHG emissions in 2017. Since 2013, New Zealand has implemented a range of measures under commercial buildings programmes that aim to improve the energy performance of new and existing commercial buildings, for example, rating the energy efficiency of existing office buildings using an independent energy efficiency rating tool adapted from the National Australian Built Environment Rating System called NABERSNZ and identifying opportunities for energy performance improvements. The impacts of these measures have not yet been estimated.

34. **Transport sector.** The transport sector was responsible for 19.7 per cent of New Zealand's total emissions in 2017. The main measure for reducing emissions in this sector is the cross-sectoral NZ ETS (see paras. 27–28 above). In addition, since 2016, New Zealand has implemented a package of measures under the efficient and low-emissions transport programme, the overarching objective of which is to increase the uptake of electric vehicles in the country. The mitigation impact of this programme has not yet been estimated. Since 2018, the Government Policy Statement on land transport has been in effect, with the objective of increasing investment in rail networks, public transport and active modes of transport (e.g. walking and cycling) to mitigate emissions. Planned measures addressing the transport sector include the Low-emissions Vehicle Package (as part of clean car reforms) and measures complementary to that Package, as well as the green freight measure, which aims to reduce emissions from heavy road freight.

35. **Industrial sector.** In 2017, emissions from energy used in the industrial sector constituted 21.2 per cent of total emissions from the energy sector. A number of programmes are planned for this sector and will be implemented by the Energy Efficiency and Conservation Authority. One of them is the Energy Transition Accelerator Programme, which establishes a long-term vision for clean energy and drafts a practical road map for the

transition to it by identifying technically and economically feasible opportunities and innovative technologies for energy efficiency and fuel switching.

(c) **Policies and measures in other sectors**

36. **Industrial processes.** The IPPU sector accounted for 6.1 per cent of total GHG emissions in 2017, equivalent to 4,968.56 kt CO₂ eq. The main source categories in this sector – steel, aluminium, cement, lime and glass production – are covered by the NZ ETS, and free allowances are allocated to industrial plants. New Zealand was not able to estimate the direct mitigation effect of the NZ ETS on the IPPU sector. However, under the ongoing reform of the scheme, the phase-out of free allocations to major industrial emitters is proposed at a rate of 1.0 per cent per year from 2021 to 2030, 2.0 per cent per year from 2031 to 2040, and 3.0 per cent per year from 2041 to 2050. These reductions in allocations are expected to incentivize emission reductions.

37. As HFCs contribute substantially to IPPU emissions (30.2 per cent in 2017), New Zealand has put in place specific measures targeting HFCs, among them a levy on the import of products containing HFCs and the inclusion of imports of bulk HFCs in the NZ ETS. By ratifying the Kigali Amendment to the Montreal Protocol, which entered into force for New Zealand on 1 January 2020, the Party has committed to scaling down HFC production and use by 85.0 per cent by 2036.

38. **Agriculture.** The agriculture sector is a significant source of emissions in New Zealand, accounting for 38,880.72 kt CO₂ eq, or 48.1 per cent of total national emissions, in 2017. The measures for this sector are wide-ranging; however, most of them are currently focused on research and capacity-building activities and thus are not expected to have a significant impact on emissions. Key measures include the GRA, a collaborative agricultural research initiative involving more than 60 countries worldwide; Sustainable Food and Fibre Futures, a source of funding for agricultural research and innovation; the New Zealand Agricultural Greenhouse Gas Research Centre, a nationwide network of research organizations; the Pastoral Greenhouse Gas Research Consortium, a research partnership between the Government and institutions conducting agricultural research; and the Sustainable Land Management and Climate Change Plan of Action, a suite of research programmes on agricultural adaptation for the agriculture and forestry sectors. The only implemented measure with an estimated mitigation impact is the National Policy Statement for Freshwater Management, which is focused on improving the quality of fresh water in New Zealand, but which the Party expects will reduce emissions and produce carbon capture co-benefits in the agriculture sector.

39. The ERT noted that mitigation potential in the agriculture sector was estimated by the Biological Emissions Reference Group in 2018 at up to 10.0 per cent of the current level of emissions. This was considered achievable by applying best available mitigation practices in agriculture. Since the BR3, the implementation of the Climate Change Response (Emissions Trading Reform) Amendment Act 2020 will put a price on emissions of CH₄ and N₂O from the agriculture sector from 2025 onward, through either the NZ ETS or an alternative pricing mechanism. Agricultural participants are set to receive 95 per cent free allocations, and progress on the development of the pricing mechanism will be reviewed by the Climate Change Commission in 2022.

40. **LULUCF.** The LULUCF sector in New Zealand produced a net removal of 23,958.45 kt CO₂, equivalent to 29.6 per cent of total emissions, in 2017. To maintain or increase this net sink, New Zealand is implementing several PaMs in this sector. Many of these measures have afforestation as their primary focus; soil erosion control is their secondary focus. Since its BR3, New Zealand has launched the One Billion Trees Programme, which has the aim of planting at least one billion trees between 2017 and 2028 while creating jobs, improving land use, supporting Maori culture and promoting the transition to a low-emission economy. The Programme, which replaces the Afforestation Grant Scheme, is supported by grants from the Provincial Growth Fund and is complemented by Crown Forestry joint ventures – a commercial joint venture with private landowners to help reach the one billion tree target.

41. New Zealand has also implemented a number of measures primarily aimed at controlling soil erosion, with a secondary aim of enhancing forest carbon sequestration.

Under the Erosion Control Funding Programme (formerly the East Coast Forestry Project) and the Sustainable Land Management Hill Country Erosion Programme, New Zealand aims to fund landowners in minimizing soil erosion through afforestation and revegetation while improving watershed management and assisting the regeneration of native forest species. The Erosion Control Funding Programme will be incorporated into the One Billion Trees Programme, because the latter measure integrates a number of afforestation-related measures.

42. **Waste management.** The PaMs in New Zealand's waste sector cover both minimizing waste generation and improving waste management, particularly CH₄ capture from landfills. The main policy framework for the sector is the Waste Minimisation Act 2008, which serves to decrease overall waste, protect the environment, and generate social, economic and cultural co-benefits. As part of this legislation, a levy on landfilled waste was introduced to incentivize the minimization of waste. Part of the revenue from the levy is used to support the Waste Minimisation Fund, which since 2010 has supported projects relating to the recovery, reuse and recycling of waste. The impact of the Fund was not estimated.

43. The largest mitigation impact in the waste sector will be achieved through the National Environmental Standard for Air Quality, as it relates to landfill CH₄, which entered into force in 2014 and establishes the legal requirement to capture and destroy CH₄ from landfills. The Standard also establishes restrictions on landfills designed with a lifetime capacity of greater than one million tonnes of waste.

44. **Tokelau.**⁶ The Tokelau Renewable Energy Project aims to provide reliable, adequate and efficient power supply in the territory through the use of solar photovoltaic power. In 2012, the installation of about 4,000 solar panels across Tokelau's three atolls was completed. Almost all local electric power demand on each of the three atolls can now be met with electricity from these solar panels.

(d) Response measures

45. New Zealand's assessment of the economic and social consequences of its response measures involves assessing impacts on various communities as part of its overall commitment to a fair and equitable transition to a low-emissions economy. One aspect of this work is assessing the vulnerability of various communities to emissions pricing, for example, for businesses with high emissions or businesses that compete internationally where their competitors are not affected by emissions pricing. A second aspect is ensuring that lower-income households are not disproportionately affected by mitigation actions, for example, low-income households where access to low-emissions heating or transportation options may not be within the household budget. Research conducted in 2019 on the impacts of climate change policies on rural communities indicated that further work was needed to understand the full spectrum of impacts, and to understand how changes in agriculture and forestry policy would impact Maori. Additionally, any new draft legislation on climate change response measures must have the support of Parliament before being passed into law. The public consultation phase of the legislative process allows any member of the public, or any organization, to raise concerns and issues about the proposed measures.

46. The Party reported on its first Just Transition Summit, an event held in May 2019 to explore how New Zealand could make the transition to a low-carbon economy. The Summit highlighted the need for a shared understanding and approach to the transition, noting in particular the need for the approach to be more integrated and inclusive (particularly in relation to Maori groups) and less market-oriented. New Zealand also reported on its support for the establishment of the National New Energy Development Centre (NZD 27 million), which will help increase investment and support for the transition to clean energy. The Centre is expected to create new jobs and support businesses while accelerating the transition to

⁶ During the review, the Party explained that within the national GHG inventory, Tokelau has been treated as a dedicated sector. This is because, for most emission sources, New Zealand and Tokelau use different methods and emission factors. As a result, it would not be possible to include Tokelau's emissions directly into the existing source categories. Similarly, in CTF table 3, PaMs in Tokelau were reported under the separate sector heading "Tokelau".

affordable renewable energy. New Zealand further reported that it provided NZD 20 million in support for early stage energy technology research.

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

47. The ERT assessed the information reported in the BR4 of New Zealand and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 4.

Table 4

Findings on mitigation actions and their effects from the review of the fourth biennial report of New Zealand

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	<p>The Party reported in its BR4 that the policy or measure with the most significant GHG mitigation effect is the NZ ETS; however, the Party did not elaborate on important features of this scheme, such as how the emission cap is set, how the allocations are distributed among the sectors, and how the overall mitigation impact of the scheme is estimated.</p> <p>During the review, New Zealand clarified that when the BR4 was submitted, the NZ ETS did not have a cap, but the Climate Change Response (Emissions Trading Reform) Amendment Act 2020 established a cap on emissions in line with the 2050 target. The Party noted that the impact of the NZ ETS provided in CTF table 3 covers only stationary energy and forestry impacts. The scheme's impact on emissions in the other sectors that are included in it (e.g. IPPU and waste) was not estimated.</p> <p>The ERT recommends that New Zealand enhance the transparency of its reporting by providing in its next BR detailed information on significant PaMs such as the NZ ETS, including, for example, how the NZ ETS functioned prior to the establishment of an emission cap and how the future cap will be set and revised over time; how the overall mitigation impact of the NZ ETS is estimated; and which sectors are covered by the NZ ETS.</p>

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.

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**

48. With regard to LULUCF activities, New Zealand reported in CTF tables 4 and 4(a) that in 2016 and 2017 it used net removals from this sector to offset 19.9 and 19.7 per cent of its total GHG emissions, respectively. New Zealand reported that it intends to use surplus AAUs from the first commitment period of the Kyoto Protocol towards achieving its 2020 target. New Zealand further noted in the BR4 that, at the time of submission of the BR4, the WEM projection scenario indicated that 27.7 million AAUs may be used to meet the 2020 target – however, the Party further qualified this by noting that these projections have considerable uncertainty and are subject to revision over time. New Zealand has not used any units to date; therefore, the Party reported that it did not use any units from market-based mechanisms in 2016 or 2017. Table 5 illustrates New Zealand's total GHG emissions, contribution of LULUCF and use of units from market-based mechanisms towards achieving its target.

Table 5

Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by New Zealand for achieving its target

Year	Emissions excluding LULUCF (kt CO ₂ eq)	Contribution of LULUCF (kt CO ₂ eq) ^a	Use of units from market-based mechanisms (kt CO ₂ eq) ^b	Net emissions including LULUCF contribution and market-based mechanisms (kt CO ₂ eq)
1990 (base year)	65 668.25	NA	NA	NA
2010	NA	NA	NA	NA

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution of LULUCF (kt CO₂ eq)^a</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)^b</i>	<i>Net emissions including LULUCF contribution and market-based mechanisms (kt CO₂ eq)</i>
2011	NA	NA	NA	NA
2012	NA	NA	NA	NA
2013	80 540.66	-7 294.86	0.0	73 245.80
2014	81 310.14	-12 475.60	0.0	68 834.54
2015	81 202.02	-13 853.86	0.0	67 348.16
2016	79 136.11	-15 759.92	0.0	63 376.19
2017	80 853.47	-15 953.02	0.0	64 900.45
Cumulative 2013–2017	403 042.40	-65 337.26	0.00	337 705.14
2013–2020 emissions budget ^c	NA	NA	NA	509 775.00

Sources: New Zealand's BR4 and BR4 CTF tables 1, 2(a), 4, 4(a)I, 4(a)II and 4(b).

^a New Zealand does not include emissions or removals from LULUCF in the base-year emissions. The contribution from LULUCF reported in the BR4 includes emissions/removals from activities under Article 3, para. 3, of the Kyoto Protocol and, at the end of the 2013–2020 period, will also include emissions/removals from forest management under Article 3, para. 4, of the Kyoto Protocol (see para. 16 above).

^b New Zealand's CTF table 2(f) indicates that the final number of carry-over AAUs to be used towards achieving the 2020 target will not be known until the end of the 2013–2020 accounting period.

^c New Zealand intends to use an emission budget for the period 1 January 2013 to 31 December 2020, which is calculated as eight times 96.8 per cent of base-year emissions, excluding LULUCF.

49. In assessing the Party's progress towards achieving its 2020 target, the ERT noted that New Zealand's emission reduction target under the Convention is 5.0 per cent below the 1990 level and it will use an emission budget approach for 2013–2020 (see paras. 14–15 above). Applying the Party's budget approach results in a total emission budget of 509,775.00 kt CO₂ eq for 2013–2020. In 2017 New Zealand's annual total GHG emissions excluding LULUCF were 80,853.47 kt CO₂ eq, or 23.1 per cent above the base-year level. The ERT noted that in 2017 the contribution of LULUCF was -15,953.02 kt CO₂ eq and the use of market-based mechanisms accounted for 0.00 kt CO₂ eq, resulting in net emissions of 64,900.45 kt CO₂ eq. Between 2013 and 2017, the Party's total GHG emissions excluding LULUCF amounted to 403,042.40 kt CO₂ eq, the total contribution from LULUCF amounted to -65,337.26 kt CO₂ eq and the use of market-based mechanisms amounted to 0.00 kt CO₂ eq, resulting in a net figure of 337,705.14 kt CO₂ eq, which equals 62.5 per cent of the emission budget for 2013–2020.

50. The ERT noted that New Zealand is making progress towards its emission reduction target by implementing mitigation actions that deliver emission reductions. The ERT noted that, to achieve its 2020 target under the Convention, the Party would also need to use carry-over units from the first commitment period of the Kyoto Protocol and account for the LULUCF contribution (see para. 16 above) to achieve its 2020 target under the Convention. The Party has indicated that it intends to make use of such units to achieve its 2020 target, but that the number of units needed will not be known until the end of the 2013–2020 period. Similarly, the Party indicated that the LULUCF contribution from forest management will not be known until the end of the period.

(b) Assessment of adherence to the reporting guidelines

51. The ERT assessed the information reported in the BR4 of New Zealand 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.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

52. New Zealand reported updated projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The WEM scenario reported by New Zealand includes PaMs implemented and adopted until 2018.

53. In addition to the WEM scenario, New Zealand reported the WAM and WOM scenarios. By reporting the WAM scenario, the Party addressed the encouragement to do so made in the previous review report. The WAM scenario includes planned PaMs and the planned strengthening of existing PaMs, while the WOM scenario excludes all PaMs implemented, adopted or planned after 2002 or, in the case of PaMs in the LULUCF sector, after 1992. New Zealand explained that only a small number of policies are approved but not adopted at any time; therefore, the differences between the projections under the WEM and the WAM scenarios are not large. The WEM and the WAM scenario differ because of two actions: the planned strengthening of the NZ ETS (see paras. 27–28 above) and the planned pricing on agricultural emissions (see para. 39 above). The definitions of the WEM and WAM scenarios indicate that the projections were prepared in accordance with the UNFCCC reporting guidelines on BRs.

54. 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 CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) as well as NF₃ (which, however, is not occurring in New Zealand) for 2020, 2025, 2030 and 2035. The Party presented emission projections related to fuel sold to ships and aircraft engaged in international transport (bunker fuels), thereby addressing a recommendation made in the previous review report. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. New Zealand reported on factors and activities affecting emissions, but with different levels of detail for different sectors. While factors and activities for the agriculture sector are comprehensive, and factors and activities for other sectors have been provided to some extent, some important factors and activities were not reported, for instance projected transport volumes and projected energy use (see finding 4 in table 9).

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

55. The methodology used for the preparation of the projections is very similar to that used for the preparation of the emission projections for the NC7. New Zealand provided information on the changes since the submission of the NC7, which are mainly changes in parameters and activities, not in the methods themselves. The main factors leading to changes in the projections, besides the PaMs implemented or adopted since the NC7, are the higher estimate of the expected carbon price in the NZ ETS – even before strengthening the scheme further – and revised population growth and economic growth assumptions. The net effect of these changes is an increase in the projected gross emissions in 2020 of 1.0 Mt CO₂ eq, which is mainly due to increased emissions in the energy sector (0.9 Mt CO₂ eq).

56. New Zealand provided well-structured information on the projection methods by sector. For the energy sector, two models were combined for preparing the projections: SADEM and the Generation Expansion Model for electricity supply. The descriptions of the models used for the energy sector and the transport sector, however, are not sufficiently detailed to allow a reader to gain a basic understanding of them (see finding 3 in table 9).

57. For several sectors, New Zealand reported that methodologies had been improved since the NC7 and explained changes in factors and assumptions made. Projections in the transport sector are based on a scenario approach that is informed by observed trends. They have been updated since the NC7 to include the expected faster uptake of electrical vehicles. In the IPPU sector, top-down trends are estimated on the basis of historical developments, partly including bottom-up data on individual production facilities. Changes relative to the BR3 are mainly due to revised input assumptions. In the agriculture sector, sectoral activity forecasts are based on expert judgment and modified by the estimated effects of the NZ ETS; these forecasts are translated into emission projections by applying the same emission factors

as used in the inventory. In the LULUCF sector, bottom-up estimates of trends in the different subsectors, modified by expert estimates, are aggregated to estimate total removals. In the waste sector, activity data for nine source categories are estimated on the basis of extrapolations of past trends or based on the development of GDP or other economic parameters. Other methodological changes compared with the BR3 include disaggregating one of the categories and making further improvements in the estimation parameters.

58. The ERT noted that New Zealand estimates the emissions under the WOM scenario by taking the WEM projections and subtracting the sum of the quantified PaMs. The WOM scenario therefore is counterfactual in the sense that it tries to estimate how emissions would have developed without the PaMs. This means that, if the quantified impact of PaMs in the WEM scenario changes, the WOM scenario is also affected. The ERT further noted that in this context, the Party chose to account for overlaps or synergies among individual PaMs by including the quantification of these indirect effects in a way that made it appear as a policy or measure (see finding 1 in table 9).

59. To prepare its projections, New Zealand relied on key underlying assumptions relating to population, the size of the labour force, GDP and the effective carbon price in the NZ ETS, among others. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. For example, population is expected to increase by 15.7 per cent from 2017 to 2030 in the central estimate for that period (i.e. in the estimate currently deemed most probable), and real GDP is projected to increase by 34.2 per cent. Under the WEM scenario, the carbon price in the NZ ETS is expected to reach NZD 25 by 2020 and NZD 30 by 2030. Under the WAM scenario, the carbon price is estimated to be considerably higher: NZD 50 in 2030.

60. Sensitivity analyses were conducted for the total emissions under the WEM scenario. By reporting sensitivity analyses, the Party addressed an encouragement made in the previous review report. A high-emissions scenario was modelled under the assumption that, relative to the central estimate, the carbon price in the NZ ETS is lower (NZD 25 until 2035) while population growth is higher (10.7 per cent increase in population in 2035) and GDP growth is higher (9.0 per cent increase in GDP in 2035). Conversely, the low-emissions scenario assumed that these parameters deviated from the central estimate in the other direction. The high-emissions scenario has 2.5 per cent higher gross emissions in 2035, while the low-emissions scenario has 2.5 per cent lower gross emissions in 2035.

61. In addition to the sensitivity analyses for the total emissions, the Party also reported sensitivity analyses for the projections in most individual sectors. Energy-related emissions are 5.9 per cent higher in 2035 under the high-emissions scenario (see para. 60 above). For the transport sector, the sensitivity analysis was based on varying the rate of uptake of electric vehicles. Assuming a faster uptake of electric vehicles leads to a 26.0 per cent share among all light vehicles in 2035, which translates into 11.0 per cent lower emissions from transport compared with the WEM scenario. For the IPPU sector, assumptions on demand for industrial commodities such as cement and lime were varied, as were assumptions on the residence time of HFCs between consumption and emission; for the agriculture sector, assumptions on the productivity of animal production and the carbon price in the NZ ETS were varied; and for the LULUCF sector, sensitivity analysis was performed by varying assumptions on removals.

(c) Results of projections

62. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 6 and figure 1.

Table 6

Summary of greenhouse gas emission projections for New Zealand

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention	509 775.00 ^a	5.0
Inventory data 1990 (base year)	65 688.25	0.0

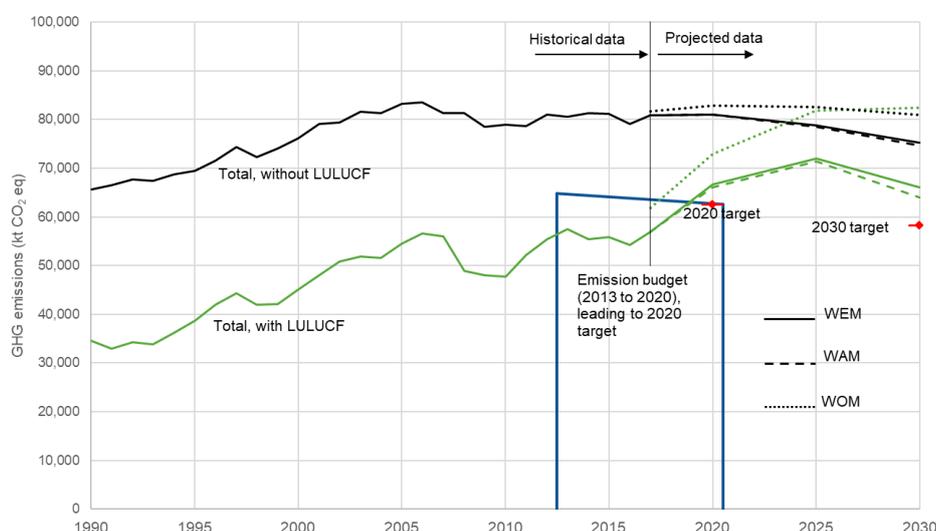
	GHG emissions (kt CO ₂ eq/year)	Change in relation to 1990 level (%)
Inventory data 2017	80 853.47	23.1
WOM projections for 2020	82 873.23	26.2
WEM projections for 2020	80 928.58	23.2
WAM projections for 2020	80 934.94	23.2
WOM projections for 2030	80 932.72	23.2
WEM projections for 2030	75 265.73	14.6
WAM projections for 2030	74 701.79	13.8

Sources: New Zealand’s BR4 and BR4 CTF table 6.

Note: The projections are for GHG emissions excluding LULUCF and excluding indirect CO₂.

^a New Zealand’s emission reduction target under the Convention is 5.0 per cent below the 1990 level and it will use an emission budget approach for 2013–2020 equal to 509,775.00 kt CO₂ eq (see paras. 14–15 above).

Figure 1
Greenhouse gas emission projections reported by New Zealand



Sources: New Zealand’s BR4 and BR4 CTF tables 1 and 6 (total GHG emissions excluding LULUCF).

63. New Zealand’s emission reduction target under the Convention is 5.0 per cent below the 1990 level and it will use an emission budget approach for 2013–2020; the emission budget for this period is 509,775.00 kt CO₂ eq (see paras. 14–15 above). According to New Zealand’s BR4, under the WEM scenario total GHG emissions excluding LULUCF for 2013–2020 are projected to be around 645,400.00 kt CO₂ eq. The contribution of LULUCF (see para. 16 above) is projected to be 108,000.00 kt CO₂ eq and the use of units from market-based mechanisms to date is 0.00 kt CO₂ eq for 2013–2020.⁷ The total projected net cumulative GHG emissions including the projected contribution from LULUCF (excluding the contribution from forest management, which will be known only after 2020) is estimated to be 537,400.00 kt CO₂ eq, which is about 27,600.00 kt CO₂ eq higher than the Party’s emission budget of 509,775.00 kt CO₂ eq for 2013–2020.⁸ The 2020 projections suggest that the Party would need to use carry-over units from the first commitment period of the Kyoto Protocol and account for the LULUCF contribution to achieve its 2020 target under the

⁷ As indicated in the footnote to CTF table 2(e) the Party states that “the scale of contributions of market mechanisms for New Zealand in meeting its 2020 target will not be known until the end of the 2013–2020 accounting period”. In the BR4, New Zealand reported an initial estimate of 27,700 kt CO₂ eq, but noted that this is uncertain and subject to revision over time.

⁸ The ERT assumes that the difference of 100 kt CO₂ eq between the projected gross emissions and the sum of the carbon budget, the contribution from LULUCF and the contribution from AAU carry-over units is due to rounding.

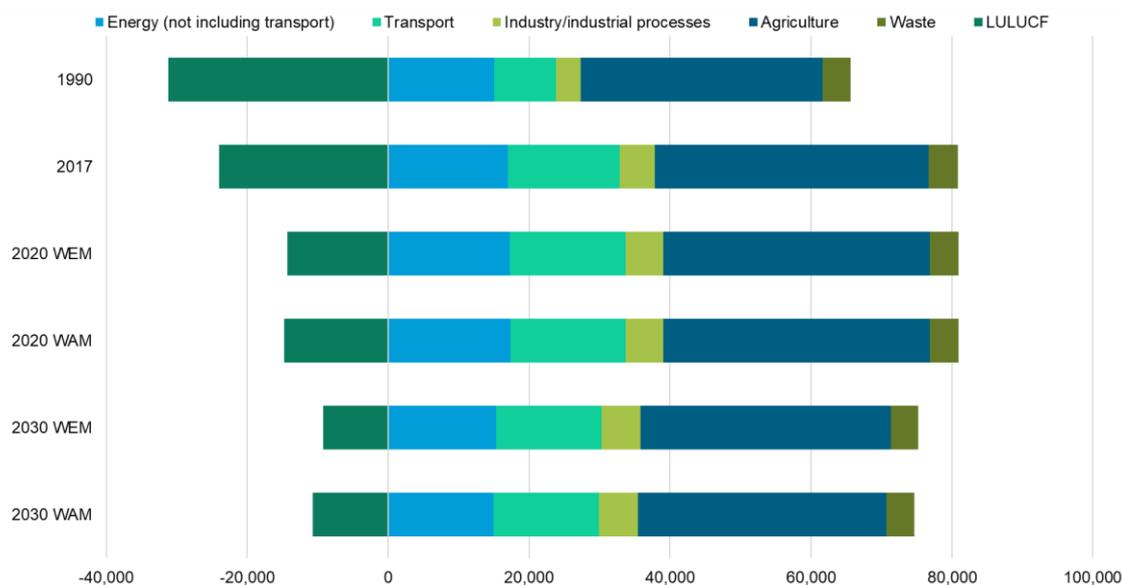
Convention. New Zealand has indicated that it intends to use the surplus AAUs from the first commitment period of the Kyoto Protocol and intends to account for the contribution from forest management.

64. New Zealand presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in figure 2 and table 7.

Figure 2

Greenhouse gas emission projections for New Zealand presented by sector

(kt CO₂ eq)



Source: New Zealand's BR4 CTF table 6.

Table 7

Summary of greenhouse gas emission projections for New Zealand presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	15 013.41	17 306.34	17 313.45	15 333.31	14 963.19	15.3	15.3	2.1	-0.3
Transport	8 772.25	16 401.20	16 401.20	14 948.75	14 948.75	87.0	87.0	70.4	70.4
Industry/industrial processes	3 579.87	5 326.24	5 326.24	5 568.11	5 568.11	48.8	48.8	55.5	55.5
Agriculture	34 257.22	37 839.15	37 838.39	35 456.48	35 262.67	10.5	10.5	3.5	2.9
LULUCF	-31 161.77	-14 331.46	-14 802.86	-9 192.71	-10 686.95	-54.0	-52.5	-70.5	-65.7
Waste	4 041.86	4 052.78	4 052.78	3 956.11	3 956.11	0.3	0.3	-2.1	-2.1
Other (Tokelau)	3.64	2.89	2.89	2.97	2.97	-20.6	-20.6	-18.4	-18.4
Total GHG emissions excluding LULUCF	65 668.25	80 928.58	80 934.94	75 265.73	74 701.79	23.2	23.2	14.6	13.8
Total GHG emissions including LULUCF	34 506.47	66 597.14	66 132.08	66 073.03	64 014.86	93.0	91.7	91.5	85.5

Source: New Zealand's BR4 CTF table 6.

65. According to the projections reported for 2020 under the WEM scenario, emissions in 2020 are projected to increase in all sectors compared with the 1990 level. The most significant absolute emission increase is expected to occur in the LULUCF sector because of a projected decrease in net removals of 54.0 per cent between 1990 and 2020, followed by

the transport sector, where emissions are projected to increase by 87.0 per cent between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario remains largely the same: apart from a minor reduction in emissions in the waste sector, projected emissions in 2030 increase in all sectors. The most significant absolute emissions increase is expected to occur in the LULUCF sector, amounting to a projected decrease in net removals of 70.5 per cent between 1990 and 2030, followed by the transport sector, where emissions are projected to increase by 70.4 per cent over the same period.

66. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector remain largely the same, with the exception of the LULUCF sector where net removals are projected to be higher than under the WEM scenario, resulting in a projected decrease in net removals of 52.5 per cent between 1990 and 2020. The pattern of projected emissions reported for 2030 under the WAM scenario resembles the WEM scenario. The most significant difference between the two scenarios is in the LULUCF sector, which contributes additional net removals, mainly owing to the higher carbon price in the NZ ETS under this scenario; emission removals are projected to decrease by 65.7 per cent from 1990 to 2030.

67. New Zealand presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 8.

Table 8

Summary of greenhouse gas emission projections for New Zealand presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO ₂ ^a	25 455.16	36 920.80	36 927.55	33 512.14	33 149.61	45.0	45.1	31.7	30.2
CH ₄	32 149.96	33 262.85	33 250.59	31 368.05	31 210.04	3.5	3.4	-2.4	-2.9
N ₂ O	7 133.21	8 873.13	8 885.00	8 316.02	8 272.62	24.4	24.6	16.6	16.0
HFCs	0.00	1 783.93	1 783.93	1 983.61	1 983.61	–	–	–	–
PFCs	909.95	70.72	70.72	70.72	70.72	-92.2	-92.2	-92.2	-92.2
SF ₆	19.97	17.15	17.15	15.19	15.19	-14.1	-14.1	-23.9	-23.9
NF ₃	–	–	–	–	–	–	–	–	–
Total GHG emissions without LULUCF	65 668.25	80 928.58	80 934.94	75 265.73	74 701.79	23.2	23.2	14.6	13.8
Total GHG emissions with LULUCF	34 506.47	66 597.14	66 132.08	66 073.03	64 014.86	93.0	91.7	91.5	85.5

Source: New Zealand's BR4 CTF table 6.

^a New Zealand did not include indirect CO₂ emissions in its projections.

68. With the exception of PFCs and SF₆, emissions under the WEM scenario are projected to increase for all gases from the base year (1990) to 2020, most significantly for CO₂, which increases by 45.0 per cent between 1990 and 2020.

69. For 2030, the most significant absolute increases are projected for CO₂ emissions: 31.7 per cent between 1990 and 2030. Projected emissions for CH₄ decrease in absolute terms, leading to a reduction of 2.4 per cent between 1990 and 2030. For the other gases, the pattern does not change substantially compared with the projections for 2020. Owing to the limited short-term effects of its additional measures, under the WAM scenario, emissions by gas do not differ significantly from those under the WEM scenario in 2020. By 2030, the longer-term effects of the additional measures are seen primarily in the projected emissions of CO₂, which are 1.5 per cent lower than in the WEM scenario. This result shows that the higher carbon price of the NZ ETS under the WAM scenario primarily affects CO₂ emissions.

(d) Assessment of adherence to the reporting guidelines

70. The ERT assessed the information reported in the BR4 of New Zealand and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 9.

Table 9

Findings on greenhouse gas emission projections reported in the fourth biennial report of New Zealand

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	<p>Reporting requirement specified in paragraph 29</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>In the context of the Convention, PaMs are intentional political acts adopted by Parties. The ERT noted that, in table 4.1 of the BR4, which summarizes the PaMs included in the projection scenarios, the Party has included the item “Indirect effects of combined forestry land-use policies on agricultural land use”. This item does not conform to the definition of a policy or measure.</p> <p>During the review, New Zealand explained that this item relates to a combination of PaMs that were included in the modelling of agricultural emissions as a way of estimating their combined effects. The ERT acknowledges that modelling overlaps and synergies among PaMs as a separate process is an innovative approach to estimating the combined effect of several PaMs on agricultural emissions, for instance for estimating the indirect effects of combined forestry land-use policies on agricultural land. However, while this approach may be appropriate for modelling projections, it should not be considered or reported as a policy or measure, by definition.</p> <p>The ERT recommends that New Zealand enhance the transparency of its next BR by not reporting the indirect effects arising from synergies or overlaps among PaMs as a separate policy or measure, but rather by explaining how it has taken indirect effects into account when preparing the projection scenarios.</p>
2	<p>Reporting requirement specified in paragraph 35</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>The Party did not report projections for indirect GHGs.</p> <p>During the review, New Zealand acknowledged the issue and stated that it would consider including such projections in its next submission.</p> <p>The ERT reiterates the encouragement from the previous review report for New Zealand to improve the completeness of its reporting by including in its next BR emission projections for indirect GHGs.</p>
3	<p>Reporting requirement specified in paragraph 43</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>The Party described the type of model or approach used for its projections and its characteristics in table 4.14 of the BR4 and in the sectoral descriptions. However, the ERT noted that the information provided on the methodology for energy projections and for the transport model is not sufficiently detailed to allow a reader to obtain a basic understanding of the models and/or approaches. In particular, the following information was not provided:</p> <ul style="list-style-type: none"> (a) A description of the type of model or approach used for developing its projections for the energy and transport sectors; (b) An explanation of how the model used for energy and transport projections accounts for overlaps or synergies among the PaMs; (c) A description of the strengths and weaknesses of the models used for the transport emission projections. <p>During the review, New Zealand:</p> <ul style="list-style-type: none"> (a) Provided comprehensive information on SADEM, the Vehicle Fleet Emissions Model and its recent update, and the Transport Outlook freight model. SADEM is a partial equilibrium model for the energy sector that relies on key exogenous variables (e.g. GDP, oil price). The model projects energy demand for all sectors of the economy (except land transport), links to the Generation Expansion Model for power generation and calculates emissions by applying emission factors. The Vehicle Fleet Emissions Model has been updated since the BR3 and is mainly used for projecting the number of vehicles in the national fleet, differentiated by several characteristics (e.g. age, engine type). The Transport Outlook freight model projects freight transport, in 10-year steps, to 2052. The model disaggregates goods, regions, modes of transport and vehicles. As part of that model, the Road Freight Tonne-Km Model provides projections for transport volumes; (b) Clarified that SADEM, the model used for estimating the mitigation effects of the NZ ETS, works independently of the estimates of effects of the other measures, which do not depend on future carbon prices; (c) Provided information on the strengths and weaknesses of the transport model; among the strengths, the Party noted that bottom-up modelling allows for very

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
4	<p>Reporting requirement specified in paragraph 48</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>detailed modelling and that real-world fuel consumption data are used; whereas a weakness noted is the high degree of uncertainty due to the long time-horizon of the model.</p> <p>The ERT, reiterating part of an encouragement from the previous review report, encourages New Zealand to enhance the transparency of its reporting in its next BR by including sufficient information on models or approaches that will allow a reader to obtain a basic understanding of that model or approach, namely:</p> <p>(a) A brief description of the type of model or approach used for developing projections for the energy and transport sectors;</p> <p>(b) Clear information on how possible overlaps or synergies among PaMs affecting the energy and transport sectors are accounted for by the model used for the energy and transport sector projections;</p> <p>(c) Information on strengths and weaknesses of the models used for transport emission projections.</p> <p>The Party reported in CTF table 5 (which is also contained in the BR4 as annex B) information on the key variables affecting the agriculture and the LULUCF sectors. For the transport sector, information on the projected number of vehicles of different categories is provided; however, information on national navigation, aviation and rail transport (which was recommended in the previous review report to be provided) and on projected transport volumes (passenger-kilometres, tonne-kilometres) is not provided. For the energy sector, no information on projected activity data (e.g. fuel and energy consumption) is provided.</p> <p>During the review, New Zealand provided data on projected transport volumes and projected total final energy consumption. The Party informed the ERT that, owing to the absence of any discernible trend and the lack of robust models for these categories, energy demand by fuel type for national navigation, aviation and rail transport was projected on the basis of expert judgment and held constant through the projection horizon.</p> <p>The ERT, reiterating part of a recommendation from the previous review report, recommends that New Zealand enhance the transparency of its reporting by including in its next BR key activity data for the energy and the transport sector projections, namely, projected transport volumes; activity data for national navigation, aviation and rail transport; and projected total final energy consumption.</p>

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

1. Technical assessment of the reported information

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

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

72. New Zealand has provided support that it considers to be “new and additional”. The Party clarified that it considers “new and additional” support to include any climate-related support provided over the reporting period that meets agreed ODA definitions (i.e. mainly concessional support with a focus on economic development). The Party observed in its BR4 that “it is not effective to try and separate climate-related support from other official development assistance (ODA)”; rather, it considers that an integrated approach to climate and development finance is practical and produces cross-cutting benefits. In the BR4, New Zealand indicated that its “climate-related support remains an important part of its growing aid budget”. Also in the BR4, the Party confirmed that its process for determining resources to be “new and additional” has not changed since its BR3.

73. New Zealand 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. It explained how it tracks finance for adaptation and mitigation using the Rio markers for tracking development assistance with climate change adaptation and mitigation outcomes at the thematic level (i.e. mitigation, adaptation).

74. New Zealand's national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked, relies on the use of the Rio markers. However, the Rio markers do not quantify expenditure on specific activities. Therefore, as part of its efforts to continuously improve its financial reporting, New Zealand has built on the Rio markers to create a system for quantifying climate-related support. This system is under review and any changes made to New Zealand's approach will be operational from 2020. Additionally, in 2018, New Zealand added a climate change capacity-building marker to its existing reporting system to better track support provided for climate change capacity-building.

75. New Zealand's methodology and underlying assumptions used for collecting and reporting information on financial support include classification and moderation weighting for quantifying and recording climate-related expenditure. Where climate change is the principal focus of a particular activity, 100 per cent of the activity value is reported; where climate change is a significant focus, 30 per cent is recorded; and where climate change is not a focus, 0 per cent is recorded. Additionally, for disaster risk reduction and management activities driven by a prime concern for extreme weather events and where adaptation is the principal focus, a 100 per cent weighting is reported; for renewable energy and energy efficiency activities, a 100 per cent weighting is recorded for mitigation; and for energy upgrading activities, where the outcome of the activity is safer access to energy supplies in the presence of extreme weather events, these can potentially be marked as significant for adaptation. Support through bilateral, regional and multilateral institutions is assessed as being 'principal' or 'significant' depending on the outcome of the activity. However, except for funding of GRA activities, core funding to regional and multilateral organizations is not monitored by the Party to the level of specific climate change allocations and actions.

(b) Financial resources

76. New Zealand 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.

77. New Zealand allocates its resources to address the adaptation and mitigation needs of non-Annex I Parties. In providing climate-related support, New Zealand aims to support activities that achieve "sustainable, inclusive and resilient development outcomes that meet the aspirations and needs identified by partner countries, consistent with international best practice". This approach is implemented through strong country partnerships with developing countries and by aligning support with partner countries' national plans and self-identified needs and priorities. The Party described how its support assists non-Annex I Parties in mitigating GHG emissions and adapting to the adverse effects of climate change and any economic and social consequences of response measures, and contributes to technology development and transfer and capacity-building related to mitigation and adaptation.

78. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, New Zealand allocated its climate finance on the basis of priority areas identified by recipient countries and reflected in their national plans. The main focus of support for mitigation is on actions in the energy and agriculture sectors, while for adaptation, the focus is on reducing the vulnerability of human and natural systems by increasing community resilience and adaptive capacity. New Zealand has supported renewable energy initiatives as part of its support for affordable, reliable and clean energy sources and its efforts to reduce carbon emissions through improved energy efficiency and low-carbon development pathways. New Zealand also noted that its core/general support to Pacific regional organizations, including the Secretariat of the Pacific Regional Environment Programme, the Pacific Community and the Pacific Islands Forum Secretariat, is intended to contribute to the programmes and projects identified in these

organizations' strategic plans. Table 10 summarizes the information reported by New Zealand on its provision of financial support.⁹

Table 10

Summary of information on provision of financial support by New Zealand in 2017–2018

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>	
	<i>2017</i>	<i>2018</i>
ODA	535.10	471.82
Climate-specific contributions through multilateral channels, including:		
Other multinational climate change funds	0.00	1.11
Climate-specific contributions through bilateral, regional and other channels	27.86	43.02

Sources: BR4 CTF tables and Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

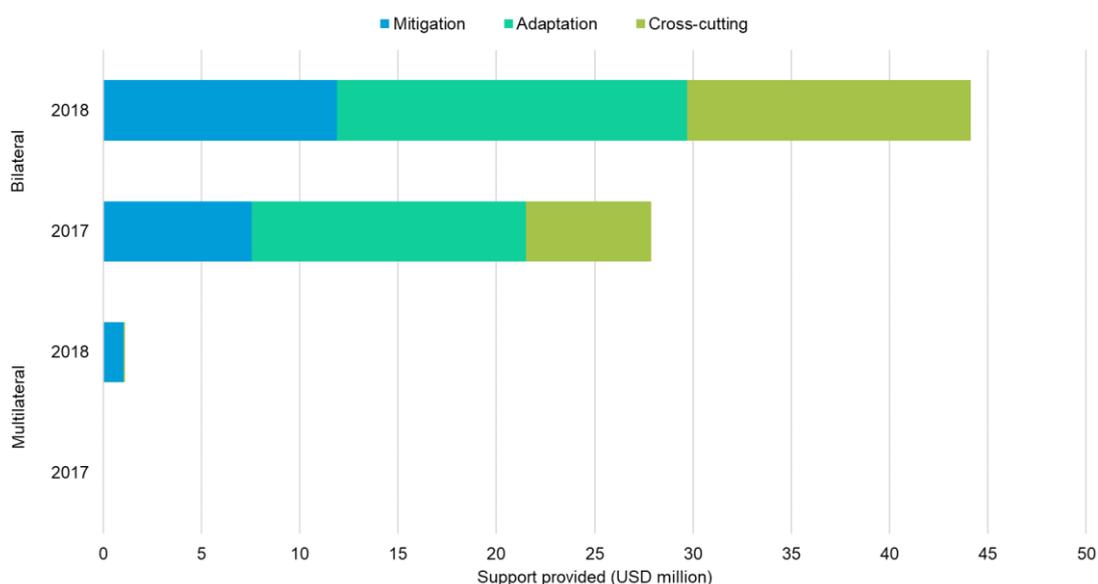
79. New Zealand's climate-specific public financial support¹⁰ totalled USD 71.99 million in 2017–2018, compared with USD 77.95 million in 2015–2016. New Zealand estimated that approximately 21.1 per cent of its ODA in 2017–2018 had a climate component compared with 22.0 per cent in 2015–2016. The ERT noted a reduction of about 9.1 per cent in the Party's financial support since the BR3 (2015–2016). This could be in part due to currency conversion, as ODA, expressed in NZD, shows an upward trend from 2010 to 2019. New Zealand expects growth in climate-related support in the coming years due to the planned increase in its ODA budget for 2018–2022. Further planned changes in ODA include mainstreaming of climate change support across the New Zealand Aid Programme and a renewed climate finance commitment of NZD 300 million for 2019–2022. New Zealand also reported that it pledged replenishment, in the amount of NZD 15 million, to the GCF, and will report on its contributions in its next BR.

80. During the reporting period, New Zealand placed a particular focus on Pacific SIDS when allocating its core/general support, but also provided climate-specific support to partner countries in Africa, the Caribbean and South-East Asia. 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 11. Note that variances in contribution amounts from year to year can occur that are not reflective of trends owing to factors such as the biennial or triennial contribution cycles of some multilateral funds, timing of approval of individual bilateral projects or changes in exchange rates.

⁹ Core/general support is not reflected in table 10.

¹⁰ For the remainder of this chapter, the term "financial support" means climate-specific financial support, unless otherwise noted.

Figure 3
Provision of financial support by New Zealand in 2017–2018



Source: New Zealand's BR4 CTF tables 7, 7(a) and 7(b).

Table 11
Summary of information on channels of financial support used in 2017–2018 by New Zealand

(Millions of United States dollars)

Allocation channel of public financial support	Year of disbursement				Share (%)	
	2017	2018	Difference	Change (%)	2017	2018
Detailed information by type of channel						
Multilateral channels						
Mitigation	0.00	1.04	1.04	–	–	93.7
Adaptation	0.00	0.00	0.00	–	–	–
Cross-cutting	0.00	0.07	0.07	–	–	6.3
Other	0.00	0.00	–	–	–	–
Total multilateral	0.00	1.11	1.11	–	–	100.0
Bilateral channels						
Mitigation	7.57	10.85	3.28	43.3	27.2	25.2
Adaptation	13.93	17.80	3.87	27.8	50.0	41.4
Cross-cutting	6.36	14.37	8.01	125.9	22.8	33.4
Other	0.00	0.00	–	–	–	–
Total bilateral	27.86	43.02	15.16	54.5	100.0	100.0
Total multilateral and bilateral	27.86	44.13	16.27	58.4	100.0	100.0

Source: New Zealand's BR4 CTF tables 7, 7(a) and 7(b).

81. New Zealand did not contribute through multilateral channels in 2017 but contributed USD 1.11 million in 2018. The contributions were made to multilateral climate change funds, such as the United Nations Development Programme to support the implementation of the Montreal Protocol and the UNFCCC Trust Fund for Participation. In the BR3, New Zealand reported it had contributed around USD 3.06 million through these channels.

82. The Party reported detailed information on the total financial support provided through bilateral, regional and other channels in 2017 (USD 27.86 million) and 2018 (USD 43.02 million). A large part of New Zealand's climate-related support (97.5 per cent) is

provided through its bilateral aid programme and multi-country assistance. While activities and programmes are fairly uniformly supported across many Pacific Island countries, some of the larger amounts of funding were directed to Fiji (for the Tropical Cyclone Winston recovery package), Niue (for energy and wharf projects), Papua New Guinea (for renewable energy in remote communities), Samoa (for the Renewable Energy Partnership) and Vanuatu (for the Rural Electrification Project).

83. 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 27.2, 50.0 and 22.8 per cent, respectively. In 2018, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 25.2, 41.4 and 33.4 per cent, respectively. The allocations for mitigation and adaptation decreased from 2017 to 2018, while the cross-sectoral component increased, in line with the Party's emphasis on integrated funding.

84. The ERT noted that in 2017 the majority of financial contributions through multilateral channels was allocated to cross-cutting sectors, followed by the agriculture, fisheries and "general environment" sectors, as reported in CTF table 7(a). The corresponding allocations for 2018 were directed mostly to cross-cutting sectors, followed by the "general environment", agriculture and fisheries sectors. In 2017, the majority of financial contributions through bilateral and regional channels was allocated to the energy sector, followed by the disaster prevention and preparedness, agriculture, "multi-sector", water and sanitation, and "further" sectors, as reported in CTF table 7(b). The corresponding allocations for 2018 were directed mostly to the energy sector, followed by the agriculture, government and civil society, "multi-sector", disaster prevention and preparedness, and "further" sectors. In the BR4, New Zealand noted that it applies an integrative approach to environment and climate change objectives, resulting in much of its support being classified as "cross-cutting", in line with international best practice and with the aim of producing environment and climate co-benefits.

85. CTF tables 7(a) and 7(b) include information on the types of financial instrument used for providing assistance to developing countries, which include mostly grants. The ERT noted that the grants provided in 2017 and 2018 accounted for most of the total public financial support.

86. New Zealand also 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. One of the target areas for increasing private sector involvement is renewable energy, where New Zealand has used financial instruments such as payment guarantees and risk-sharing, as well as regulatory improvements, to leverage greater private sector financial support. One example is the Party's NZD 3.72 million contribution to the International Finance Corporation's Risk Share Facility, which focuses on risk reduction in the Pacific region. A second example is its support for the Pacific Islands Investment Forum, where New Zealand has invested NZD 0.48 million over a three-year period (2018–2020) to reduce investment barriers and scale up private sector investment in the Pacific across several sectors, including tourism, agriculture and community assets. New Zealand also engages in activities that are designed to leverage additional funding, including, for example, private sector funding for adaptation.

87. New Zealand complements its previous (2015) contributions to multilateral funds such as the GCF through capacity-building initiatives and with the provision of specialized technical support. For example, through the Technical Assistance for Pacific Access programme, in 2017 the Party provided multi-country support for building capacity within regional governments and other stakeholders. In some cases, this has involved providing technical support to develop proposals for project funding. Similarly, through the Pacific Regional Infrastructure Facility, New Zealand has helped Pacific Island countries develop national investment plans, which in turn could help leverage additional finance, including private sector finance and support for resilient infrastructure. In another example, New Zealand provides capacity-building support to develop monitoring, reporting and verification systems in selected Pacific Island countries. These systems may be used beyond national GHG inventory improvement, such as for meeting the eligibility requirements to participate

in the International Civil Aviation Organization's Carbon Offsetting and Reduction Scheme for International Aviation.

88. New Zealand highlighted its success stories in reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in renewable energy and agriculture in non-Annex I Parties. New Zealand has contributed to a number of initiatives designed to address barriers to greater investment in infrastructure in Pacific SIDS and to facilitate direct investment. It is also undertaking a feasibility study on mobilizing New Zealand private investment in development assistance, including projects related to climate change.

(c) Technology development and transfer

89. New Zealand provided information on the steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including on activities undertaken by the public and private sectors. New Zealand provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties, noting that it does not differentiate between endogenous and non-endogenous technology transfer. During the review, in response to a query raised by the ERT, the Party explained that it did not believe any 'hard' technology has been adapted or altered sufficiently within a country for it to become an endogenous technology per se. Further, New Zealand noted that it has been particularly challenging to promote transfer and enhancement of endogenous technology in Pacific SIDS, but it has had some success in developing endogenous capacity through training and mentoring.

90. One example of such support provided is New Zealand's efforts to train a large contingent of Tongan power line mechanics to New Zealand standards. Participants in the initiative were trained using an internationally recognized approach (the New Zealand Line Mechanic Pathway) at a purpose-built training facility at the Tonga Institute of Science and Technology. This training was complemented by practical experience overseen by Northpower (a New Zealand company). The training was seen as a success in helping women access employment in non-traditional sectors and in improving local capacity to operate and maintain the power system, which is particularly critical following tropical cyclones.

91. The ERT took note of the information provided on recipient countries, target areas, measures, focus sectors, technology transferred and factors contributing to project success of technology transfer programmes. The focus of technology transfer delivered through the New Zealand Aid Programme is the Pacific SIDS, but there are also some projects in South-East Asia and South America. The focus sectors are energy (for mitigation activities) and water and sanitation, disaster risk management, agriculture and fisheries (for adaptation activities).

92. New Zealand reported on its measures and activities, including on activities implemented or planned since its NC7 and BR3, as well as factors that led to project success in relation to technology transfer. Regarding climate-related support provided to developing countries, New Zealand noted that ownership and engagement with partner countries, alignment with partner country priorities, donor harmonization, results-based approaches and transparency in reporting on results have contributed to the overall success of its efforts.

93. New Zealand did not consider there were any failure stories in relation to technology transfer, and in particular in relation to measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. During the review, in response to a query raised by the ERT, the Party clarified that there were lessons learned from activities, including lessons related to challenges in implementation. The most common challenges include low capacity and capability within partner governments, particularly in the smallest Pacific Island countries; hesitancy of the private sector to develop projects in what are perceived to be high-risk environments; lack of coordination between development partners in some sectors and countries; few development partners to co-fund projects; and logistical issues, that is, transporting people and equipment to remote locations in the Pacific region.

94. Successful projects include the initiatives taken under the GRA, whereby New Zealand has committed NZD 73.5 million since 2009 to support research, education and training in and public awareness of the agriculture sector. This initiative includes collaboration with over 50 developed and developing countries to improve inventories of

agricultural GHG emissions; develop, apply and extend technologies to both monitor and reduce agricultural emissions; and improve capacity to enhance soil carbon. The Climate Food and Farming – Global Research Alliance Development Scholarships serve to build the capability of early career agriculture students to conduct applied research on climate change mitigation, focusing on GHG quantification and mitigation, in the agriculture sector.

95. New Zealand has also supported the upgrading of the electricity network on Tonga's main island of Tongatapu as part of the Tonga Village Network Upgrade Project. In addition to upgrading infrastructure, reducing line losses and expanding access to more communities, the project builds the capacity of mechanics and provides them with qualifications to the New Zealand Qualifications Authority level 4 standard. As a result, there is now greater local capacity to operate, maintain and rebuild electricity systems, especially after natural disasters such as tropical cyclones. This benefit was manifested after Cyclone Gita in 2018, when power was quickly restored with little external assistance.

96. As part of the Water 2015–2020 project, New Zealand provides technical assistance to improve potable water supply, sewerage and sanitation on South Tarawa, Kiribati. Supported activities include rainwater harvesting for public buildings and households, installation of a desalination plant, extension of the current sewerage system, provision of a new reticulated sewerage system, and provision of on-site sanitation for public buildings and households.

97. Another example of the Party's technology development and transfer support is the support provided to Niue to help it achieve its goal of increasing renewable energy production and decreasing its reliance on fossil fuels. New Zealand has helped resolve technical issues within the current electricity generation and distribution networks while increasing the supply of renewable energy. In both cases, New Zealand reported that the factors that led to the success of the projects in Kiribati and Niue include country ownership, alignment with country strategies and priorities, harmonization of donor support, results-based planning, and transparency.

(d) Capacity-building

98. New Zealand 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 projects and activities it supports are designed and developed in close consultation with recipient countries, with building new and enhancing existing capacities being a key pillar of their scope. The Party described measures and activities related to capacity-building support in textual and tabular format.

99. New Zealand has supported climate-related capacity development activities relating to adaptation, mitigation and cross-cutting sectors. Since the BR3, the focus of support has remained stable. The focus is on areas in which New Zealand has domestic expertise, namely agriculture, renewable energy, and disaster risk reduction and resilience. New Zealand's support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by working in direct consultation with country and/or regional partners in the design of initiatives on a case-specific basis. Examples of where this approach has been implemented include the New Zealand Aid Programme, the GRA and the Secretariat of the Pacific Regional Environment Programme. A large proportion of New Zealand's capacity-building activities have been targeted at the Pacific SIDS, which are considered to be among the most vulnerable of countries to the impacts of climate change, and with the least capacity to adapt. In an effort to capture support provided for capacity-building, New Zealand has added a capacity-building marker to its financial tracking system.

100. Successful projects include the Technical Assistance for Pacific Access programme (see para. 87 above), under which New Zealand provides technical support to Pacific Island countries to develop project proposals and secure funding through multilateral funds such as the GCF. Through this programme it also provided engineering assistance to the Marshall Islands, which helped secure funding for a USD 18.6 million water security project. Based on its success to date in assisting Pacific Island countries with accessing funding, a second phase of the programme is envisioned.

101. A second example of a successful capacity-building initiative is New Zealand's provision of support (NZD 833,922.00) to the Livestock Emissions Abatement Research Network. Participants in this academic network build capacity in and share the results of research into livestock emissions, thereby contributing to a global body of best practice and reinforcing the work of the GRA.

2. Assessment of adherence to the reporting guidelines

102. The ERT assessed the information reported in the BR4 of New Zealand 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.

III. Conclusions and recommendations

103. The ERT conducted a technical review of the information reported in the BR4 and BR4 CTF tables of New Zealand 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 New Zealand towards achieving its target; and the Party's provision of support to developing country Parties.

104. According to the most recent inventory report (NIR 2020), New Zealand's total GHG emissions excluding LULUCF increased by 24.0 per cent in 1990–2018, whereas over the same period, total emissions including LULUCF increased by 57.2 per cent. Emissions (excluding LULUCF) peaked in 2006 and gradually decreased (by 3.2 per cent) in 2006–2018. The changes in total emissions were driven mainly by increases in CH₄ emissions from dairy cattle, CO₂ emissions from road transportation and N₂O emissions from agricultural soils. While New Zealand continues to maintain a considerable net sink in its LULUCF sector (equivalent to 29.7 per cent of its total emissions in 2018), the net sink has decreased in 1990–2018 as a result of increased forest harvesting and deforestation.

105. Under the Convention New Zealand committed to achieving a quantified economy-wide emission reduction target of 5.0 per cent below the 1990 level by 2020 and it will use an emission budget approach for 2013–2020. The target covers CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃, expressed using GWP values from the AR4, and covers all sources and sectors included in the annual GHG inventory. In 2017, Tokelau was included as part of New Zealand's GHG inventory for the first time, contributing 0.004 per cent to New Zealand's gross emissions. The emissions from Tokelau have been included in the target since 2017; however, owing to their small amount, they have not been considered as significant enough to warrant recalculating the target or revising the overall ambition. Emissions and removals from the LULUCF sector are not included in the base year (1990), but the eligible contribution from the LULUCF sector will be accounted towards the 2020 target (see para. 16 above). New Zealand reported that it plans to make use of surplus AAUs from the first commitment period of the Kyoto Protocol for achieving its target, but noted that the projected number of units needed to meet the target is uncertain and subject to revision over time. In absolute terms, in order to reach its 2020 target under the Convention New Zealand would have to reduce its emissions from 65,668.25 kt CO₂ eq (in the base year) to 62,384.84 kt CO₂ eq by 2020.

106. In addition to its 2020 target, New Zealand also reported on its 2030 target under the Paris Agreement, which includes a commitment to reduce emissions by 30.0 per cent below the 2005 level in 2021–2030 (equivalent to an 11.0 per cent reduction below the 1990 level). As with the 2020 target, the 2030 target is expressed as a carbon budget and will include all sectors and gases, allow for the use of market mechanisms and cooperative approaches, and account for any contribution from the LULUCF sector.

107. The ZCA establishes New Zealand's 2050 zero emission target (with a complementary target and measures to address biogenic CH₄). In parallel, it has set a target

to reduce biogenic CH₄ emissions to between 24.0 and 47.0 per cent below the 2017 level by 2050, with an interim target of 10.0 per cent below the 2017 level by 2030.

108. Between 2013 and 2017 New Zealand's total GHG emissions excluding LULUCF amounted to 403,042.40 kt CO₂ eq and the contribution of LULUCF amounted to 123,152.36 kt CO₂ eq. New Zealand indicated that it has not yet used any units from market-based mechanisms. This suggests that New Zealand has used 337,705.14 kt CO₂ eq, or 62.5 per cent of the budget for the total period (i.e. 2013–2020).

109. The GHG emission projections provided by New Zealand in its BR4 correspond to the WOM, WEM and WAM scenarios. Under the WEM and WAM scenarios, emissions (excluding LULUCF) are projected to be 23.2 per cent above the 1990 level by 2020, while under the WOM scenario, they are projected to increase by 26.2 per cent in the same period. Under the WEM scenario, the total projected net cumulative GHG emissions including the known contribution of LULUCF and the potential use of market-based mechanisms are estimated to be 509,775.00 kt CO₂ eq in 2013–2020. This corresponds to the Party's target under the Convention. On the basis of the reported information, the ERT concludes that New Zealand is making progress towards its emission reduction target by implementing mitigation actions that deliver emission reductions. The ERT noted that the 2020 projections suggest that, to achieve its 2020 target under the Convention, the Party would also need to use carry-over AAUs from the first commitment period of the Kyoto Protocol and account for the forest management contribution of the LULUCF sector (which will be known only after 2020).

110. New Zealand's main measure to reduce GHG emissions and meet its international targets is the NZ ETS, which was established in 2008 and now covers all sectoral emissions apart from CH₄ and N₂O emissions from agriculture. With the implementation of the Climate Change Response (Emissions Trading Reform) Amendment Act 2020, emissions of CH₄ and N₂O from the agriculture sector will also be priced from 2025 onward, under either the NZ ETS or an alternative pricing mechanism. The NZ ETS also creates financial incentives for large emitters to reduce emissions and landowners to generate offset units through afforestation. The NZ ETS is undergoing reforms to introduce a domestic cap in order to align the scheme with New Zealand's long-term 2050 emission targets and to better manage the supply of NZ ETS units.

111. New Zealand continues to provide climate finance to developing countries as part of its ODA. The level of New Zealand's financial support (in United States dollars) has fallen by about 9.1 per cent since the BR3; its public financial support in 2017 and 2018 totalled USD 27.86 million and 44.13 million, respectively. For those years, New Zealand provided more support for adaptation than for mitigation. The biggest share of support went to projects and programmes addressing water and sanitation, disaster risk management, and energy, followed by projects and programmes addressing agriculture, fisheries and the environment. While New Zealand supports a range of multilateral climate funds, one of its key contributions is to the United Nations Development Programme to support the implementation of the Montreal Protocol. New Zealand's NZD 1.5 million contribution is aimed at supporting global efforts to reduce HFC production under the Kigali Amendment to the Montreal Protocol. The largest share (97.5 per cent) of its financial support is delivered through bilateral, regional and other channels.

112. New Zealand continues to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects and programmes in mitigation and adaptation in recipient countries, mainly the Pacific SIDS, as in the BR3. One example of such support provided is New Zealand's initiative to train a large contingent of Tongan power line mechanics to the New Zealand Qualifications Authority level 4 standard. Participants in the initiative were trained using an internationally recognized approach at a purpose-built training facility. The training was complemented by practical experience overseen by a local company. The training has been successful in helping women access employment in non-traditional sectors and in improving local capacity to operate and maintain the power system.

113. Priority for capacity-building support was given to projects and programmes in areas where New Zealand has strong expertise, that is, agriculture, renewable energy, and disaster risk reduction and resilience. An example of the Party's support for capacity-building is its

provision of support to the Livestock Emissions Abatement Research Network, an academic network for building capacity in and sharing the results of research into livestock emissions among developing countries, thereby contributing to a global body of best practice and reinforcing the work of the GRA.

114. In the course of the review, the ERT formulated the following recommendations for New Zealand to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR and the transparency of its reporting by:

- (a) Providing detailed information on significant PaMs (see issue 1 in table 4);
- (b) Not reporting the indirect effects arising from synergies or overlaps among PaMs as a separate policy or measure (see issue 1 in table 9);
- (c) Including key activity data for the energy and the transport sector projections (see issue 4 in table 9).

Annex

Documents and information used during the review

A. Reference documents

2019 GHG inventory submission of New Zealand. 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>.

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“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 Caterina Joseph (Ministry for the Environment of New Zealand), including additional material. The following documents¹ were provided by New Zealand:

¹ References reproduced as received from the Party.

- New Zealand. 2020. *Projected activity data for the sectors energy, transport, IPPU and waste*. Not available publicly.
- New Zealand. 2020. *Climate Change Response (Emissions Trading Reform) Amendment Act 2020*. Available at <http://www.legislation.govt.nz/act/public/2020/0022/latest/whole.html>.
- New Zealand. 2020. *Climate implications of policy assessment: guidance on Cabinet requirement for central government agencies*. Available at <https://www.mfe.govt.nz/climate-change/climate-implications-policy-assessment>).
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