



Framework Convention on Climate Change

Distr.: General
18 February 2011

English only

Report of the in-depth review of the fifth national communication of New Zealand

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

Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and summary	1–11	3
A. Introduction	1–4	3
B. Summary	5–11	3
II. Technical assessment of the reviewed elements	12–152	4
A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures	12–27	4
B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol	28–85	8
C. Projections and the total effect of policies and measures, and complementarity relating to the Kyoto Protocol mechanisms	86–114	19
D. Vulnerability assessment, climate change impacts and adaptation measures	115–121	26
E. Financial resources and transfer of technology, including information under Articles 10 and 11, of the Kyoto Protocol	122–132	29
F. Research and systematic observation	133–139	31
G. Education, training and public awareness.....	140–143	32
H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol	144–145	33
I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol	146–152	33
III. Conclusions and recommendations.....	153–167	34
IV. Questions of implementation	168	37
Annex		
Documents and information used during the review.....		38

I. Introduction and summary

A. Introduction

1. For New Zealand, the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, New Zealand committed itself to keeping its greenhouse gas (GHG) emissions at the base year¹ level on average during the first commitment period from 2008 to 2012 taking into account Article 3, paragraph 3, of the Kyoto Protocol.

2. This report covers the in-country in-depth review (IDR) of the fifth national communication (NC5) of New Zealand, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 23 to 28 August 2010 in Wellington, New Zealand, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Leandro Buendia (Philippines), Mr. Solomone Fifita (Tonga), Ms. Julie Gilfelt (Australia) and Ms. Agnieszka Janowska (European Union). Mr. Buendia and Ms. Janowska were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by New Zealand as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by New Zealand in its 2010 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

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

B. Summary

5. New Zealand's NC5 mostly complies with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol was provided in the NC5. New Zealand considered most of the recommendations provided in the report of the centralized in-depth review of the fourth national communication (NC4) of New Zealand² including the reporting of quantitative estimates of the effect of individual policies and measures (PaMs) as well as reporting of the total effect of PaMs for 2020.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above provided in the 2010 annual submission is almost complete and transparent and was provided on time. During the review New Zealand provided further relevant information (see para 147).

¹ "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

² FCCC/IDR.4/NZL.

1. Completeness

7. The NC5 covers all sections and contains most of the information required by the UNFCCC reporting guidelines, except for information on: the assumptions and key drivers used in the projections for each sector (see para. 88 below) and estimates of the total effects of PaMs for the first commitment period of the Kyoto Protocol (see para. 106 below). The NC5 contains most of the information required in accordance with Article 7, paragraph 2, of the Kyoto Protocol, with the exception of explicit elaboration of supplementarity (see para. 111 below) and the steps New Zealand has taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or reduce GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels (see para. 64 below). The ERT recommends that New Zealand improve the completeness of its reporting by providing this information in its next national communication.

2. Transparency

8. The ERT acknowledged that New Zealand's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol is comprehensive and generally transparent. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and the supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable.

9. The ERT noted some discrepancies and lack of linkages between the section on PaMs and the section on projections (see para. 31 below). In addition, there appears to be some inconsistency in the time horizons of the economy-wide and sectoral GHG emission reduction targets (see para. 42 below). The ERT also noted that activities undertaken by the public and private sectors for technology transfer were not clearly distinguished in the NC5.

10. The ERT encourages New Zealand to continue its efforts to enhance the transparency and consistency of its reporting in its next national communication.

3. Timeliness

11. The NC5 was submitted on 23 December 2009, before the deadline of 1 January 2010 mandated by decision 10/CP.13. The ERT commends New Zealand for the timeliness of its submission.

II. Technical assessment of the reviewed elements

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

12. In its NC5, New Zealand has provided a concise description of the national circumstances and has elaborated on the framework legislation and key policy documents on climate change. The NC5 also referred to the description of the national system provided in the national inventory report (NIR) of the 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapters II.A.1 and II.B.1 of this report.

1. National circumstances

13. In its NC5, New Zealand has provided a description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals in New Zealand and how changes in national circumstances affect GHG emissions and removals over time.

14. The ERT noted that the main drivers of emission trends in New Zealand are population growth and land-use changes defined by the demand for agricultural products. New Zealand's small population of 4.3 million people (according to 2008 figures) is rapidly growing (increasing by 25 per cent between 1990 and 2007) and is driving the country's energy demand and demand for transportation. About 87 per cent of the population lives in towns and cities; this influences the development of infrastructure and triggers an increase in energy demand in urban areas. New Zealand experienced severe drought over the period 2007–2008, which significantly reduced its agricultural production. With regard to land-use change, the dynamics of forestry versus dairy farming profitability over the time series have influenced land-use conversion (e.g. deforestation, reforestation/afforestation) rates, which has had a direct effect on the carbon stocks in forest land. As the price of dairy products increases, farmers tend to deforest and convert their forest land to grassland for dairy production. Conversely, a drop in the price of dairy products encourages farmers to reforest/afforest.

15. New Zealand's energy mix for electricity generation is sensitive to the effects of rainfall, since more than 50 per cent of its electricity is generated from hydroelectric plants. During dry years, more heat and power is produced from combined heat and power plants, particularly from the use of coal and gas. Drought, in particular over the years 2007–2008, has considerably affected the export-oriented and energy-based livestock industries, such as the dairy processing industry.

16. New Zealand has provided detailed information on its geography, climate and economic profile. The ERT noted, however, that further information on sector-specific parameters would be useful (such as the agriculture sector's contribution to gross domestic product (GDP), the share of the population employed in agriculture, and national energy demand). Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

17. New Zealand has provided in its NC5 a summary of information on GHG emission trends for the period 1990–2007. This information is consistent with the 2009 annual submission. The ERT noted that the NC5 included a report on the country's total GHG emissions, both with land use, land-use change and forestry (LULUCF) and without LULUCF. Summary tables of New Zealand's emissions and removals provided in its 2007 national GHG inventory, including trend tables for emissions in carbon dioxide equivalent (CO₂ eq) (given in the common reporting format (CRF)) for the period 1990–2007, are also provided in annex A to the NC5. During the review, New Zealand provided data from its 2010 annual submission, which is referred to in table 1 below and used in the relevant sections of this report.

18. Total GHG emissions including net emissions and removals from LULUCF increased by 62.5 per cent between the base year and 2008, whereas total GHG emissions excluding emissions and removals from LULUCF increased by 22.8 per cent.³ The latter increase was mainly attributed to CO₂ emissions, which increased by 44.9 per cent over this

³ Calculations in the report are based on New Zealand's 2010 annual submission, CRF version 1.2, submitted 15 October 2010 and further revision of estimates of CH₄ emissions from natural gas leakage at industrial plants and power stations (1.B.2.b.v.1) submitted as a result of the review of annual 2010 submission.

period. Emissions of nitrous oxide (N₂O) and methane (CH₄) also increased by 21.8 per cent and 1.7 per cent, respectively.

19. Trends in total GHG emissions were mostly underpinned by trends in the energy and agriculture sectors, driven by the growth in emissions from transport and energy industries, from enteric fermentation from livestock and N₂O from agricultural soils. Table 2 provides an overview of GHG emissions by sector from the base year to 2008 (see also the discussion of sectoral trends provided in chapter II.B of this report).

Table 1

Indicators relevant to greenhouse gas emissions and removals for New Zealand

	1990	1995	2000	2005	2008	Change 1990– 2000 (%)	Change 2000– 2008 (%)	Change 1990– 2008 (%)
Population (million)	3.5	3.7	3.9	4.2	4.3	11.2	11.1	23.5
GDP (2000 USD billion using PPP)	60.4	70.4	80.3	97.3	101.0	32.9	25.8	67.2
TPES (Mtoe)	12.7	14.7	16.7	15.1	17.0	31.4	1.5	33.5
GDP per capita (2000 USD thousand using PPP)	17.3	18.9	20.7	23.3	23.4	19.6	13.2	35.4
TPES per capita (toe)	3.6	4.0	4.3	3.6	3.9	18.2	-8.6	8.1
GHG emissions without LULUCF (Tg CO ₂ eq)	61.2	63.0	70.1	77.2	75.2	14.5	7.3	22.8
GHG emissions with LULUCF (Tg CO ₂ eq)	30.1	34.2	38.9	53.5	48.9	28.7	26.3	62.5
CO ₂ emissions per capita (Mg)	7.1	7.0	8.0	8.6	8.4	11.8	4.9	17.3
CO ₂ emissions per GDP unit (kg per 2000 USD using PPP)	0.4	0.4	0.4	0.4	0.4	-6.5	-7.3	-13.4
GHG emissions per capita (Mg CO ₂ eq)	17.5	16.9	18.1	18.5	17.4	3.0	-3.5	-0.6
GHG emissions per GDF unit (kg CO ₂ eq per 2000 USD using PPP)	1.0	0.9	0.9	0.8	0.7	-13.9	-14.8	-26.6

Data sources: (1) GHG emissions data: New Zealand's 2010 annual submission, CRF version 1.2, submitted 15 October 2010 and further revision of estimates of CH₄ emissions from natural gas leakage at industrial plants and power stations (I.B.2.b.v.1) submitted as a result of the review of annual 2010 submission. (2) Population, GDP and TPES data: International Energy Agency.

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

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

2. National system

20. In accordance with decision 15/CMP.1, New Zealand has provided, in annex B to its NC5, a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1

(decision 19/CMP.1). The description includes the elements as required in decision 15/CMP.1.

21. New Zealand has also provided, in annex B to its NC5, a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, of the Kyoto Protocol also contribute to the conservation of biodiversity and sustainable use of natural resources.

Table 2
Greenhouse gas emissions by sector in New Zealand, 1990–2008

Sector	GHG emissions (Tg CO ₂ eq)						Change (%)		Shares ^a by sector (%)	
	1990	1995	2000	2005	2007	2008	1990–2008	2007–2008	1990	2008
1. Energy	23.20	23.87	29.09	33.94	32.89	34.05	46.8	3.5	37.9	45.3
A1. Energy industries	5.98	4.71	6.07	9.27	7.88	8.90	48.9	13.0	9.8	11.8
A2. Manufacturing industries and construction	4.23	3.73	5.63	5.12	5.34	5.71	35.0	6.9	6.9	7.6
A3. Transport	8.75	11.05	12.48	14.55	14.90	14.27	63.2	–4.2	14.3	19.0
A4.–A5. Other	2.91	3.04	3.31	3.14	2.82	2.90	–0.5	2.7	4.8	3.9
B. Fugitive emissions	1.33	1.33	1.59	1.85	1.95	2.27	70.7	16.3	2.2	3.7
2. Industrial processes	3.39	3.31	3.56	4.31	4.64	4.29	26.8	–7.4	5.5	5.7
3. Solvent and other product use	0.04	0.04	0.05	0.04	0.04	0.03	–25.4	–28.6	0.1	0.04
4. Agriculture	31.87	33.19	35.08	36.78	35.56	34.83	9.3	–2.1	52.1	46.3
5. LULUCF	–31.07	–28.77	–31.28	–23.79	–16.82	–26.18	–15.7	55.6	–50.8	–34.8
6. Waste	2.71	2.56	2.37	2.16	2.10	1.95	–27.9	–7.1	4.4	2.6
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	30.13	34.20	38.86	53.45	58.41	48.98	62.5	–16.1	NA	NA
GHG total without LULUCF	61.20	62.98	70.14	77.24	75.23	75.15	22.8	–0.1	100.0	100.0

Data source: New Zealand's 2010 annual submission, CRF version 1.2, submitted 15 October 2010 and further revision of estimates of CH₄ emissions from natural gas leakage at industrial plants and power stations (1.B.2.b.v.1) submitted as a result of the review of annual 2010 submission;

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

Abbreviations: NA= not applicable, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

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

22. The Climate Change Response Act (CCRA) (2002) put in place the legal framework for the implementation of the UNFCCC and its Kyoto Protocol. The CCRA authorizes the Ministry for the Environment to act as the national inventory agency and empowers the Minister of Finance to manage, trade and record New Zealand's holdings and transfers of Kyoto units.

23. The ERT noted that New Zealand's national system continues to perform its required functions as set out in decision 19/CMP.1. During the review, New Zealand provided further information on its inventory system (e.g. the choice of methods, activity data and emission factors), and on the process for archiving inventory data and information. The ERT encourages New Zealand, in its next national communication, to include a description of its inventory documentation and archiving systems and an explanation of how the inventory information is used to improve national inventory planning or to provide a reference to this information reported in the NIR of an annual submission.

3. National registry

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

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

26. The ERT took note of the recommendation in the 2009 report of the individual review of the annual submission (ARR) of New Zealand that the Party improve its reporting on the changes made to test procedures and test results, in accordance with paragraph 32(j) of the annex to decision 15/CMP.1. Based on the information provided to the ERT during the review, the ERT noted that the recommendation of the previous ERT has been sufficiently addressed.

27. The ERT also noted the conclusion of the 2010 standard independent assessment report (SIAR) and concluded that New Zealand's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

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

28. As required by the UNFCCC reporting guidelines, New Zealand has provided in its NC5 comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the UNFCCC and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by the summary table on PaMs by sector. New Zealand has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. The NC5 includes information on three PaMs which are no longer in place, accompanied by an explanation of why a decision to discontinue such policies was made. The NC5 contains, with a few exceptions, a similar set of PaMs to those in the NC4.

29. However, the ERT noted that the NC5 did not include information on: the way in which progress with PaMs is monitored and evaluated over time and relevant institutional arrangements; the potential overlap among PaMs; the PaMs which could lead to an increase in GHG emissions; and the implementation costs of PaMs. The ERT encourages New Zealand to include this information in its next national communication. The ERT noted that, during the review, the Party provided relevant information including estimates of the implementation costs of PaMs in the energy sector, such as the benefit–cost ratio for energy-efficient products, energy audits and the clean heat programme. The ERT encourages New Zealand to further elaborate on the monitoring and evaluation of the progress in the implementation of PaMs, including information on the costs of its PaMs in its next national communication.

30. The GHG emission reduction potential is provided in the NC5 for a limited number of PaMs, some of which are presented at an aggregated level. For example, the estimated GHG emission reduction potential of New Zealand’s emissions trading scheme (ETS) is 10,000 Gg CO₂ eq by 2020, while the estimated GHG emission reduction potential of the Efficient Products Programme is 1,400 Gg CO₂ eq by 2020. The ERT encourages New Zealand to include more detailed information on the effect of individual PaMs in its next national communication.

31. The ERT noted some discrepancies between the PaMs and the projections chapters of the NC5. It was not clear whether all the PaMs considered when estimating the total effect of PaMs on GHG emissions in the NC5 are also included in the ‘with measures’ scenario (see paras. 87–91 below). The ERT therefore encourages New Zealand to improve the linkages between these two chapters in its next national communication.

32. Several recommendations from the previous review were taken into consideration, including the enhanced reporting of quantitative estimates of the impact of individual PaMs, as well as reporting of the total effect of PaMs for 2020. The NC5 presents the effects of several PaMs for 2009, 2020 and 2040. However, similarly to the NC4, the summary table of PaMs does not clearly present PaMs by sector and by gas. The ERT recommends that New Zealand further enhance the reporting of its PaMs by presenting them by sector and by gas in the summary table of PaMs in its next national communication. Table 3 provides a summary of the reported information on the PaMs of New Zealand.

Table 3
Summary of information on policies and measures

<i>Major policies and measures</i>	<i>Examples/comments</i>
<i>Policy framework and cross-sectoral measures</i>	
Emissions trading	New Zealand emissions trading scheme (ETS) (1.6 Mt CO ₂ eq per year by 2010; 12 Mt CO ₂ eq per year by 2020)
Research and information	Global Research Alliance on Agricultural Greenhouse Gases; Sustainable Land Management and Climate Change Plan of Action Agricultural Greenhouse Gas Research Centre
<i>Policies and measures by sector</i>	
<i>Energy</i>	
Renewable energy	Draft Energy Strategy (2010)
Energy efficiency improvements	Draft Energy Efficiency and Conservation Strategy (2010)

<i>Major policies and measures</i>	<i>Examples/comments</i>
	Efficient Products Programme (1.4 Mt CO ₂ eq per year by 2020) which include Minimum Energy Performance Standards and electricity efficiency programmes
	Business programmes (0.032 Mt CO ₂ eq per year by 2020)
	Marine Energy and Distributed Generation Funds (0.07 Mt CO ₂ eq per year by 2020)
	Warm Up New Zealand: Heat Smart
	ENERGYWISE homes (0.02 Mt CO ₂ eq per year by 2020)
<i>Transport</i>	Transport Strategy (2008)
	Vehicle Fuel Economy Labelling (43 Mt CO ₂ eq per year by 2020)
	Promotion of biofuels in transport
	Promotion of electric vehicles
<i>Industrial processes</i>	(Covered under ETS, as all the other sectors)
<i>Agriculture</i>	Introduction of nitrification inhibitors (dicyandiamide (DCD))
	Enhancing collaboration between the policy makers and researchers
	Greenhouse Gas Footprinting Strategy for the Land-based Primary Sectors
	Enhancing research and development of biochar (semipermanent carbon storage) technology
	Wood energy programme
	Agriculture inventory research programme
	Technology transfer programme
<i>Forestry</i>	East Coast Forestry Project
	Afforestation Grant Scheme
	Permanent Forest Sinks Initiative
	Increasing the use of wood as a construction material
<i>Waste</i>	Waste Strategy (2002)
	Setting of National Environmental Standard for Landfill Methane
	Waste Minimisation Act 2008
	Imposing of waste disposal levy (2008)

1. Policy framework and cross-sectoral measures

33. The institutions responsible for coordinating and implementing New Zealand's climate change policy have been continuously strengthened since the establishment of the Climate Change Programme, coordinated by the Ministry for the Environment, in 1988.

The programme has steadily evolved and now spans several government departments and agencies, including the Ministry of Agriculture and Forestry and the Ministry of Economic Development. The NC4 presented the history of New Zealand's climate change policy and related governmental decisions up to 2006, while the NC5 describes more recent developments such as the introduction of the ETS.

34. Governance for the coordination of environmental policy, including climate change, is provided by the Natural Resources Sector Group, which is comprised of the relevant government agencies' chief executives. The Ministry for the Environment is responsible for coordinating climate change policy across government. The implementation of specific climate change policies, once agreed to by the Government, is led by relevant ministries in the areas of their competencies, including the Ministry of Environment, the Ministry of Agriculture and Forestry, the Ministry of Transport, the Ministry of Economic Development as well as various research and scientific institutions. Many agencies from several sectors are also involved in the climate policy implementation process and the Energy Efficiency and Conservation Authority plays a significant role.

35. Regional and local authorities have primary responsibility for regulating resource use in New Zealand and for promoting the environmental, social, cultural and economic well-being of communities. Many local authorities and regions, being responsible for infrastructure planning, are also active in promoting emission reduction PaMs and climate change adaptation. Associated partners, such as farmers' unions, business associations and ethical groups, are also involved by the central government in the implementation of climate change policy, such as the preparation for and implementation of the ETS.

36. The CCRA (amended on 26 September 2008 and in 2009) was enacted in order to enable New Zealand to meet its international obligations under the UNFCCC and its Kyoto Protocol target (keeping net GHG emissions on average at 1990 levels between 2008 and 2012). It established the national registry as well as the necessary institutional arrangements in accordance with the Kyoto Protocol. New Zealand does not intend to use the flexible mechanisms of the Kyoto Protocol to reach its Kyoto Protocol emission reduction targets in the first commitment period. The CCRA amendment of 2008 established the ETS as the principal PaM to reduce GHG emissions. New Zealand has also developed emission reduction strategies for the energy, transport and waste sectors.

37. New Zealand considers its ETS as the principal policy instrument in its climate change programme for the period 2008–2020. The ETS was launched in 2008 by amending the CCRA, and in 2009 it was amended again in order to ease the effect of the ETS on the economy in the first years of its implementation. Forestry was the first sector covered by the ETS in 2008, followed by fossil fuel use in stationary energy sources, transport and the manufacturing industry sector (included in the ETS as of 1 July 2010). As a result of these changes compared to the original design of the scheme, the expected effect between 2008 and 2012 is very small (see para. 39). For the post-2012 period, it is foreseen that the waste sector and synthetic gases will be included in the ETS in 2013 and the agriculture sector in 2015. Thus, it is expected that by 2015 all sectors and gases will be covered by the ETS. The ETS will be reviewed every five years, with the first review to be carried out in 2011, which will also take account of international climate policy developments. As the decision concerning the inclusion of the remaining sectors in the post-2012 period within the ETS depends on the developments in international climate change policy, it is uncertain if all sectors will be covered by the ETS as currently foreseen.

38. The allocation of allowances for industry under the ETS is based on energy intensity per unit of production, and a transitional phase (1 July 2010 to 31 December 2012) is planned, during which assistance in the form of free allocation to energy-intensive industry is foreseen until 2012 (90 per cent and 60 per cent rates of assistance for highly and moderately emission-intensive industry). The monitored reporting and verification system

within the ETS is similar to the tax system, as it includes self-assessment, powers of audit and penalties for fraud. In cases of non-compliance, financial penalties and an obligation to buy missing allowances are implemented.

39. Several rules have been implemented in the ETS during the transition phase to soften the possible impact of the scheme on the participants. New Zealand will allow participants in the ETS to buy emission units from the Government for a fixed price of 25 New Zealand dollars (NZD). In addition, participants from the fuel combustion in energy industries, transport and the manufacturing industry will have to surrender only one emission unit for every two tonnes of emissions they produce during the transition phase. From 2013, these rules will be abolished and one tonne of CO₂ emitted will have to be covered by one allowance.

40. The ERT noted the efforts made by New Zealand to implement the ETS as well as to educate its participants. However, the ERT noted that the design of the scheme as well as the conditionality of its full implementation by 2015 create uncertainties in relation to the delivery of its estimated emission reductions. The ERT noted the need to monitor the mitigation effect delivered by the ETS, especially in the forestry sector where most emission reductions are expected to occur.

41. In addition to the ETS, other cross-cutting measures include promoting research and information dissemination, especially in the agriculture sector. These measures are implemented chiefly through the Global Research Alliance on Agricultural Greenhouse Gases (2009) and the Sustainable Land Management and Climate Change Plan of Action (2007). This plan centres on the agriculture and forestry sectors. It is supported by the Government, which allocated NZD 175 million to it, and it is implemented through a partnership of the Government, the land management sectors, local government and Maori. It covers three broad workstreams: adaptation, reducing emissions and enhancing sinks, and creating business opportunities.

42. Beyond 2012, New Zealand has set a conditional target of reducing GHG emissions by 10–20 per cent below 1990 levels by 2020. The target is conditional on the extent of future international action to reduce emissions. New Zealand considers that as with its target for the first commitment period of the Kyoto Protocol, this is a ‘responsibility target’, meaning that it is expected that New Zealand will meet its target through a combination of domestic emission reductions, the storage of carbon in forests and the purchase of emission reduction units from other countries. The ETS is the main mechanism through which New Zealand aims to meet this target, although current projections show that it is expected that a net emission reduction of 12.0 Mt CO₂ eq/year will be achieved by 2020 (based on a continuation of Kyoto Protocol accounting rules). This is only a third of the reductions level required to meet the lower end of the 10–20 per cent target range.

43. The medium-term targets are defined in two energy-related policy documents and in strategic documents relating to the transport and waste sectors. A Draft Energy Strategy and Draft Energy Efficiency and Conservation Strategy are to be adopted in early 2011 once the consultation process has been finalized. These two strategies set a target for electricity generation from renewable energy sources (RES) of 90 per cent by 2025, set an energy-efficiency savings target of 55 petajoules (PJ) by 2015 and identifies an energy-intensity improvement of 1.2 per cent per year by 2030 compared with energy intensity levels in 2008. The delivery of the 55 PJ target is divided between three sectors: transport (29 PJ), business (21 PJ) and dwellings (4 PJ).

44. New Zealand has also announced a long-term aspirational target of reducing emissions to 50 per cent below 1990 levels by 2050. While PaMs to reduce emissions to this level have not yet been defined, the ERT noted that New Zealand does have in place

several long-term sectoral strategies, such as the New Zealand Transport Strategy (2008), which is set to run until 2040.

45. In addition, the Transport Strategy (2008) has also set several targets to be achieved by 2040, such as halving per capita GHG emissions from domestic transport compared to 2007 levels. The Waste Minimisation Act (2008) is aimed at the minimization of waste and covers solid, liquid and gaseous waste. The fact that the strategies for different sectors set targets with different time horizons may create challenges for coordinated efforts and for the assessment of the contribution of these PaMs to economy-wide medium- and long-term emission reduction targets.

2. Policies and measures in the energy sector

46. Between 1990 and 2008, GHG emissions from the energy sector increased by 46.8 per cent, mainly driven by strong growth in transport energy demand and the increased use of fossil fuels (coal and gas) for electricity generation. During this period, GDP continued to grow (by 67.2 per cent) and the population also increased (by 23.5 per cent). Electricity generation from RES plays a significant role in New Zealand, accounting for 73 per cent of total electricity generation in 2008. Inter-annual emission changes are caused by inter-annual fluctuations of electricity generation from hydroelectric power plants that rely heavily on weather conditions and the resulting production of electricity from coal and natural gas. The trend in GHG emissions from fuel combustion has showed notable increases in transport (63.2 per cent) and in energy industries (48.9 per cent). In the residential and services sector, emission reductions due to improvements in thermal insulation did not outweigh the increase in emissions due to the growing number of dwellings and commercial premises and the improved standard of living conditions. The ERT commends New Zealand for its transparent reporting on PaMs in the energy sector, which is the second largest contributor to total GHG emissions in New Zealand.

47. **Energy supply.** In 2009, 73 per cent electricity was produced from RES (mostly hydro, followed by geothermal) with coal and gas making up the remaining relatively small share of electricity generation. Increased demand in electricity consumption since 1990 was met by an increase in electricity generation from coal (coal and coal products in total primary energy supply increased by 49.4 per cent in 1990–2008). The share of RES in total primary energy supply (TPES) increased by 36.2 per cent in 1990–2008, mainly due to increases in geothermal energy production (by 62.2 per cent) and combustable renewables (by 89.0 per cent) over the same time period. The amount of hydro energy produced remained almost unchanged. RES (hydro, geothermal, combustable renewables, solar, wind) accounted for 32.4 per cent of TPES in 1990 and 33.1 per cent in 2008. New Zealand plans to phase out the use of coal by 2020, which will be replaced by an increased use of RES.

48. New Zealand's energy intensity (energy use per GDP) decreased by 8.6 per cent from 2001 (4.3 TJ/NZD million) to 2008 (3.9 TJ/NZD million), or a reduction of about 1.3 per cent per year. On a per capita basis, however, energy intensity rose by 0.8 per cent from 2001 (117 GJ/person) to 2008 (124 GJ/person). GDP grew by around 2.9 per cent/year during the period 1990–2008. The increasing trend in energy use per capita can be largely attributed to increased personal energy use, possibly driven by factors such as higher average incomes and an increasingly energy-intensive lifestyle.

49. **Renewable energy sources.** New Zealand has abundant and diverse RES and there is considerable potential to further develop RES (mainly hydro, geothermal and wind) for electricity generation to partially replace the use of oil and gas and coal. The Government has set a target for 90 per cent of New Zealand's electricity to be generated from RES by 2025 (in 2008, 73 per cent of electricity was generated from RES). The increase of 17 per cent of the share of electricity generated from RES in 2008–2025 will be provided by an

increase in the use of geothermal, wind and hydro energy, as those are the most cost-effective options among various RES. Biomass and solar energy currently are not considered economically viable options. Most of the projects concerning RES are undergoing the approvals process or are already under development.

50. So far, the relatively high share of RES used for electricity generation has been due to the availability of RES and their cost-effectiveness. The Government oversees the electricity market and ensures that any unnecessary regulatory barriers to the development of renewable energy generation are removed. The most prominent measure to further promote RES use for power generation is the inclusion of the energy sector in the ETS. To this end, the ERT noted that the ETS may provide incentives for the replacement of coal by renewables for power generation. The ERT encourages New Zealand to provide, in its next national communication, information on its plan and the actions it intends to implement to reach the 2025 target for RES.

51. **Energy efficiency.** According to the information provided during the review, in the period 2001–2008 the average economy-wide energy efficiency improvement was 1.3 per cent per year. Most improvements were achieved by enhancing energy efficiency in products (through minimum energy performance standards, mandatory product efficiency labelling, ENERGYSTAR, vehicle fuel efficiency labelling) and in the residential and commercial sectors.

52. The key PaM currently in place to promote energy efficiency is the Efficient Products Programme which includes the development of energy efficiency labels and minimum energy performance standards (MEPS) for a range of electrical products that are commonly used in the residential, commercial and industrial sectors. MEPS ensure that the most inefficient products are not available for sale and that products are labelled to provide energy efficiency information. Compulsory labelling covers all whiteware appliances and heat pumps for sale.

53. Additionally, a voluntary product labelling scheme (ENERGY STAR) was launched in 2005 and has been awarding labels to the most energy-efficient products on the market. Electricity efficiency programmes focus on electricity use and address areas such as efficient lighting. This includes the ENERGY WISE homes programme, which is aimed at the residential sector and provides information and support to reduce energy consumption, including information on clean heating options and heat-pump water heating. Other PaMs to promote energy efficiency focus on information dissemination and the provision of grants as well as advice, energy audits and loans to businesses.

54. Eleven government agencies are responsible for the promotion of energy efficiency, with the Energy Efficiency and Conservation Authority (EECA) working as the Government's primary programme delivery agency in the area of energy efficiency improvement, leading many programmes and projects. The other agencies involved include the Ministry of Economic Development, the Ministry for the Environment and the Electricity Commission.

55. **Residential and commercial sectors.** According to the additional information provided to the ERT during the review, in 2008 the residential sector accounted for 12 per cent (62 PJ) of total final energy consumption. This equates to 40 GJ (or 11,000 kWh) of energy/year/household. From 2001 to 2008, the commercial sector's total energy use remained broadly unchanged, increasing slightly by 1.2 per cent (from 48.4 PJ to 49 PJ). The ERT noted these trends and encourages New Zealand to monitor and report on them in its next national communication.

56. The PaMs addressing these subsectors cover all programmes aimed at energy efficiency improvements, such as building insulation (Warm Up New Zealand: Heat

Smart), the reduction of energy consumption (ENERGY WISE homes) and the use of energy-efficient appliances (MEPS).

57. New Zealand considers the programme Warm Up New Zealand: Heat Smart as one of its success stories. Sixty thousand homes received subsidized insulation in 2009–2010 during the first year of this programme, with a total of 180,000 homes expected to benefit during the entire four-year programme. The efficient administration by the EECA contributed to the success of this programme. The ERT noted New Zealand's efforts to improve energy efficiency and encourages the Party to report in further detail on its success stories in its next national communication.

58. **Transport sector.** Transport is the largest and fastest-growing energy-consuming sector in New Zealand. During the period 1990–2008, GHG emissions from transport increased by 63.2 per cent, amounting to 20 per cent of total national GHG emissions in 2008. During the period 2001–2008, GHG emissions from transport increased by 14.3 per cent, mainly due to the GDP growth (by 27 per cent) and the population growth (by 9.8 per cent). A 7.4 per cent decrease in overall transport energy intensity (from 1.8 TJ/NZD million in 2001 to 1.6 TJ/NZD million in 2008) suggests some steps towards decoupling of energy use and economic activity.

59. Energy use in road transportation accounts for 90.3 per cent of total energy use by transport, followed by 6.7 per cent in civil aviation, 1.9 per cent in navigation and 1.1 per cent in railways. While there have been some significant increases in air and rail travel (including a 63 per cent increase in the share of air travel in total distances travelled), road transportation remains the dominant mode of travel in New Zealand.

60. New Zealand considers the ETS, which has covered the transport sector since 1 July 2010, as the main GHG reduction measure in the sector in the future. The New Zealand Transport Strategy (2008) sets several targets to be achieved by 2040, such as halving per capita GHG emissions from domestic transport and increasing the use of electric vehicles. Existing estimates⁴ suggest penetration rates of 1.0 per cent for electric cars (30,000 electric cars) by 2020, indicating that a strategy should be developed if the target set for electric vehicles is to be achieved.

61. The per capita GHG emission reduction target equates to a reduction of 60 per cent in predicted 2040 levels of per capita emissions. Accordingly, by 2020, New Zealand could achieve a reduction of approximately 23 per cent in per capita CO₂ eq emissions from transport. Just over half of this reduction is expected to come from changes in the car fleet, as well as from an increase in walking, cycling and the use of public transport. The anticipated change in the car fleet includes a reduction in engine size and an increased share of diesel engines and biofuels. The rest of the CO₂ eq emission reduction would come from heavy-duty vehicles, including: a modal shift of freight from road to rail and sea; increases in the fuel efficiency of road freight operations; and the use of biodiesel. Reductions by 2040 are expected to be delivered by further increase in the use of alternative fuels, changes in composition of car fleet as well as shift to more efficient modes.

62. Other PaMs in transport include the Vehicle Fuel Economy Labelling scheme and grants to biodiesel production, but their effect is limited and not yet quantified. Despite the measures in place, New Zealand projects a 78 per cent increase in GHG emissions from transport in 2020 compared to 1990. The ERT therefore encourages New Zealand to closely monitor GHG emissions from the transport sector in order to track the progress towards achieving the GHG emission reduction target.

⁴ Cabinet Economic Growth and Infrastructure Committee. 2009. Road User Charges Act 1977: Proposed Amendments. Summary of Paper. EGI (09) 77, pages 3–4.

63. New Zealand continues to be a very aviation-oriented nation and aviation fuel is the second most commonly used fuel after gasoline for road transportation. Almost all passenger travel to and from New Zealand is by air, and aviation is essential for exporting time-sensitive goods, including horticultural and seafood products. New Zealand's geographical remoteness, coupled with its economically important international tourism, mean that addressing international aviation emissions is a key concern. Airways New Zealand (New Zealand's air navigation service provider) is working together with the air navigation service providers of other countries to improve energy efficiencies on international or long-haul routes through the Asia-Pacific Initiative to Reduce Emissions (ASPIRE).

64. International shipping carries the vast majority of New Zealand's imported and exported goods (99.4 per cent of imports and 99.5 per cent of exports). Shipping is also relied on to transport freight domestically. Most domestic shipping cargo is carried across Cook Strait between the North and South Islands. The NC5 notes that Government plays an active role within the International Maritime Organization's Maritime Environment Protection Committee and that joint inter-departmental project is investigating methods for calculating GHG emissions from international shipping. The ERT recommends that New Zealand further report in its next national communication the steps it has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol.

65. **Industrial sector.** The main type of energy used in the industrial sector is electricity, consistently accounting for slightly under one third of sectoral energy use. Solid fuel, gas, wood and liquid fuels account for just under the remaining two thirds of energy use in the sector and their contribution is approximately equal, with the balance coming from geothermal energy. Several programmes implemented by the EECA (grants, audits, technology improvements) aim to improve energy efficiency in the industry sector. The Motor Bounty Scheme provides an incentive to motor users to upgrade their electric motors by providing support for the removal of low-efficiency motors and replacing them with more energy-efficient ones.

3. Policies and measures in other sectors

66. Between 1990 and 2008, GHG emissions from the industrial processes (including solvent and other product use), agriculture and waste sectors increased by 13.5 per cent (5,097.05 Gg CO₂ eq), mainly driven by a growth in emissions from agriculture as well as from metal production and the consumption of hydrofluorocarbons (HFCs). The GHG emissions from the agriculture sector increased by 9.3 per cent (or 2,960.88 Gg CO₂ eq), emissions from the industrial processes sector increased by 26.8 per cent (or 906.20 Gg CO₂ eq) and this increase was partly compensated for by a decrease in emissions from the waste sector (31.5 per cent or 767.49 Gg).

67. **Industrial processes.** Between 1990 and 2008, GHG emissions from the industrial processes sector increased by 26.8 per cent (906.20 Gg CO₂ eq), mainly due to a growth in emissions from metal production and the consumption of HFCs. This sector has been covered by the ETS since 1 July 2010 (synthetic gases will be covered from 2013); the ETS is the principal PaM through which GHG emission reductions are expected to be delivered, mostly after 2012. However, estimates of the effect of the ETS on this sector are not yet available.

68. **Agriculture.** Between 1990 and 2008, GHG emissions from the agriculture sector increased by 9.3 per cent (2,960.88 Gg CO₂ eq), mainly driven by an increase in emissions from enteric fermentation from livestock and N₂O emissions from agricultural soils.

69. The Ministry for the Environment is responsible for coordinating national climate change policy in the agriculture sector with the Ministry of Agriculture and Forestry and contributes to the development of PaMs related to agriculture and forestry policy. The Ministry of Research, Science and Technology provides relevant science and technology policy advice to the Government, while the Foundation for Research, Science and Technology makes necessary investments in science and research, including research on climate change. Local authorities (regional, district and unitary authorities) regulate resource use in New Zealand by promoting the environmental, social, cultural and economic well-being of communities and by actively promoting emission reduction PaMs in their respective regions.

70. New Zealand's PaMs in the agriculture sector comprise the ETS, the provision of information and support for research and development programmes to reduce GHG emissions and enhancing forest sinks while achieving other policy goals as well as enhancing the introduction of nitrification inhibitors.

71. The agriculture sector is set to enter the ETS in 2015. The ETS will cover all major agricultural sources of CH₄ and N₂O emissions and its aim is to reduce net emissions below 'business as usual' levels. The Ministry of Agriculture and Forestry, with the assistance of the Ministry for the Environment, develops the allocation plans and regulations. The obligatory reporting of CH₄ and N₂O emissions by the potential ETS participants is anticipated to begin in 2013. During the review, the ERT received additional information and material showing New Zealand's endeavour to educate the agriculture sector, farmers and landowners about the principles and the operation of the ETS. However, the ERT noted the concerns and risks associated with the uncertainty of implementing the ETS for the agriculture sector.

72. New Zealand is also supporting research and development activities, both domestic and international, to develop measures to reduce GHG emissions from agriculture. It provides financial support to agricultural GHG mitigation research under the Global Research Alliance on Agricultural Greenhouse Gases, in addition to the funding already committed to the national Agricultural Greenhouse Gas Research Centre. The establishment of this centre is the key programme under the Primary Growth Partnership (PGP), focusing on research on ruminant methane, N₂O and soil carbon in the pastoral and horticultural sectors. New Zealand further supports a partnership with the dairy and fertilizer industries, the Pastoral Greenhouse Gas Research Consortium (PGGRC), which provides livestock farmers with information on GHG mitigation options.

73. New Zealand has developed a Sustainable Land Management and Climate Change Plan of Action research programme which implements research activities on farm-level GHG reporting using national nitrification inhibitor research, a nutrient budget model, bioenergy and biochar research and development, national agriculture and forestry inventory development, and life cycle analysis to a number of industry sectors and products. The nitrification inhibitor (dicyandiamide (DCD)) applied to pastures proved to be a successful measure to also reduce nitrate leaching and increase pasture growth.

74. The ERT noted the research collaborations and initiatives undertaken by New Zealand to reduce GHG emissions from the agriculture sector, including the information on the effects of PaMs. The ERT also noted that most of the implemented measures do not contain any quantitative estimates of the effect of PaMs on GHG emissions. The ERT encourages New Zealand to enhance the transparency and completeness of its reporting by providing information on the effect of each PaM.

75. **LULUCF.** In 2008, the LULUCF sector in New Zealand was a net sink of 26,176.78 Gg CO₂ eq. Net GHG removals have decreased by 15.7 per cent since 1990

(31,066.30 Gg CO₂ eq). The trend was mainly driven by deforestation, rates of harvesting, afforestation and reforestation.

76. New Zealand's forests play a critical role in meeting the country's climate change objectives, since the PaMs chosen by New Zealand to manage its forests will significantly affect its total carbon stock and GHG emissions. New Zealand's main policy instrument to reduce emissions from deforestation and encourage afforestation beyond 2012 is the ETS. In addition, New Zealand has already established three major schemes that promote afforestation and provide incentives to maintain forests. The Ministry of Agriculture and Forestry is responsible for developing forestry-related policy, and has been organizing extensive consultative and training processes for the participants of the ETS and actively promoting the afforestation incentives.

77. The LULUCF sector has been included in the ETS since 1 July 2008, with forest landowners as participants. Under the ETS, forests in New Zealand are grouped into "pre-1990 forest" (predominantly exotic forest species) and "post-1989 forest". If the owners of "pre-1990 forest" have deforested more than 2 ha of this forest type in any five-year period from 1 January 2008 they become a mandatory participant in the ETS whereas owners of "post-1989 forest" may voluntarily participate in the ETS. The ETS in forestry is projected to deliver 3 Mt CO₂/year removals during the first commitment period of the Kyoto Protocol. At the time of the review, 382 applications from landowners owning a total of 110,150 ha had been approved and 5,152,678 New Zealand units (equivalent to 1 t CO₂) had been issued.

78. The three major incentive schemes established by New Zealand, which in mid-term play a less prominent role in emission mitigation compared to the ETS, are the East Coast Forestry Project, the Afforestation Grant Scheme and the Permanent Forest Sinks Initiative. Under the East Coast Forestry Project, an additional 200,000 ha of commercially productive forest will be established by 2020. The project started in 1992 and, at the time of the NC5 review, around 33,000 ha of forest had been established. For the Afforestation Grant Scheme, which offers a simpler alternative to the ETS for landowners with small tracts of forest, about 96 participants were reported to have taken part at the time of the review. Lastly, under the Permanent Forest Sinks Initiative, the establishment of permanent forests on previously unforested land is encouraged. At the time of the review, 22 applications for afforestation covering 5,493 ha of forest land had been received.

79. The ERT took note of the consultations with the forestry sector undertaken by the Government in developing the ETS for forestry, as well as the efforts to promote the enhancement of carbon removals from forest land. The ERT encourages New Zealand to improve the transparency of its reporting of PaMs in the LULUCF sector by monitoring and evaluating the effect of the ETS and other PaMs on the sector, and to report on the outcome in its next national communication.

80. **Waste management.** Between 1990 and 2008, GHG emissions from the waste sector decreased by 27.9 per cent (756.00 Gg CO₂ eq). This reduction occurred in the "solid waste disposal on land" subcategory as a result of initiatives to improve solid waste management practices and increase the rate of landfill gas capture in New Zealand. The ERT noted that the increasing number of international tourists (2.5 million in 2008, which is more than half the population of New Zealand) may have an impact on GHG emissions from the waste sector in the future.

81. In addition to the Waste Strategy (2002), the Waste Minimisation Act was adopted in 2008, which introduced a levy (NZD 10/t) on waste disposal as of July 2010. The revenue from the levy will be used to support actions on waste minimization at the central and regional levels. Revenue collected from the levy in 2010 amounted to NZD 6 million at the central level and NZD 9 million at the regional level. The National Environmental

Standard for Landfill Methane (part of a suite of 14 standards on air quality) is also in place and requires landfill sites with a design capacity greater than 1 Mt of refuse to collect and destroy methane emissions. From 2013, the waste sector (landfills) will be covered by the ETS. Until now, the effects of the PaMs in the waste sector have not been estimated or quantified.

82. The ERT commends New Zealand for its transparent reporting on PaMs and for the recent developments in the waste sector. Noting the considerable amount of tourists visiting New Zealand every year, New Zealand may wish to estimate the impact of waste generated by tourists in its GHG emission projections and to report on the effect of PaMs in its next national communication.

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

83. In its NC5, New Zealand has reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. Further information on how New Zealand strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on the developing country Parties, as reported in the 2010 annual submission, is presented in chapter II.I of this report.

84. The NC5 underlines the fact that, to date, no specific concerns have been raised about any negative impact of New Zealand's climate policy, such as effects on international trade or social, environmental and economic impacts. The NC5 also provides information on New Zealand's legislative process, which includes consultation with the Ministry of Foreign Affairs and which also provides advice on international aspects of proposed climate policies. In addition, the NC5 mentions cooperation with developing countries under New Zealand's International Aid and Development Programme. The ERT noted that the example of the repeal of the biofuels sales obligation could be reported as a response to the minimization of adverse impacts.

85. The ERT encourages New Zealand to continue exploring and reporting information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects.

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

86. In its NC5, New Zealand has presented comprehensive information on its projections of GHG emissions. Projections by 2012 and projections for most sectors by 2010 are updated each year. During the review, New Zealand provided the ERT with updated information of the projections published in April 2010 and corrections of some errors found in the NC5. The April 2010 projections and the corrected information were considered by the ERT in conjunction with the review of the projections as reported in the NC5. In addition, the NC5 provides references to source documents that include more detailed information on projections, which were also considered by the ERT.

1. Projections overview, methodology and key assumptions

87. The set of GHG emission projections provided by New Zealand in the NC5 include a 'with measures' and a 'without measures' scenario until 2020, presented relative to actual inventory data for 1990, 1995, 2000, 2005 and 2007. Projections are presented on a sectoral

basis, using the same sectoral categories used in the PaMs section and on a gas-by-gas basis for the following GHGs: CO₂, CH₄, N₂O, perfluorocarbons (PFCs), HFCs and sulphur hexafluoride (SF₆). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential (GWP) values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals.

88. However, the ERT noted that while NC5 provided information on key assumptions (see para 98), key assumptions and drivers for each sector were not provided. The ERT therefore recommends that New Zealand include this information in its next national communication. The ERT also noted that the projections were presented against the revised 2009 annual submission (version 1.2) and were therefore not consistent with inventory data presented in chapter 3 of the NC5, which were based on the earlier version. The reasons for these differences were provided to the ERT during the review. The ERT recommends that New Zealand include an explanation of possible cross-sectional inconsistencies in data in its next national communications.

89. New Zealand has defined the ‘with measures’ scenario as including the effect of New Zealand’s climate change policies; specifically, it includes the effect of the ETS, nitrification inhibitors in the agriculture sector, and the National Environmental Standard for Landfill Methane.

90. However, the ERT noted that there were some inconsistencies in the definition of the ‘with measures’ scenario and the measures used in the modelling assessments. Although the NC5 states that the effects of the ETS are included in the projections for the energy, agriculture and forestry sectors, the ERT noted that, in fact, the direct effect of the ETS in the agriculture sector was not modelled – only the interaction between the agriculture and forestry sectors was considered. During the review, New Zealand clarified that the indirect effects of the interaction between the agriculture and forestry sectors have the biggest effect on emissions from agriculture in the period 2010–2020, and these were included in the modelling of agricultural emissions. The ERT encourages New Zealand to improve the transparency of its reporting of the models used for the projections and to describe the ‘with measures’ scenario as including the quantifiable effects of the ETS.

91. The ERT noted further inconsistencies. For example, the NC5 states that the ‘with measures’ projection scenario includes the effect of nitrification inhibitors in the agriculture sector, whereas the ERT noted that nitrification inhibitors, at differing levels of application, are in fact included in both the ‘with measures’ and the ‘without measures’ scenarios. This implies that New Zealand has determined that some application of nitrification inhibitors in the agriculture sector would occur under the ‘without measures’ scenario. The ERT encourages New Zealand to improve the transparency of the definition of the ‘with measures’ and the ‘without measures’ scenarios by clearly specifying the measures included in each scenario.

92. The methodology used to prepare the projections is briefly covered in the NC5. Multiple sector-specific models are prepared and maintained by different national ministries. The Ministry of Economic Development prepares the projections for the energy, transport and industrial processes sectors, the Ministry of Agriculture and Forestry prepares the projections for the agriculture and LULUCF sectors and the Ministry for the Environment prepares the projections for the waste sector.

93. The main model used for projections of GHG emissions from energy is the Supply and Demand Equilibrium Model (SADEM), which is a partial equilibrium model run in conjunction with more detailed subsector models for electricity and transport, specifically the Generation Expansion Model (GEM) and the Vehicle Fleet Emissions Model (VFEM). The models use, as an input, data that reflect the historical relationships between energy

use, GDP, fuel prices and population. Energy demand is forecast for three subsectors (households, commerce and industry) and includes autonomous improvements in energy efficiency based on historical record. No explicit assumptions are made to capture future improvements in energy efficiency beyond the autonomous improvements.

94. The main model used for projections of GHG emissions from agriculture is the Pasture Supply Response Model (PSRM), which projects animal numbers and animal performance (milk yield and animal weight), the key drivers of emissions from agriculture. These are forecast by type of animal and are primarily driven by commodity prices for agricultural products and the returns on agricultural land relative to returns in the forestry sector. The inventory tier 3 model is then used to convert agricultural activity to emissions.

95. The projections for the LULUCF sector are based on data collected through the National Exotic Forest Description survey (NEFD), an annual survey of forest owners and managers. The forest estate modelling system (Forestry-Oriented Linear Programming Interpreter (FOLPI)) is then used to aggregate the carbon of individual stands and simulate the effect on carbon stocks of new planting, restocking and harvesting over time. Key drivers in the LULUCF sector are future afforestation, deforestation and harvesting rates. These key assumptions are developed through a variety of methods. Afforestation estimates are determined through industry knowledge of future projects, which are cross-checked against the capacity of nurseries to service the industry. Deforestation estimates are derived from surveys of participants' future intentions to undertake deforestation activities. Harvesting rates are modelled assuming returns to owners are maximized, and are dependent on factors such as log and timber prices, carbon prices, shipping costs and exchange rates.

96. The main driver of emissions from landfill is population growth, while emissions from wastewater are directly linked to the economic activity of the timber and dairy industries. The ERT noted that, due to data limitations, New Zealand has been unable to include the effects of the ETS or the Waste Minimisation Act 2008 in the projections. However, the ERT also noted the improvements to the collection of information on the waste sector driven by the implementation of the waste levy. This should help to overcome the lack of data and improve future projections of the sector.

97. The ERT noted that the methodology used by New Zealand was generally transparent and accurate and has been externally reviewed by international consultants three times over the past five years. This highlights New Zealand's commitment to the ongoing improvement of the preparation of projections. The ERT encourages New Zealand to include more detailed information regarding all the models and any improvements to the methodology in future national communications. Also, the inclusion of a macroeconomic model into the suite of models used by New Zealand could improve the accuracy of the projections, as it could ensure that structural shifts and sectoral interactions are properly reflected.

98. The NC5 presents key assumptions on projected GDP, population, exchange rates, carbon prices, energy prices and gas discoveries for the years 2010, 2015 and 2020. The ERT noted that, to ensure sectoral consistency, these assumptions are developed by a cross-government technical group. The assumptions were considered generally reliable and realistic, although the ERT noted that the assumed carbon price was considered to be constant until 2020. The ERT noted that New Zealand may wish to further examine the projected future carbon price path, drawing on international analysis, to enable a more realistic analysis of the GHG mitigation effect of the ETS.

99. While the NC5 presents the key economy-wide assumptions used across all sectors, the ERT noted that it did not present sector-specific information on factors, activities and assumptions that would provide an understanding of emission trends for each sector. Given

the importance of the agriculture and forestry sectors to New Zealand's emissions profile, the specific sectoral assumptions are critical to the overall emissions story for New Zealand. The ERT recommends that New Zealand provide sector-specific information on key assumptions and drivers in its next national communication.

100. The NC5 does not present a sensitivity analysis of New Zealand's overall projection. One sensitivity scenario is presented for the forestry sector based on the harvest age of plantations. The ERT noted that a sensitivity analysis of New Zealand's overall projection is important to enable New Zealand's progress to be tracked against its emission reduction targets and can inform New Zealand on the likely range of the projected emission levels given the possible range of changes in the key assumptions. The ERT encourages New Zealand to undertake a coordinated sensitivity analysis of key drivers in each sector and to present it in future national communications.

101. The approach, assumptions and institutional arrangements in place to prepare GHG emission projections are consistent with those used in the NC4. The main difference relates to new assumptions, input parameters and policy impacts, such as the recent slowdown in economic growth, higher oil prices and updated information on harvesting and afforestation levels. In addition, improvements to New Zealand's GHG inventory data, notably the integration of Land Use Carbon Analysis System (LUCAS) data sets in the LULUCF sector, also improve the quality of the projections.

2. Results of projections

102. Based on current projections, New Zealand is expected to meet its Kyoto Protocol target for the first commitment period through domestic efforts and the use of credits from Article 3, paragraph 3, activities. According to the projections estimate in 2010,⁵ New Zealand is expected to have a 3.97 Mt CO₂ eq surplus compared to the Kyoto Protocol target. A key factor in New Zealand's ability to meet its Kyoto Protocol target is the inclusion of credits from Article 3, paragraph 3, of the Kyoto Protocol, which is projected to offset emissions by 16.3 Mt CO₂ eq in 2010. The ERT noted that the ETS (which will delay forest harvesting by about one year) and other measures are projected to have only a marginal impact on moderating emissions growth during the first commitment period, contributing only 2.2 Mt CO₂ eq of abatement in 2010. Table 4 and the figure below demonstrate GHG emission projections for New Zealand for 2010 and 2020.

103. The period between 2012 and 2020 holds considerable uncertainty for New Zealand's emission trends. Until now, New Zealand's emissions have been significantly influenced by the forestry sector, where extensive plantations were established in the early to mid-1990s. These plantations have enabled New Zealand to offset a significant proportion of its emissions through forest sequestration. From 2012 onwards, these plantations are expected to come to maturity and the subsequent rate of harvesting will have a significant effect on the future trend in emissions. The forestry sector is projected to turn from a net sink in 2015 to a net source of emissions in 2016. This is the largest source of emissions growth for New Zealand over the period 2012–2020, contributing 95 per cent of emissions growth during that period. Growth in other sectors is projected to be relatively small (2 per cent from 2008 to 2020). The ETS is expected to affect harvesting rates into the future as it may provide incentives to participants to delay harvesting in order to gain an extra few years of credits under the ETS. By 2020, the forestry sector is projected to account for 28 per cent (3.4 Mt CO₂ eq/year) of the total abatement from the ETS (12.0 Mt CO₂ eq/year).

⁵ The figures correspond to 2010 figures, not the annual average of the first commitment period of the Kyoto Protocol.

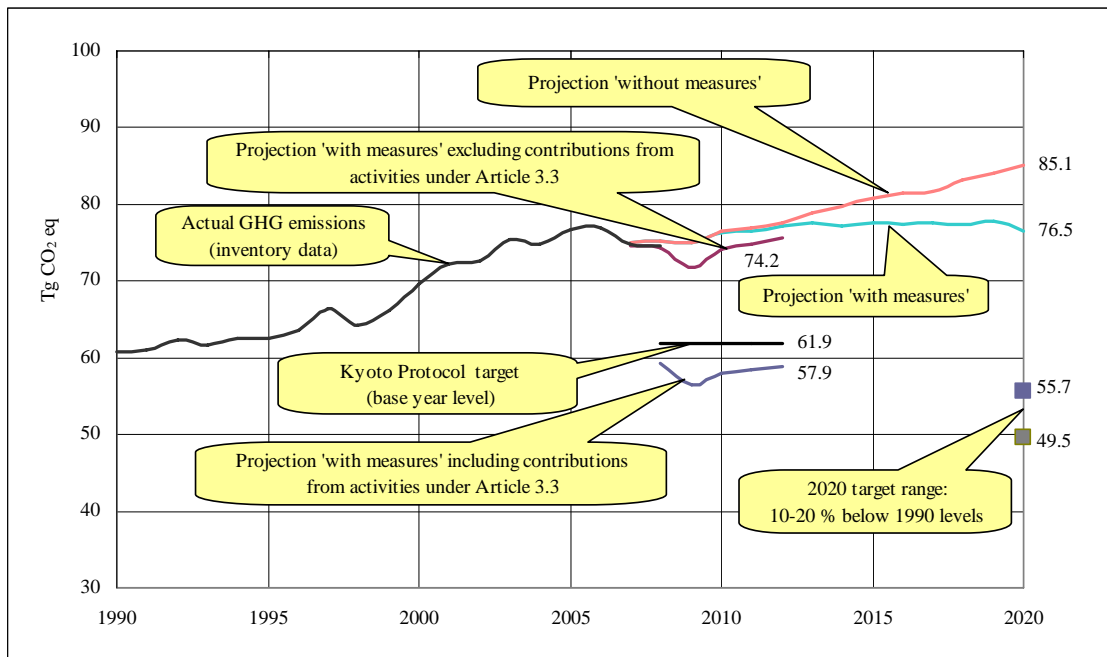
Table 4
Summary of greenhouse gas emission projections for New Zealand

	<i>Greenhouse gas emissions (Tg CO₂ eq per year)</i>	<i>Changes in relation to base year level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Inventory data 1990 ^a	61.20	-1.8	NA
Inventory data 2008 ^a	75.15	20.6	22.9
Kyoto Protocol base year ^b	61.91	NA	1.9
Kyoto Protocol target ^b	61.91	0.0	1.9
‘Without measures’ projections for 2010 ^c	76.43	23.5	25.8
‘With measures’ projections for 2010 ^c	74.24	19.9	22.2
Difference between ‘with measures’ projections and Kyoto Protocol target in 2010	12.33	–	–
Credits from activities under Article 3, paragraph 3	16.30	–	–
‘With measures’ projections including credits from Article 3, paragraph 3	57.94	-6.4	–
Difference between ‘with measures’ projections accounting for activities under Article 3, paragraph 3, and Kyoto Protocol target in 2010	-3.97	–	–
‘Without measures’ projections for 2020 ^c	85.12	37.5	40.1
‘With measures’ projections for 2020 ^c	76.51	23.6	25.9

Data sources: (a) New Zealand’s 2010 annual submission; the emissions are without land use, land-use change and forestry (LULUCF); (b) Based on the initial review report contained in document FCCC/IRR/2007/NZL; (c) Updated projections provided by New Zealand during the in-depth review; the projections are for GHG emissions without LULUCF.

Abbreviation: NA = not available.

Greenhouse gas emission projections



Data sources: (1) Data for the years 1990–2008: New Zealand’s 2010 annual submission; the emissions are without land use, land-use change and forestry (LULUCF). (2) Data for the years 2009–2020: New Zealand’s fifth national communication and updated projections provided by New Zealand during the in-depth review (the emissions are without LULUCF).

104. The emissions profile of the agriculture sector, which is dominated by the dairy, sheep and beef industries, is influenced by fluctuations in the climate over the year, in particular by drought. The recent regional drought in 2007–2008 had the impact of reducing emissions in the agriculture sector by 6.7 per cent (by 2.3 Mt CO₂ eq from 2005–2008). Regional droughts also affect New Zealand’s energy sector due to the large proportion of electricity generated from hydroelectric power. In dry years, New Zealand relies on its spare thermal capacity to make up the difference, usually through coal and gas electricity generation. Therefore, New Zealand’s future emissions trends might continue to be influenced in the future by the climate conditions, including drought.

105. The uncertainty surrounding the future design of the ETS is another a factor contributing to the uncertainty of New Zealand’s emission projections as well as its ability to achieve its medium-term target. Given the planned review of the ETS in 2011, and the conditionality of future international climate change actions, there is considerable uncertainty surrounding the future effectiveness of the ETS. Until the review of the ETS is finalized, it is unclear whether the extent of emission reductions from the ETS presented in the NC5 will be realized. The ERT noted that New Zealand may wish to further analyse opportunities for reaching its 2020 target by means other than the ETS.

3. Total effect of policies and measures

106. In the NC5, New Zealand presents the expected total effect of implemented and adopted PaMs in terms of GHG emissions avoided or sequestered, by gas for 2020 only. The ERT noted that the inclusion of the total effect of PaMs is an improvement from the NC4 and encourages New Zealand to continue to include this information in future national communications. However, the ERT noted that New Zealand did not provide an estimate of the total effect of PaMs in 2010 as required by the UNFCCC reporting guidelines. The ERT

recommends that New Zealand improve the completeness of its reporting of the total effect of PaMs by reporting this element in its next national communication.

107. During the review, New Zealand provided information on the total effect of PaMs in 2010. This is estimated to be 1.6 Mt CO₂ eq. The forestry sector is expected to provide the majority of these savings (1.4 Mt CO₂ eq or 88 per cent of the total effect of PaMs) followed by the effect of nitrification inhibitors in the agriculture sector (0.13 Mt CO₂ eq or 8 per cent of the total effect of PaMs). Small savings are expected from the energy sector (0.06 Mt CO₂ eq or 4 per cent of the total effect), reflecting the effect from the initial stages of the implementation of the ETS in this sector.

108. New Zealand reported in the NC5 that the total estimated effect of PaMs in 2020 is 12.3 Mt CO₂ eq. During the review, New Zealand provided updated information which reduced the total effect of PaMs to 12.0 Mt CO₂ eq in 2020. According to the information reported in the NC5, PaMs implemented in the energy sector, specifically the ETS, will deliver the largest emission reductions (7.2 Mt CO₂ eq or 60 per cent of the total effect of PaMs) resulting from the phase-out of coal and its replacement by geothermal and wind for electricity generation.

109. The second largest reductions will be achieved by the ETS in the forestry sector (3.4 Mt CO₂ eq or 28 per cent of the total effect of PaMs), followed by the indirect effect of the ETS on the agriculture sector (the switch from agriculture to forestry) and nitrification inhibitors (1.3 Mt CO₂ eq or 11 per cent of the total effect of PaMs). The most effective PaMs and drivers behind GHG emission reductions are described in sections II.B.1 and II.B.2 of this report. Table 5 provides an overview of the total effect of PaMs as reported by New Zealand.

110. The ERT noted some inconsistencies between the PaMs and projections chapters in the NC5. The PaMs chapter included a wider range of quantified emission reduction policies, mainly energy efficiency initiatives such as voluntary product labelling (e.g. ENERGY STAR). However, these measures were not included in the total effect of PaMs estimated for 2010. Also, the waste levy and the direct impact of the ETS on the

Table 5

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

<i>Sector</i>	<i>Effect of implemented and adopted measures (Gg CO₂ eq)</i>		<i>Effect of implemented and adopted measures (Gg CO₂ eq)</i>	
	<i>2010</i>	<i>Relative value (% of 1990 emissions)</i>	<i>2020</i>	<i>Relative value (% of 1990 emissions)</i>
Energy (without CO ₂ from transport)	58.2	0.1	7 211.1	11.8
Transport – CO ₂	0.4	0.0	133.8	0.2
Industrial processes	0.0	0.0	0.0	0.0
Agriculture	139.8	0.2	1 263.1	2.1
Land-use change and forestry	1 385.2	2.3	3 381.6	5.5
Waste management	0.0	0.0	0.0	0.0
Total	1 574.7	2.6	11 989.7	19.6

Data sources: New Zealand's fifth national communication and updated data provided by New Zealand during the review.

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

agriculture and waste sectors could be quantified and included in the total effect. During the review, New Zealand informed the ERT that the estimates from these measures were not considered accurate and, thus, were not included in the total effect of PaMs. The ERT considers that the total effect of PaMs in New Zealand may be larger than that provided in the NC5 and encourages New Zealand to improve consistency across chapters and the completeness of the total estimated effect of PaMs in its next national communication.

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

111. In the NC5, New Zealand provided implicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such.

112. New Zealand's 'with measures' projections for 2010 (74.24 Mt CO₂ eq.) show that GHG emissions are expected to be above New Zealand's target for the first commitment period of the Kyoto Protocol (61.91 Mt CO₂ eq). The deficit of 12.33 Mt CO₂ eq will be offset by credits generated from activities under Article 3, paragraph 3, of the Kyoto Protocol (16.30 Mt). This represents a surplus of 6.4 per cent compared to the Kyoto Protocol target level (3.97 Mt annually) or an average of 18.6 Tg surplus for the period of 2008–2012. Given this projection, New Zealand has stated in its NC5 that, at this stage, it does not intend to make use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol to reach its target for the first commitment period.

113. During the review, New Zealand provided information on the Projects to Reduce Emissions (PRE) programme. The programme has approximately 30 projects in place to reduce emissions during the first commitment period of the Kyoto Protocol. Project participants are awarded emission units from the Government on completion of the project. These units can subsequently be transferred into emission reduction units (ERUs) if they meet all the eligibility requirements for a joint implementation project, and the ERUs can be sold on the international emissions trading markets. Across the 30 projects, 9.7 million emissions units are estimated to be credited to project participants over the first commitment period.

114. The ERT noted that some of these ERUs have already been purchased at the international carbon market, including by companies and other governments. The extent of the transfer and sale of ERUs on international carbon market may affect New Zealand's ability to meet its Kyoto Protocol target. If all issued ERUs were sold on the international emissions trading markets, New Zealand's surplus against its first commitment period target could be reduced by around half. The ERT encourages New Zealand to further elaborate on how the use of Kyoto mechanisms is supplemental to domestic actions in its next national communication.

D. Vulnerability assessment, climate change impacts and adaptation measures

115. In its NC5, New Zealand provided the required information on its current climate variability and observed changes as well as its future climate change scenarios. However, the NC5 did not provide information on the current impacts of climate change in New Zealand based on the observed changes as well as the future impacts based on the projected future climate change scenarios. The ERT encourages New Zealand to enhance the transparency of its reporting by presenting the impacts of climate change based on observed and projected climate variability scenarios and by elaborating on the linkages between impact assessments, vulnerability assessments and response measures in its next national

communication. This could be achieved through improved coordination of the various studies and efforts on vulnerability and adaptation, which could be addressed by developing an overarching national adaptation policy.

116. The ERT noted that, compared to the NC5, New Zealand’s NC4 provided more detailed information on vulnerability and adaptation; it referred to the use of the CLIMFACTS model and described inputs from modelling conducted by insurance companies and the results of the research carried out by the National Institute of Water and Atmospheric Research (NIWA). The ERT encourages New Zealand to provide updated information on the model used and the research carried out, as well as to maintain consistency and continuity with the previously used models reported in the NC4.

117. The ERT also noted that New Zealand has mainstreamed climate change impact assessments, enacted relevant legislation in areas such as resource management, civil defence, building and health, and developed guidance and technical manuals to assist local governments in responding to and assessing the impacts of climate change. The other reports targeted at the general public include the reports on adaptation and local government, adaptation in agriculture and forestry, adaptation in the community and adapting to sea level rise.

118. New Zealand indicated cooperation with developing countries on vulnerability assessment and adaptation, including, for instance, providing support for a number of outreach sessions designed to increase awareness of the findings of the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4), particularly those relating to the Pacific Islands. It also includes the funding of a climate data rescue programme designed to capture, preserve and digitize historical climate observations from a number of the Pacific Islands (see para. 125 for information on financial support for adaptation in developing countries). The ERT encourages New Zealand to continue to contribute to the global endeavour to improve research and systematic observation on issues related to climate change.

119. In its NC5, New Zealand reports on a number of research activities on climate change impacts and adaptation, including its Research and Systematic Observations programme. A report on climate change adaptation and impacts was published at the beginning of 2010.⁶ The NC5 also provides information on studies undertaken on the impacts of the future wind environment on wind energy resources, infrastructure designs and rainforests, and on the impacts of the IPCC scenarios and models on future river flows and irrigation. Research has also been carried out regarding adaptation to flooding and coastal hazards.

120. New Zealand has yet to implement an overarching adaptation framework that is expected to be based on the observed and future impacts and a prioritization of the vulnerability of its sectors. During the review, New Zealand indicated that the agriculture sector is the most vulnerable sector. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

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

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Primary production and land management	Issue: impacts of drought, wind and frost on pasture production, forestry and horticulture Action: Awareness-raising among land managers, various research

⁶ New Zealand Climate Change Centre, 2010. *Climate Change Adaptation in New Zealand. Future scenarios and some sectoral perspectives*. Richard A.C. Nottage et al. February 2010.

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
	projects, educational materials for agricultural, horticultural and forestry education providers and universities, Sustainable Farming Fund and the Community Irrigation Fund
Biodiversity	<p>Issue: Large number of endemic native species</p> <p>Action: Updating of two reports: (i) <i>Adapting to Climate Change: an approach for Assessing and Managing Impacts on Native Terrestrial Biodiversity in New Zealand</i>; and (2) <i>Climate Change and the New Zealand Marine Environment</i></p>
Fisheries	<p>Issue: Vast exclusive economic zone and a large fishing industry</p> <p>Action: Several projects by the Ministry of Fisheries to better understand how climate change might affect fish stocks in New Zealand waters and the New Zealand fishing industry</p>
Community resilience to natural hazards	<p>Issue: Community vulnerability</p> <p>Action: Revision of the National Civil Defence Emergency Management Strategy, inclusion of climate change in the National Hazardscape Report and workshops with local governments</p>
Health	<p>Issue: Impacts on human health and health infrastructure</p> <p>Action: Joint research on health infrastructure, development of a strategy on adaptation for the health sector and a resource framework for linking New Zealand’s specific climate change scenarios to their potential impacts on water supplies and health</p>
Transport	<p>Issue: Vulnerability of the transport infrastructure</p> <p>Action: Publication of a research report entitled <i>Climate Change Effects on the Land Transport Network</i>. The report is a basis for policy options and adaptation measures</p>
Labour market	<p>Issue: Impacts of climate change on terms of employment, skills and economic performance</p> <p>Action: Study to include scenarios for 2020 that take account of the pressures surrounding natural resources, including climate change, energy and water issues</p>
Tourism	<p>Issue: Climate change impacts and adaptation in tourism industry</p> <p>Action: Production of a tourism climate change plan</p>
Education	<p>Issue: Climate change awareness at all levels of the education system</p> <p>Action: Inclusion of climate change in the school curriculum</p>
Maori	<p>Issue: Maori place a high cultural value on land and have significant investment in primary sectors, including fisheries and forestry</p> <p>Action: Commissioning of Maori-specific projects and case studies. Maori participation in the Sustainable Land Management and Climate Change Plan of Action and the Climate Change Peak Group</p>

121. The two key institutions engaged in preparing and planning for the impacts of climate change are the Ministry for the Environment and the Ministry of Agriculture and Forestry. The main partners for the former are local governments, engineers, surveyors, planners and ‘lifeline utility’ groups, whereas the main partners of the latter are

representatives from the land-based sectors, local government and Maori. Implementation activities are deferred to regions and local authorities.

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

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

122. The information provided in the NC5 covers most of the issues on which information is required under the Convention and its Kyoto Protocol. New Zealand defines “new and additional” financial resources as those provided since 1993 when New Zealand ratified the Convention. The NC5 presented the various channels New Zealand is using to deliver its financial assistance, including financial contributions to the Global Environment Facility (GEF), other multilateral agencies, regional agencies and bilateral arrangements. It has also listed funding specifically targeted to provide support for the developing countries that are most vulnerable to the adverse effects of climate change, namely the Pacific Islands.

123. The ERT noted the increasing trend of financial assistance through regional intergovernmental organisations in the Pacific region since 2005. The total contribution of New Zealand to climate change related funds increased by 26 per cent from 2005 to 2006, then decreased by 14 per cent in 2007 but recovered by the same amount in 2008. A total of 64 per cent of the 2005–2008 contributions was given to multilateral agencies, 25 per cent to the regional agencies, 7 per cent to bilateral programmes and 4 per cent to the UNFCCC Trust Fund for Participation in the UNFCCC Process and the UNFCCC Trust Fund for Supplementary Activities. New Zealand also allocated NZD 45 million over 2010–2014 for the Global Research Alliance on Agricultural Greenhouse Gases.

124. New Zealand reported a slightly increasing trend of financial contribution provided to multilateral institutions (including the Asian Development Bank, World Bank, United Nations Development Programme, United Nations Environmental Programme, Montreal Protocol and funds under the UNFCCC – NZD 147.58 million over 2005–2008) and multilateral scientific, technological and training (including Secretariat of the Pacific Regional Environment Programme, Secretariat of the Pacific Islands Applied Geoscience Commission, Secretariat of the Pacific Community, University of the South Pacific and Consultative Group on International Agricultural Research – NZD 58.50 million over 2005–2008). Financial support to bilateral and regional financial contributions related to the implementation of the UNFCCC doubled in 2005–2008. Table 7 summarizes the information on financial resources provided by New Zealand.

Table 7

Summary of information on financial resources for 2005–2008^a

<i>Channel of financial resources</i>	<i>Years of disbursement</i>			
	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Official development assistance (ODA), NZD million	388.62	398.73	435.22	502.98
Bilateral and regional financial contributions related to the implementation of the UNFCCC	2.39	4.15	4.36	4.96
Contribution to GEF ^b , NZD million	2.78	3.42	3.28	3.12
Pledge for the fourth GEF replenishment, NZD million	8.38	NA	NA	NA

UNFCCC Trust Fund for Participation, NZD million	0.10	0.10	0.10	0.50
UNFCCC Least Developed Countries Fund, NZD million	1.80	1.80	1.80	1.40
UNFCCC Trust Fund for Supplementary Activities, NZD million	0.12	0.11	0.06	NA

Abbreviations: GEF = Global Environment Facility, NZD = New Zealand dollars, NA = not applicable.

^a The table does not reflect the financial resources provided by New Zealand to the multilateral institutions referred to in para. 0 above, as the table focuses, as far as it is feasible to specify, on the climate-change-related financial support.

^b The contribution to GEF includes total financial resources provided to GEF from which about one third is allocated to climate-change-related activities.

125. New Zealand has provided detailed information on the assistance it has made available to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects. For instance, it has contributed to the UNFCCC Least Developed Countries Fund and has jointly supported the National Adaptation Programme of Action for Kiribati with Australia, GEF and the World Bank. Furthermore, New Zealand has provided information on its regional and bilateral financial assistance related to the implementation of the Convention. In particular, it has provided financial resources related to the implementation of the Convention through four of the intergovernmental regional organizations in the Pacific.

126. To enhance the transparency of its reporting, pursuant to Article 4, paragraphs 3, 4 and 5 of the Convention, the ERT encourages New Zealand to specify its climate-related multilateral, regional and bilateral assistance and to present it in further detail, indicating the developing country beneficiaries and the targeted sectors under mitigation and adaptation. The next national communication would also benefit from a provision of the estimate of New Zealand's financial assistance under the Convention against its overall overseas development aid and/or gross national product (GNP).

127. With regard to the most recent financial contributions, New Zealand has committed NZD 30 million/year over the period 2010–2012 to the climate change related funds set up under the Copenhagen Accord to enhance the implementation of the Convention by developing countries.

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

128. The NC5 presents information on activities related to transfer of technology, including information under Article 10 of the Kyoto Protocol. However, the ERT noted that activities undertaken by the public and private sectors were not clearly specified and it therefore recommends that New Zealand enhance the completeness of its reporting by including a clear distinction between activities undertaken by the public sector and those undertaken by the private sector in its next national communication.

129. In its NC5, New Zealand defines technology in a broad context, where 'technology' includes 'soft technology', such as information- and knowledge-sharing. In its NC5, New Zealand has explained its strategies for creating an enabling environment through a price signal that promotes investment and cooperation in order to increase the size of investments and reduce the risks related to the commercial deployment of current, new and innovative technologies.

130. The NC5 provides some examples of measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies, both in adaptation and mitigation.

131. New Zealand's main areas of engagement in terms of mitigation have been in the energy and forestry sectors of Pacific Island countries. Examples of implemented activities include mitigation-related activities in Kiribati, the Solomon Islands and Tuvalu, and the Livestock Emissions and Abatement Research Network (LEARN).

132. With regard to adaptation, New Zealand's support is primarily designed to reduce the vulnerability of communities – particularly those in the Pacific region. The Solomon Islands and Kiribati have successfully implemented a solar lighting finance scheme funded jointly by New Zealand and the United Kingdom, and a new microfinance project in Kiribati and the Solomon Islands is enabling rural communities to trade crops for much-needed access to electricity.

F. Research and systematic observation

133. In its NC5, New Zealand has provided information on its actions relating to research and systematic observation, addressing both domestic and international activities, including cooperation with: the World Meteorological Organization (WMO); the World Climate Research Programme; the Global Climate Observing System (GCOS) and its Pacific component (PI-GCOS); the International Geosphere-Biosphere Programme; and the Asia-Pacific Network for Global Change Research. New Zealand scientists are active participants in LEARN and the IPCC.

134. The NC5 reflects action taken by New Zealand to support related capacity-building in developing countries in the areas of mitigation, adaptation and systematic observation. For instance, New Zealand has provided assistance to the development of weather and climate observing systems in a number of Pacific Island Parties, as well as assistance to various organizations in the Pacific Islands in collaboration with Australia, the United States of America and France. In addition, NIWA has undertaken a data rescue programme covering the Pacific Islands.

135. New Zealand has continuously increased its allocation of funding to research activities from NZD 33.8 million in 2001–2004 as reported in NC4 to NZD 55.6 million in 2007–2008, as reported in the NC5. The ERT noted that the funding priority remained on mitigation, even though funding for adaptation increased more than that for mitigation: in NC4, 20 per cent of research funding was allocated to mitigation and 8 per cent to adaptation, whereas in NC5, 40 per cent is allocated to mitigation and 22 per cent to adaptation.

136. At the national level, climate change research in New Zealand mostly focuses on adaptation and mitigation in the agriculture and forestry sectors. It seeks to develop information and knowledge on a wide variety of issues, including past climate trends, future impacts, adaptation opportunities and risks, ways of reducing GHG emissions, particularly those resulting from pastoral production, enhancing sinks, particularly forest sinks, increasing community resilience, human health, oceanic and atmospheric chemistry, climate systems and GHG measurement and national GHG inventory development and support.

137. At the international level, New Zealand participates in a number of networks and is engaged in a number of partnerships on technology research that benefits developing countries. These include the International Partnership on Hydrogen Economy, LEARN and the Global Research Alliance on Agricultural Greenhouse Gases. New Zealand has

demonstrated successful leadership through the formation of the Global Research Alliance on Agricultural Greenhouse Gases – an alliance of 30 countries dedicated to the research, development and extension of technologies and practices on methods for growing greater quantities of food (and more climate-resilient food systems) while stabilizing GHG emissions. New Zealand is currently hosting the interim Global Research Alliance Secretariat and has committed NZD 45 million over four years towards agricultural mitigation research.

138. Programmes and projects supported by New Zealand include: the provision of support to ensure the continuity and integrity of climate data gathered, the provision of support to MetService, general assistance and routine in-country technical preventive and emergency maintenance support to Global Upper-Air Network (GUAN) stations in several Pacific partner countries.

139. Due to its geographical location, much of New Zealand's research is focused on the Antarctic region. The ERT noted that the International Polar Year represents a unique opportunity to participate in a number of important Antarctic scientific collaborations and New Zealand has a prominent leadership role in the ANDRILL project (ANtartic geological DRILLing).

G. Education, training and public awareness

140. In its NC5, New Zealand has provided information on its actions relating to education, training and public awareness on both the domestic and the international level. The ERT noted that New Zealand has not included any information regarding the extent of public participation in the preparation or domestic review of the national communication. The ERT suggests that New Zealand report such information, where feasible, in its next national communication.

141. New Zealand's domestic action on education, training and public awareness covers a wide range of sectors of the community, including households, businesses, the public sector, land-based sectors, schools, tourists and the media. The key developments in training have focused on educating participants in the ETS and developing guidelines for local authorities on how to plan for the expected impacts of climate change. In particular, the guidelines have been a key success story for New Zealand as they have helped to incorporate climate change considerations into the standard planning practices of engineering professionals throughout the country. Challenges remain in communicating and educating the community on the ETS. New Zealand noted that there were many more small- to medium-sized businesses impacted by the ETS than first thought, and the engagement of these businesses remains a key challenge for New Zealand. A number of workshops for larger industries were held in the lead-up to the start of the ETS, with successful outcomes.

142. Compared to the NC4, New Zealand has provided more extensive information on public awareness and engagement on climate change issues in its NC5. In both the lead-up to the implementation of the ETS and the setting of the national 2020 targets, public awareness campaigns were run. In the development of the 2020 targets, the Minister Responsible for Climate Change Issues held a series of public meetings in which he discussed the key issues and invited public feedback. New Zealand noted that, since the NC4, numerous public perception surveys have been carried out to gauge the level of public awareness on climate changes issues. Public perceptions of action on climate change were considered favourable, although the ERT noted that the last public perceptions survey was carried out in 2008.

143. The ERT noted that New Zealand has strong academic and non-governmental organization sectors. These sectors have been widely consulted on the ETS and broader climate change policy. The ERT encourages New Zealand to continue to engage with these sectors in the future.

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

144. New Zealand has provided most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in its NC5 with the exception of the explicit elaboration of supplementarity, provision of information on how New Zealand gives priority to the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol and information on steps New Zealand has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. The ERT recommends that New Zealand in its next annual submission include this information.

145. The supplementary information is mainly contained in annex B to the NC5, with some information in annex C and in various chapters of the NC5. Table 8 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided.

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

146. New Zealand reported the information requested in section H, Minimization of adverse impacts, in accordance with Article 3, paragraph 14, of the annex to decision 15/CMP.1 as a part of its 2010 annual submission. It has not reported, however, how it gives priority to the actions taken, in implementing its commitments under Article 3, paragraph 14.

Table 8

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

<i>Supplementary information</i>	<i>Reference in NC5</i>
National registry	Annex B
National system	Annex B
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Annex B
Policies and measures in accordance with Article 2	Annex B and annex C
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4 and annex B
Information under Article 10	Chapters 4, 6, 7, 8 and 9 and annex B
Financial resources	Chapter 7 and annex B

147. During the in-country review New Zealand provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and

economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be transparent and complete.

148. New Zealand stated that it does not have any significant market imperfections, fiscal incentives, tax and duty exemptions and subsidies in GHG-emitting sectors of this nature, or subsidies for environmentally unsound and unsafe technologies.

149. So far, New Zealand has not actively cooperated in the technological development of non-energy use of fossil fuels. However, New Zealand participates in the initiatives that facilitate development of carbon capture and storage technologies, namely the Carbon Sequestration Leadership Forum, the Global Carbon Capture and Storage Institute and International Energy Agency Greenhouse Gas Research and Development Programme.

150. Further, New Zealand reported on how it strengthened the capacity of non-Annex I Parties by improving the environmental efficiency of the use of fossil fuels. Examples of cooperation include capacity building and improvement of energy efficiency and the identification of renewable energy feasibility in Tuvalu with the aim of reducing its reliance on fossil fuels.

151. New Zealand provided assistance to non-Annex I Parties that are highly dependent on the export and consumption of fossil fuels in diversifying their economies through the International Partnership for Energy Development in Island Nations. The Partnership, among others, facilitates the development of clean energy technology and provides support for renewable energy and energy-efficiency projects.

152. The ERT recommends that New Zealand incorporate information on how it gives priority to the actions taken in the implementation of its commitments under Article 3, paragraph 14, of the Kyoto Protocol in its next annual submission and encourages it to continue exploring and reporting on the adverse impacts of the response measures.

III. Conclusions and recommendations

153. The ERT concludes that, in general, New Zealand's NC5 provides a good overview of the national climate policy. The information provided in the NC5 includes almost all the mandatory information required by the UNFCCC reporting guidelines with the exception of the total effect of PaMs in the first commitment period of the Kyoto Protocol, and the provision of the drivers and assumptions of future projections for individual sectors. Further, New Zealand has provided limited information on the distinction between technology transfer driven by the private sector and that driven by the public sector.

154. New Zealand has provided in its NC5 almost all the supplementary information required under Article 7, paragraph 2 of the Kyoto Protocol, with exception of the elaboration of complementarity, information on the steps New Zealand has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. During the review, New Zealand provided the additional information requested by the ERT on all the areas covered by the national communication, in particular on the most recent climate change PaMs and projections.

155. New Zealand's emissions for 2008 were estimated to be 22.8 per cent above its 1990 level, excluding LULUCF, and 62.5 per cent above its 1990 level with LULUCF. Emission increases were driven by strong population and economic growth, in particular an increase in the number of animals and their productivity in the agriculture sector and an increase in a number of cars. These factors outweighed by far the modest improvements in

the efficiency of energy use in the residential and industrial sectors and resulting emission reductions.

156. In its NC5, New Zealand presents GHG projections for the period 1990–2020. Two scenarios are included: the baseline (‘without measures’) scenario and the ‘with measures’ scenario. Projected average annual GHG emissions for 2008–2012 under the ‘without measures’ scenario are 23.5 per cent higher than the base year level, whereas under the ‘with measures’ scenario, projected GHG emissions are 19.9 per cent above the base year level. Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol will help New Zealand to overachieve its target by 6.4 per cent for the first commitment period of the Kyoto Protocol which is to stabilize emissions at the base year level) This highlights the importance of the use of accounting for Article 3, paragraph 3 activities (which is heavily dependent on the deforestation rates in the country) for New Zealand to meet its Kyoto Protocol target.

157. In 2009 New Zealand announced a conditional national GHG emission reduction target for 2020 (a 10–20 per cent reduction of total GHG emissions compared to the 1990 level), and a long-term aspirational target for 2050 (a 50 per cent reduction of total GHG emissions compared to the 1990 level). The national 2020 target is conditional on the extent of future international action to reduce emissions and is considered a ‘responsibility target’ – to be achieved through a combination of domestic emission reductions, the storage of carbon in forests and the purchase of emission reduction units from other countries. The ‘with measures’ projection estimates that New Zealand’s GHG emissions will be 23.6 per cent above the 1990 level in 2020. Without the effect of PaMs GHG emissions are projected to be in 2020 37.5 per cent above the 1990 level. Projections show that it is expected that a net emission reduction of 12.0 Mt CO₂ eq/year will be achieved by 2020 (based on a continuation of Kyoto Protocol accounting rules) – only a third of the level required to meet the lower end of the 10–20 per cent target range.

158. The ETS is the principal measure expected to reduce emissions. Currently only forestry and fossil fuel use in stationary energy sources, in transport and in the industrial processes sector are included and it is expected that by 2015 all sectors will be covered by the ETS. However, the ERT expresses great concern about the uncertainty associated with the timeline for inclusion of the major sectors under the ETS and other PaMs needed to reach the 2020 national target. The achievement of the projected emission reductions largely depends on the incentive to reduce emissions from deforestation in the forestry sector. To that end, further analysis of the opportunities to reach its 2020 target appears necessary and monitoring and evaluation are deemed crucial in assessing the progress towards the 2020 national target.

159. New Zealand has provided implicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on complementarity as such. New Zealand is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto target. The Party has committed to issuing 9.7 Mt of carbon credits to projects implemented in New Zealand that meet the joint implementation criteria and make them available at the international carbon market. This constitutes 48 per cent of New Zealand’s projected surplus over the first commitment period of the Kyoto Protocol.

160. New Zealand continues to apply its definition of “new and additional” financial resources as those provided since 1993 when it ratified the Convention. New Zealand has continuously increased its financial contribution to climate change related funds and has committed to providing NZD 30 million/year for the period 2010–2012 in response to the Copenhagen Accord. New Zealand continues to allocate most of its financial assistance to the developing countries that are most vulnerable to the adverse effects of climate change, namely the Pacific Islands.

161. New Zealand is currently engaged in many domestic and international efforts to identify the observed impacts of climate change on different sectors of the economy and to assess climate variability. The ERT noted New Zealand's efforts to improve the work on climate change projection scenarios. The ERT noted that while some excellent work has been conducted on assessing the impacts of these climate variability scenarios, it has not been adequately reported in the NC5.

162. New Zealand is involved in domestic and international climate change related research, with a domestic focus on the agriculture sector. New Zealand also plays a lead role in various international initiatives such as the Global Research Alliance on Agricultural Greenhouse Gases and LEARN. New Zealand's domestic action on education, training and public awareness covers a wide range of sectors of the community. The key developments in training have focussed on informing and educating participants in the ETS and developing guidelines for local authorities on how to plan for the expected impacts of climate change.

163. New Zealand's national system continues to perform its required functions as set out in decision 19/CMP.1; the national registry continues to perform the functions set out in decision 13/CMP.1 and decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions. The ERT noted that updates of databases and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated persons.

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

165. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of New Zealand's reporting under the Convention and its Kyoto Protocol. The key recommendations⁷ are that New Zealand:

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

- (i) Provide an estimate of the total effect of its PaMs during the first commitment period under the Kyoto Protocol;
- (ii) Provide information on the key drivers and assumptions of future projections for individual sectors and any emerging drivers that may influence the projections;
- (iii) Provide more detailed information on complementarity relating to the Kyoto Protocol mechanisms;
- (iv) Provide information on how New Zealand gives priority to the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol;
- (v) Provide further information on the steps it has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol.

(b) Improve the transparency of its reporting by providing further information on the distinction between technology transfer driven by the private sector and by the public sector.

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

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

- (a) Further evaluate and report on the effects of individual PaMs and present them by sector and by gas as well as evaluate and report on the progress made towards achieving the targets set;
- (b) Improve consistency across chapters by describing in greater detail the measures included in the 'with measures' scenario in the PaMs chapter;
- (c) Undertake a coordinated sensitivity analysis across key drivers in all sectors and include macroeconomic modelling in the suite of models used for projections;
- (d) Include further information on the assessment of current and projected impacts of climate change variability on different sectors of the economy;
- (e) Further enhance its reporting on minimization of adverse impacts and the effects of response measures to climate change, in particular by including information on actions taken to minimize the adverse impacts of the implementation of domestic policies on developing country Parties.

167. New Zealand may wish to further analyse opportunities to reach its 2020 target. Monitoring and evaluation will be crucial in assessing the progress of mitigation efforts, including towards the 2020 target. A sensitivity analysis would also be a useful step in addressing the uncertainty concern.

IV. Questions of implementation

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

Annex

Documents and information used during the review

A. Reference documents

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

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

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

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

FCCC/SBI/2007/INF.6. Compilation and synthesis of fourth national communications. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06.pdf>>.

FCCC/SBI/2007/INF.6/Add.1. Compilation and synthesis of NC4s, Add.1: Policies, measures, past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06a01.pdf>>.

FCCC/SBI/2007/INF.6/Add.2. Compilation and synthesis of NC4s, Add.2: Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06a02.pdf>>.

FCCC/SBI/2007/INF.7. Compilation and synthesis of supplementary information incorporated in fourth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf07.pdf>>.

FCCC/ARR/2009/NZL. Report of the individual review of the greenhouse gas inventory of New Zealand submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/nzl.pdf>>.

FCCC/IRR/2007/NZL. Report of the review of the initial report of New Zealand. Available at <<http://unfccc.int/resource/docs/2007/irr/nzl.pdf>>.

FCCC/IDR.4/NZL. Report on the in-depth review of the fourth national communication of New Zealand. Available at <<http://unfccc.int/resource/docs/2007/idr/iso04.pdf>>.

Fourth national communication of New Zealand. Available at <<http://unfccc.int/resource/docs/nat/nzln4.pdf>>.

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

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

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Jude Addenbrooke, Ms. Maria Alano, Ms. Andrea Brandon, Mr. Len Brown, Ms. Deborah Burgess, Ms. Joanna Carr, Mr. Craig Elvidge, Ms. Bridget Fraser, Mr. Josh Fyfe, Mr. Nelson Gapare, Mr. Scott Gulliver, Ms. Maya Hunt, Mr. Todd Kriebler, Mr. Roger Lincoln, Ms. Sonia Petrie, Ms. Helen Plume, Ms. Deb Potter, Ms. Sue Powell, Dr. Paul Reynolds, Mr. Nigel Searles, Mr. Matthew Smith, Ms. Cherie Sweeney, Ms. Jo Taylor, Mr. Chappie Te Kani, Mr. Duncan Watts, Mr. Simon Wear, Ms. Nichole Wilkie (Ministry for the Environment), Ms. Anita Dahya, Mr. Darin Godber, Mr. Simon Lawrence, Ms. Kennie Tsui (Ministry of Economic Development), Mr. Darran Austin, Ms. Rosa Rivas Palma, Ms. Andrea Pickering, Dr. Gerald Rys (Ministry of Agriculture and Forestry), Mr. Steven Thomas (Crop and Food Research), Ms. Charlotte Frater (Ministry of Foreign Affairs and Trade), Mr. Murray McCurdy (CRL Energy), Mr. Peter Beets, Mr. Chris Goulding, Mr. Mark Kimberley, Mr. Steve Wakelin (Scion), Mr. John Dymond, Mr. Stephen McNeill, Mr. James Sheppard (Landcare Research), Mr. Pete Watt (Pöyry Management Consulting), Mr. Jean Watt (STATSNZ), Dr. Harry Clarke, Dr. Frank Kelliher, Dr. Cecile de Klein (AgResearch), Mr. Tony Hall, Ms. Kailin Lee and Mr. Oliver Valins (TSY), Audit New Zealand. The ERT also received additional information from New Zealand, including material on updated PaMs, GHG projections, the national registry, recent national climate policy developments, information on projections, and revised agriculture projections ‘with measures’ and ‘without measures’ for 2020 (description provided by the Ministry for the Environment). The following documents¹ were also provided by New Zealand.

AEA Energy and Environment, Nov 2007. Review of New Zealand’s 2007 ‘Net Position Report.

AEA Technology, PSI, Center for Ecology and Hydrology, October 2005. Review of New Zealand’s Net Position. Final report to the Ministry for the Environment.

AECOM Australia Pty. Ltd., 28 January 2010. Review of the Projected Balance of Kyoto Protocol Units. Review of Units during the First Commitment Period.

Bruce Manley, Final report, Feb 2010. 2009 Deforestation Survey. New Zealand School of Forestry. University of Canterbury.

Cabinet Policy Committee, 2010. *Cover Note Erratum – Climate Change: The Outcome of the First Projects Tender Round* [Ref: POL (04) 8/10].

Cabinet Economic Growth and Infrastructure Committee. 2009. Road User Charges Act 1977: Proposed Amendments. Summary of Paper. EGI (09) 77, paragraphs 14 and 15, pages 3–4.

Global research alliance on agricultural greenhouse gases. Available at <www.globalresearchalliance.org>.

Learn. Livestock Emissions and Abatement Research Network.

Ministry for the Environment, 2010. *Climate change impacts on New Zealand*. Available from <<http://www.mfe.govt.nz/issues/climate/index.html>>.

Ministry for the Environment, 2010. *Projects to Reduce Emissions*. Available from <<http://www.mfe.govt.nz/issues/climate/index.html>>.

¹ Reproduced as received from the Party.

Ministry for the Environment, July 2008. *Preparing for climate change. A guide for local government in New Zealand*. Available from <<http://www.mfe.govt.nz/issues/climate/index.html>>.

Ministry for the Environment, March 2009. *Preparing for coastal change. A guide for local government in New Zealand*. Available from <<http://www.mfe.govt.nz/issues/climate/index.html>>.

Ministry for the Environment, May 2010. *Preparing for future flooding. A guide for local government in New Zealand*. Available from <www.mfe.govt.nz/publications/climate-change-on-flood-flow/index.html>.

Ministry of Agriculture and Forestry, 2007. *New Zealand's Climate change solutions: sustainable land management and climate change. Plan of action. A partnership approach*. Available at <<http://www.maf.govt.nz/climatechange/>>.

Ministry of Agriculture and Forestry, April 2010. *A guide to Agriculture in the emissions trading scheme*.

Ministry of Agriculture and Forestry, June 2010. *Situation and outlook for New Zealand agriculture and forestry*.

Ministry of Agriculture and Forestry, March 2010. *A national exotic forest description*. Available at <<http://www.maf.govt.nz/forestry/>>.

Ministry of Agriculture and Forestry, March 2010. *New Zealand Wood Availability forecasts 2010–2040*. Available at <<http://www.maf.govt.nz/mafnet/publications/wood-availability/new-zealand/index.htm>>.

Ministry of Agriculture and Forestry, May 2010. *A guide to Forestry in the emissions trading scheme*.

Ministry of Economic Development, 2009. *New Zealand Energy Outlook: Emissions Pricing Sensitivity, Economic Growth Sensitivity, Oil Price Sensitivity, Changing gear. How could New Zealand reduce its reliance on imported oil? Hydrocarbon harvest*.

Ministry of Economic Development, 2009. *New Zealand Energy Data File*. Available at <www.med.govt.nz/energy/ghg>.

Ministry of Economic Development, 2009. *New Zealand Energy Greenhouse Gas emissions*. Available at <www.med.govt.nz/energy/ghg>.

Ministry of Economic Development, 2010. *New Zealand Energy Snapshot*. Available at <www.med.govt.nz/energy/>.

Ministry of Economic Development, July 2010. *Draft New Zealand Energy Strategy. Developing our energy potential. And the Draft New Zealand Energy Efficiency and Conservation Strategy*. Available at <www.med.govt.nz/energy/strategy>.

New Zealand Agricultural Greenhouse Gas Research Centre, <<http://www.nzagrc.org.nz/>>.

New Zealand Climate Change Center, 2010. *Climate Change Adaptation in New Zealand. Future scenarios and some sectoral perspectives*. Richard A.C. Nottage et al. February 2010.

Stephen J. Wakelin, June 2010. *2009 Planted Forest Carbon Projections for the 5th National communication*. Ministry of Agriculture and Forestry.