



Ministry for the
Environment
Manatū Mō Te Taiao

New Zealand's Greenhouse Gas Emissions Projections to 2020

Date:	10 June 2009	MfE Priority:	Moderate
Security Level:		Number of Attachments:	Nil
		MfE Ref No:	09-B-1507

Action Sought

	Action Sought	Deadline
Minister for Climate Change Issues Hon Dr Nick Smith	Information as requested Refer to Hon Tim Groser	No urgency
Associate Minister for Climate Change Issues (International Negotiations) Hon Tim Groser	Note the information provided	No urgency

Ministry for the Environment Contacts

Name	Position	Telephone		1st Contact
		(cell)	(work)	
Principal Author	Simon Wear		04 439 7636	✓
Responsible Manager	Len Brown	[Withheld]	04 439 7504	
Responsible General Manager	Todd Krieble	[Withheld]	04 439 7640	

Executive Summary

Gross emissions (excluding forest sinks) are projected to increase from 1990 to 2020 by 36 per cent (22.2 million tonnes).

Net greenhouse gas emissions from New Zealand are projected to be 31 per cent (19.1 million tonnes) above 1990 levels by 2020 under current policy settings and current Kyoto Protocol rules on forest sinks.

From 2021 the Article 3.3 forests are projected to become a net source of emissions as the large volume of forests planted during the early 1990s are harvested. Emissions from Article 3.3 forests are expected to peak at around 30 million tonnes in 2024 and remain a net source of emissions until 2033.

This projection uses a 28 year rotation period for Article 3.3 forests. If longer rotation periods are used Article 3.3 forests could remain a net removal until later in the 2020s.

Recommended Action

We recommend that you:

- (a) **Note** the information provided in this briefing note.
- (b) **Refer** this briefing note to Hon Tim Groser. **Yes / No**

Todd Krieble
Reporting and Review Group

10 June 2009

Referred to Ministry Communications Staff:

Yes

Graham McKerracher
Communications Advisor

Hon Dr Nick Smith
Minister for Climate Change Issues

Date

Hon Tim Groser

Date

Associate Minister for Climate Change Issues (International Negotiations)

Purpose

You requested a briefing on New Zealand's projected greenhouse gas emissions and removals to 2020 under current policy settings. Projections to 2020 are being updated for the mid-term target and are expected to be completed by mid July 2009. The projections provided in this briefing note are provisional, use the best information available now and assume a continuation of five year commitment periods.

Key Points:

Total greenhouse gas emissions and net removals (Figures 1 and 2, Tables 1 and 2)

1. The projected increase in gross emissions (excluding forest sinks) from 1990 to 2020 is 36 per cent (22.2 million tonnes). Gross greenhouse gas emissions are projected to increase by 12 per cent (8.7 million tonnes) from 2007 to 2020.
2. Net greenhouse gas emissions from New Zealand are projected to be 31 per cent (19.1 million tonnes) above 1990 levels by 2020. This projection assumes current policy settings and current international Kyoto Protocol rules.
3. Four sources that are projected to contribute most to the change in New Zealand's net greenhouse gas emissions are road transport, electricity generation, dairy farming (excluding nitrogen fertiliser use), and Article 3.3 forest sinks (Tables 3 and 4).

Emissions from the main sectors (Figures 1 and 2)

4. Greenhouse gas emissions from the energy sector are projected to increase by 12 per cent (3.8 million tonnes) from 2007 to 2020. Relative to 1990, greenhouse gas emissions from energy use are projected to increase by 55 per cent (12.9 million tonnes) by 2020.
5. Greenhouse gas emissions from the agriculture sector are projected to increase by 16 per cent (5.6 million tonnes) between 2007 and 2020. Relative to 1990, greenhouse gas emissions agriculture emissions are projected to have increased by 29 per cent (9.3 million tonnes) by 2020.
6. Net removals by Article 3.3 forests are projected to be 122.7 million tonnes over the period 2013 to 2020. However, by 2022, end of the third commitment period, the Article 3.3 forests are projected to be a net source of 20.0 million tonnes. The forests become a source of emissions as the large volume of forests planted during the early 1990s are harvested.
7. The change to a net source for Article 3.3 forests is one possible scenario, and assumes a 28 year forestry rotation period. If longer rotation periods are used, the forests would likely still be a net removal in 2022 and it would not become a net source of emissions until later in the 2020s (see Figure 1).

Largest contributing subsectors of energy and agriculture (Tables 3 and 4)

8. Greenhouse gas emissions from dairy farming (excluding nitrogen fertiliser) are projected to increase by 33 per cent (4.2 million tonnes) between 2007 and 2020, and by 126 per cent (9.4 million tonnes) between 1990 and 2020.
9. Greenhouse gas emissions from road transport are projected to increase by 12 per cent (1.6 million tonnes) between 2007 and 2020, and by 97 per cent (7.4 million tonnes) between 1990 and 2020. The lower growth in projected emissions is driven by expected lower population and GDP growth, an assumed rise in the price of fuel, and ongoing improvements in new vehicle efficiency.
10. Greenhouse gas emissions from electricity generation are projected to increase by 11 per cent (0.7 million tonnes) between 2007 and 2020. Relative to 1990,

emissions from electricity generation are projected to increase by 112 per cent (3.9 million tonnes) by 2020. There is low growth in projected electricity generation emissions as most expected new generation is sourced from renewable sources with the modelled effects of the Emissions Trading Scheme.

Assumptions underpinning the projections

11. The projections, especially for plantation forestry, are provisional. The projections are consistent with the current international accounting rules, assumptions and policy settings. Changes in any of these factors will affect the projected emissions and removals. The forestry projections do not yet include data from the Land Use and Carbon Analysis System mapping.
12. The projections for energy and industrial processes include the effects of an Emissions Trading Scheme as it is currently legislated. An emissions trading price of NZ\$ 25 per tonne carbon dioxide equivalent is assumed. Agriculture projections do not include the modelled effects of the Emissions Trading Scheme.
13. Agriculture emissions to 2014 were provided by the Ministry of Agriculture and Forestry for the 2009 net position report. The Ministry for the Environment extrapolated the agriculture emissions growth from 2014 to 2020 using previous agriculture emissions growth projections provided during 2008 by the Ministry of Agriculture and Forestry.
14. The 2009 net position report assumed a 28 year harvesting rotation for Article 3.3 forests across New Zealand.
15. Net removals by Article 3.3 forests depend on future afforestation, harvesting and deforestation actions. These actions are sensitive to policy settings. The net removal scenarios presented in this briefing note assume continuation of the Emissions Trading Scheme as currently legislated.

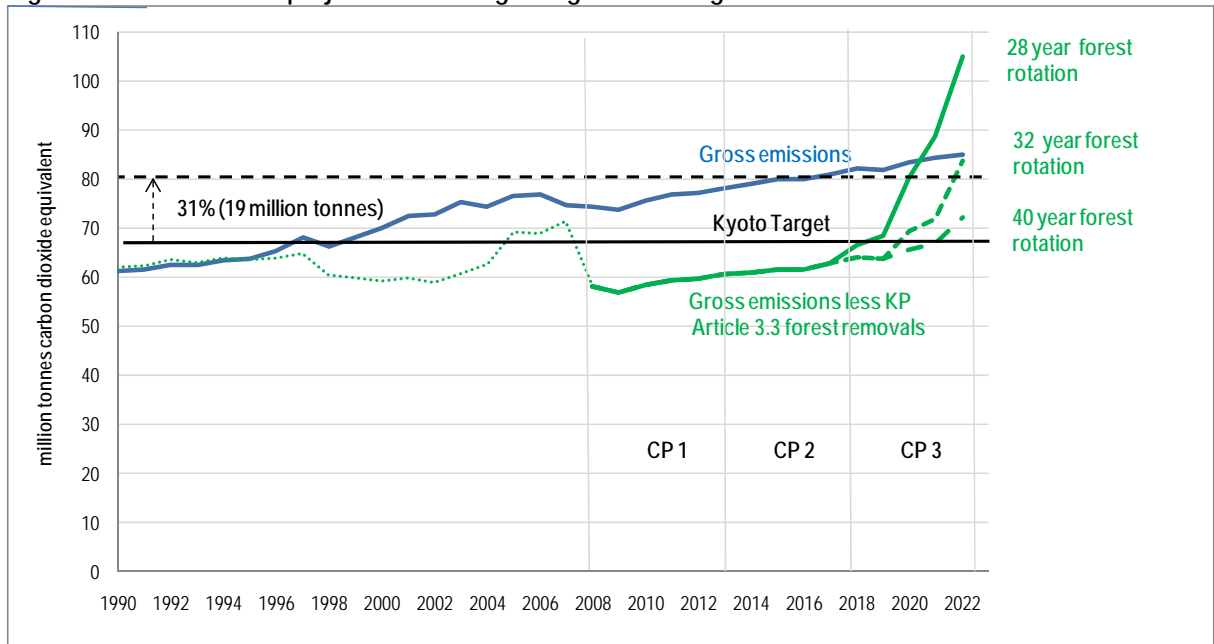
Table 1: Change in New Zealand's projected greenhouse gas emissions between 1990 and 2020

	1990 (million tonnes)	2020 (million tonnes)	Change from 1990 (million tonnes)	Change from 1990 (per cent)	Average annual change (per cent)
Energy	23.6	36.5	12.9	55	1.5
Agriculture	31.8	41.1	9.3	29	0.9
Industrial processes	3.4	4.0	0.6	19	0.6
Solvents and other use	0.0	0.0	0.0	11	0.4
Waste	2.4	1.7	-0.7	-30	-1.2
Net removals by Article 3.3 forests	na	3.1	-	-	-
Gross emissions	61.3	83.5	22.2	36	1.0
Net emissions including Article 3.3 forests	na	80.4	19.1	31	0.9

Table 2: New Zealand's projected greenhouse gas emissions between 2007 and 2020

	2007 (million tonnes)	2020 (million tonnes)	Change from 2007 (million tonnes)	Change from 2007 (per cent)	Average annual change (per cent)
Energy	32.7	36.5	3.8	12	0.8
Agriculture	35.5	41.1	5.6	16	1.1
Industrial processes	4.6	4.0	-0.6	-12	-1.0
Solvents and other use	0.0	0.0	0.0	6	0.5
Waste	1.8	1.7	-0.1	-6	-0.5
Net removals by Article 3.3 forests	na	3.1	-	-	-
Gross emissions	74.7	83.5	8.7	12	0.9
Net emissions including Article 3.3 forests	na	80.4	5.7	8	0.2

Figure 1: New Zealand's projected net and gross greenhouse gas emissions 1990 to 2020



Note: The 2009 net position report for net emissions 2008 to 2012 assumes a 28 year forestry rotation and a continuation of five year commitment periods.

Figure 2: New Zealand's projected greenhouse gas emissions by sector 1990 to 2020

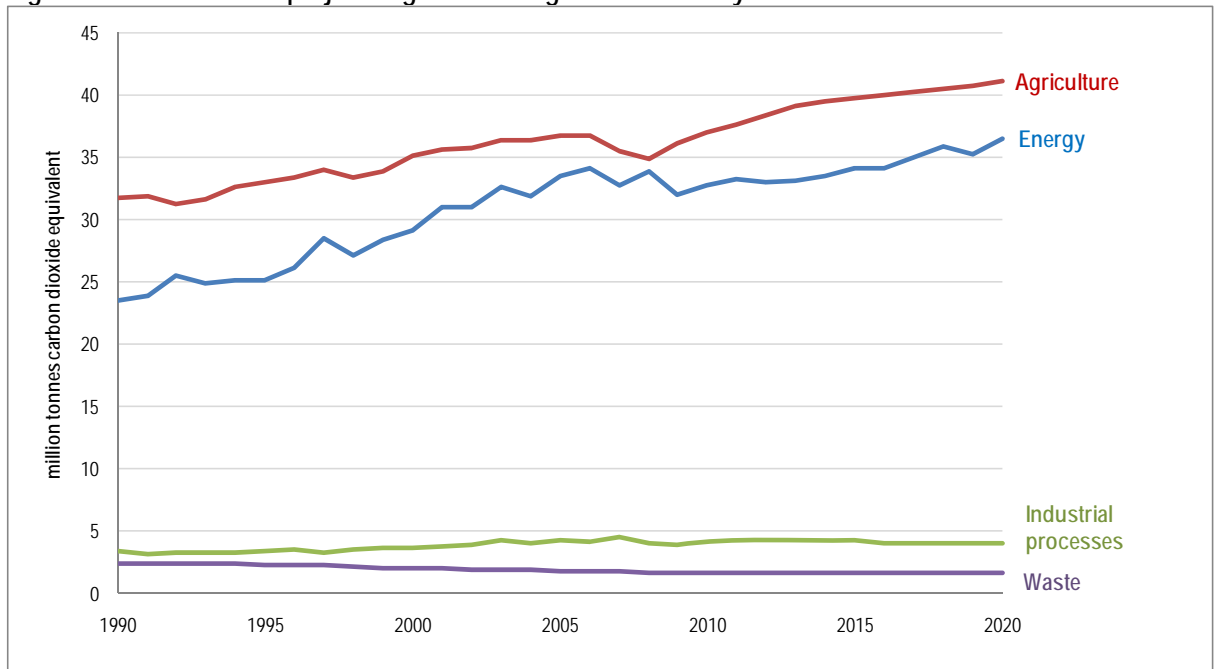


Table 3: Projections of the largest sub-sector's emissions between 1990 and 2020

	1990 (million tonnes)	2020 (million tonnes)	Change from 1990 (million tonnes)	Change from 1990 (per cent)	Average annual change (per cent)
Road transport	7.7	15.0	7.4	97	2.3
Public electricity and heat production	3.5	7.4	3.9	112	2.5
Dairy farming (excludes nitrogen fertiliser use)	7.4	16.8	9.4	126	2.8
Net removals by Article 3.3 forests	na	3.1	-	-	-

Table 4: Projections of the largest sub-sector's emissions between 2007 and 2020

	2007 (million tonnes)	2020 (million tonnes)	Change from 2007 (million tonnes)	Change from 2007 (per cent)	Average annual change (per cent)
Road transport	13.5	15.0	1.6	12	0.8
Public electricity and heat production	6.6	7.4	0.7	11	0.8
Dairy farming (excludes nitrogen fertiliser use)	12.6	16.8	4.2	33	2.2
Net removals by Article 3.3 forests	na	3.1	-	-	-

APPROVED FOR RELEASE