

Defending the Irresponsible: A Reply to Chapman and Gray

Alexander Gillespie*

The mid-1990s were very hot years for the planet.¹ 1997 was another record year (although El Nino kept New Zealand cool).² This year — 1998 — has already seen heatwave records all over the country, buckled railway tracks, dried-up rivers and very bad droughts in various parts of the country.³ These record-breaking temperatures are not evidence of climatic change.⁴ They are, however, consistent with the theories that a near incomprehensible environmental disaster, if not properly addressed, could be within the reach of the next generation.⁵ It is against this absolute background that the efforts of the global community must be assessed. However, it is within the realms of international politics that a solution (if any) will be located. It is on these points I contend that the New Zealand approach has become problematic.

Ralph Chapman and Liz Gray, both from the Ministry for the Environment (MfE), have attempted to both deflect my criticisms of New Zealand's stance and defend the policies of the government on this issue.⁶ However, although their intentions may be noble, they present an argument that is ill-researched and, in my opinion, not within the rubric of finding a suitable beginning to a problem that may extend well beyond the rhetoric of "least-cost options" and "market mechanisms".

* LLM (Hons) *Auck*, PhD *Nott*, Lecturer in Law, University of Waikato.

1 English, P., "Warming Trend Has Ups and Downs", *The New Zealand Herald*, 22 January 1997.

2 NZPA, "El-Nino Blows Cool On NZ", *The New Zealand Herald*, 19 January 1998.

3 Perry, K., "Heatwave Sets National Record", *The New Zealand Herald*, 3 March 1998.

4 See Gillespie, A., *Burning Issues: The Failure of the New Zealand Response to Climatic Change* (1997) ("Burning Issues"), Chapters 1 & 2.

5 See Retallack, S., "Kyoto: Our Last Chance" (1997) 27(6) *Ecologist* 229–235.

6 Chapman, R. & Gray, L., "Slowing the Burning: New Zealand's Climate Change Policy Approach" (1998) 2 *NZJEL* 225.

Carbon Sinks

It is stipulated that I contend that New Zealand's stance on sinks is isolated, misguided and is not an appropriate policy to take to the negotiating table. Moreover, that such an approach is helping to gridlock further negotiations.⁷ I stand by all of these contentions.

An isolated stance

In the run-up to the Kyoto Conference there was no agreement on whether or how carbon sinks should be included in the Protocol.⁸ New Zealand rallied against this, and from the outset “press[ed] strongly for the inclusion of sinks”,⁹ considering it “very important”,¹⁰ “vital” and “most important”.¹¹ Within the domestic frame of reference, the impetus came from the assertion that without sinks there could be “a major loss to the New Zealand economy”¹² as the sinks issue involved “big winners and losers”.¹³ Accordingly, New Zealand adopted a dominant role on the railroading of this agenda which, according to the *Guardian International* resulted in “angry exchanges about sinks ... the inclusion of such schemes ... was regarded by some participants as an attempt to create a loophole for evasion”.¹⁴ New Zealand's dominance and insistence on this issue led to descriptions (elsewhere) of New Zealand's approach as “parochial self-interest, combined with sleight of hand”.¹⁵

New Zealand forged the way on sinks to such an extent that the MfE (after Kyoto) noted that “had New Zealand not been there [Kyoto] sinks might well have dropped off the table ... New Zealand played a lead role in the sinks negotiations.”¹⁶ By their own analysis, I fail to see how New Zealand alone keeping the sink issue afloat is anything but isolated.

This drive was not surprising given the reliance upon the sink approach within New Zealand's mitigation policy, when compared to other countries. That is, working from the first and second national communications of Annex I parties under the United Nations Framework Convention on Climate Change (FCCC)

7 Ibid 226–227.

8 Associate Minister of Foreign Affairs and Trade, “Late Paper to CIE” (Climate Change Negotiations, 1997) (“Late Paper”) 3.

9 MfE, *Draft Supplementary Note to Minister Re: AGBM 8* (31 October 1997) 1.

10 MfE, *Kyoto Outcome: A Summary* (17 December 1997) (“Kyoto Outcome”) 2.

11 *Late Paper*, supra note 8, at 2 & 5.

12 MfE, supra note 10, at 2.

13 Minister for the Environment, *Report on Overseas Travel: Third Conference of the Parties to the Framework Convention on Climate Change 8–10 December 1997, Kyoto* (1997) 2.

14 Brown, P., “Kyoto Fails Test on Climate Change”, *Guardian International*, 14 December 1997.

15 *ECO Newsletter: Kyoto* (1997) Issue 3, at 2.

16 MfE, supra note 10, at 2.

the aggregate removals from this category represent 6.7% and 8% of total greenhouse gas (GHG) emissions in carbon dioxide (CO₂) equivalent and total CO₂ emissions of the reporting Annex I parties.¹⁷ However, the amounts varied widely amongst the parties. For example, whereas the average was 8% reductions by sinks of national CO₂ emissions,¹⁸ for New Zealand the rate was the highest of any Annex I country at 81%.¹⁹

This is not to infer that the New Zealand approach was not supported (something I have never contended).²⁰ Indeed, Australia, Canada, Norway, Iceland, the United States, and the Russian Federation all supported New Zealand's drive to include sinks within the Kyoto Protocol. However, opposed to them were the European Union, Japan, Denmark, the United Kingdom, France, Kenya, the Marshall Islands, Nauru, Peru, Uzbekistan, China, Brazil, and delegations speaking on behalf of the Alliance of Small Island States. These countries all wished to defer any decisions upon what role sinks should play until many of the uncertainties had been satisfactorily resolved.²¹

From this latter approach, it is very important to recognise that this is not an argument against sinks, or forests generally. However, this is the view that New Zealand suggested. They contended at Kyoto that if sinks were not included in the Protocol, then "taking it from the perspective of the atmosphere",²² an emissions loophole of about a billion tonnes of CO₂ per year would be created.²³ It

17 United Nations, *Methodological Issues: Synthesis of Information From National Communications on Sources and Sinks in the Land-Use Change and Forestry Sector* (Technical Paper FCCC/TP/1997/5, 20 November 1997) 5–6.

18 Only in the UK and Australia were these areas not a sink, ie, they were a source of emissions. For Australia, they added 24% and for the UK it was a 3% increase: *ibid* Table 1.

19 *Ibid* Table 1. By 1997, the projected removal rate over the period 1990–2020 had fallen to 63% of the response of dealing with the gross CO₂ emissions from energy sources and industrial processes. MfE, *Climate Change: The New Zealand Response II. Second National Communication under the FCCC* (1997) 9, 78 ("Second National Communication").

20 Gillespie, *supra* note 4, at 81.

21 United Nations, *supra* note 17, at 4–11. The specific results to the questionnaire on sinks can be found in United Nations, *Response From Parties on Issues Relating to Sinks* (Technical Paper FCCC/AGBM/1997/MISC 4, MISC 4 Add 1, & MISC 4 Add 2, 1997) ("Response from Parties"); MfE, *Draft Supplementary Note to Minister Re: AGBM 8* (31 October 1997) 1; Minister for the Environment, "Upton Announces Climate Change Position", *Press Release* 2 December 1997, 3; "The Third Conference of the Parties to the United Nations Framework on Climate Change" (1997) 12(67) *Earth Negotiations Bulletin* 1; Ministry of Foreign Affairs and Trade, *The United Nations Framework Convention on Climate Change: The Third Session of the Conference of the Parties: The New Zealand Delegation Report* (1997) ("The New Zealand Delegation Report") 4.

22 See "After Kyoto", *Energy Wise News*, 13 April 1988.

23 New Zealand Intervention, *December 2 Committee of the Whole FCCC, COP 3. Kyoto 1 Draft Supplementary Note to Minister Re: AGBM 8* (31 October 1997) 1.

was also suggested that if they were not addressed, “a crucial part of the Berlin Mandate will not be met”.²⁴

Admittedly, the FCCC does refer to commitments by the parties with regard to “anthropogenic emissions by sources and removals by sinks” when dealing with inventories and mitigation action.²⁵ The Berlin Mandate utilised similar words.²⁶ However, quite clearly these words did not specify how sinks were to be used in reduction targets. Moreover, any failure to include them into the Kyoto Protocol would not have inferred (as New Zealand suggested) that they could be ignored. Indeed, both the European Community and Japan explicitly rejected the idea that excluding sinks from the Protocol would reduce any incentive to protect them. Thus, they maintained that the protection and enhancement of sinks should be done regardless of obligations under the FCCC.²⁷

This enlightened approach reflected clearly that the concerns expressed about sinks is not an argument against the enhancement of sinks and forests. Rather, sinks are options that must be placed carefully into context, ie, the protection and planting of forests should be done in addition to fossil fuel reductions, not as an alternative. This is because as an alternative, it introduces methodological, political, and equity issues.

The Misguided Stance

There are many reasons why the focus upon sinks is misguided.²⁸ At Kyoto, these reasons focused upon scientific uncertainties, definition problems (exactly what “sink” encompassed) and policy concerns. There is an irony in the fact that the importance of good science has been exalted within the New Zealand position on climate change,²⁹ and the representatives have forged a mechanism within the Protocol that is predicated upon scientific uncertainty. These uncertainties, pertaining to the measurement and definitions of sinks, have been replicated within the Intergovernmental Panel on Climate Change (IPCC) and individual parties to the FCCC.

In the international context, the IPCC’s Second Assessment Report³⁰ clearly sets out the methodological problems and scientific uncertainties surrounding

24 The Hon Simon Upton, Minister for the Environment, “Statement on Behalf of New Zealand” *Plenary. FCCC. COP 3*, 8 December 1997, Kyoto (1997) 2.

25 See Articles 4.1 & 4.2.

26 See Article II 2(a) “by sources and removals by sinks ...”.

27 *Response From Parties*, supra note 21, at 12, Add 1 at 22 (United Kingdom on behalf of the European Union).

28 Gillespie, supra note 4, at Chapter 6.

29 See Gamble, W., “Scientific Leadership Urged”, *The New Zealand Herald*, 10 February 1988.

30 Volume Two of IPCC’s Second Assessment Report.

the measurement of sinks. The IPCC Revised Guidelines in 1996 also recognised that major uncertainties exist relating to emissions factors and activity data for sinks. In his report to the seventh session of the Subsidiary Body for Scientific and Technological Advice in October 1997, Professor Bolin, on behalf of the IPCC, reiterated the problems relating to sinks. He specifically pointed out in relation to terrestrial ecosystems that "... the error margin for the determination of sources and sinks are quite large" and "[b]ecause of our limited understanding and lack of observations simplified methods have been proposed by the IPCC and have been adopted by the FCCC for the assessment of sources and sinks by countries". As these were "very approximate", Professor Bolin highlighted the importance of analysing "their possible shortcomings" in the context of the IPCC's work.³¹ The uncertainty in this area, as noted by the IPCC, was 60%.³² This figure was higher than New Zealand's current rate of uncertainty (25%)³³ but less than Australia's (less than 80%).³⁴

Another useful indicator of the uncertainties with sinks can be seen in the variance of the percentage changes of exactly what role sinks were playing in national circumstances between the first and second national communications. These ranged from 430% for the United Kingdom (UK), down to 3% for France (New Zealand had a 16% rework between reports).³⁵

On top of the scientific uncertainties were a number of methodological concerns (as evidenced from both first and second communications).³⁶ According to the Secretariat, the principal concerns were multiple. Specifically, they referred to a lack of a common reporting framework for emissions from the sub-categories of land-use change and forestry category.³⁷ That is, many countries had differing ideas about what does (or should) constitute³⁸ sinks. With such considerations in mind, the Technical Paper on sinks (1997) concluded, "It is clear that further methodological work is necessary in order to ensure that the

31 Noted by the Marshall Islands in *Response From Parties*, supra note 21.

32 *IPCC Guidelines for National Greenhouse Gas Inventories* (1996) Table A1-1.

33 New Zealand in *Response From Parties*, supra note 21, at 40.

34 *Ibid* Add 1, 7.

35 Noted by the Marshall Islands in *Response From Parties*, supra note 21, at 18.

36 The Technical Paper on sinks noted that "None of the problems with comparability of CO₂ emission estimates from this sector identified in the compilation and synthesis of first national communications appear to be resolved. The information provided did not shed additional light on various assumptions related to the definitions of anthropogenic activities and their treatment for emissions reporting purposes": FCCC/SBI/1997/19, Annex, para 29.

37 This category originally (1995) included changes in forests and other woods biomass stocks; forests and grasslands conversion; and abandonment of managed lands. In 1996, the IPCC added changes in mineral soil carbon stocks.

38 United Nations, *Compilation of Responses From Parties on Issues Related to Sinks: Comments from Parties and Note By Secretariat* (Technical Paper FCCC/AGBM/1997/INF.2, 29 November 1997) 3, 4-11.

estimation and reporting of GHG inventory data for land-use change and forestry are consistent, transparent and comparable.”³⁹ Although some of the difficulties in this area have been reproached within the definitions of the Protocol,⁴⁰ a number of important difficulties remain recognised within the Protocol. Thus: “Uncertainties, transparencies in reporting, verifiability and methodological work”⁴¹ all pertaining to the sinks question still have to be worked out in the short-term future of the Convention.⁴²

Such uncertainties should have spoken for excluding sinks, not including them. Qualified Emission Limitation and Reduction Objectives (QELROs) should be subject to the highest degree of certainty. Conversely, if uncertainty was to be included in the protocol by the inclusion of sinks, they should have been limited in their application. This could have been achieved in two ways.

39 United Nations, *supra* note 17, at 10. Very similar conclusions were reached with the compilation and synthesis of second national communications: “Further research and methodological work is needed to ensure that estimation and reporting is done in a consistent, transparent, and comparable manner”: FCCC/SBI/1997/19, Annex, para 29.

40 The specific language agreed upon suggested in Article 3(3) stipulated: “The net changes in greenhouse gas emissions from sources and removals by sinks resulting from direct human-induced land use change and forestry activities, limited to afforestation, reforestation, and deforestation since 1990, measured as verifiable changes in stocks in each commitment period shall be used to meet commitments in this Article of each party included in Annex I.” *Adoption of the Kyoto Protocol* (FCCC/CP/L.7 10 December, 1997). The multiple issues to be determined include: definitions for forests, afforestation, reforestation, deforestation, historical, direct-human related, carbon stock, and alternative ways of viewing the LUCF category. For discussion of these problems, see SBSTA, *Methodological Issues: Issues Related to Land Use Change and Forestry*, FCCC/SBSTA/1998/INF.1 (1998).

At Kyoto there was distinct concern over the definition and ambits of this article. “Sink” is defined in Article 1 of the FCCC to mean “any process, activity or mechanism which removes a greenhouse gas, an aerosol or precursor of a greenhouse gas into the atmosphere”. The Protocol does not cover “all” forests, but is limited to direct human-induced land use change and forestry activities, limited to afforestation, reforestation, and deforestation. The question of whether this includes natural/indigenous forests was dealt with in the *IPCC Guidelines* which state that natural, undisturbed forests, where still in equilibrium, should not be considered either as an anthropogenic source or sink, and therefore be excluded from the national inventory calculations. Of course, the concern is, what about undisturbed forests which are not in equilibrium?

As it stands, the protection and enhancement of carbon sinks and reservoirs, including commercial planted forests *and* indigenous forests, are a central part of New Zealand’s policy. However, the scientific research on the role of indigenous forests and sinks has been “slow” and it is likely that “it will be some years before the source/sink situation of our indigenous forests with respect to CO₂ can be clarified”. It is still “not known whether this reservoir is expanding or shrinking, ie, whether it is a sink or source”: *Second National Communication*, *supra* note 19, at 9; Royal Society of New Zealand, *National Science Strategy Committee for Climate Change* (1996) 7, 17.

41 Kyoto Protocol, Article 3(4).

42 *Ibid*, Articles 3(4), 5.

First, if sinks were to be taken into account it would have made sense that they be restricted to verifiable changes in stock up to a set percentage of the QELROs. A logical point would have been that sequestration as part of national response strategies did not exceed this global average (8%). If anything, it may have been more sensible to go below the 8% global average because of scientific uncertainties in this area.⁴³ New Zealand argued (and the Protocol eventually reflected) the opposite of this position, ie, “it is not necessary that a limit be placed on the amount of sinks in a QELRO”.⁴⁴

Secondly, sinks should be kept strictly within national boundaries. However, as it stands, the drive is to make sinks part of the international emissions trading market, and this objective has already been encompassed in Article 6 of the Protocol. This, too, follows New Zealand’s drive to make “sink credits being an integral part of the international emission trading market”.⁴⁵ Exactly how far emissions trading will progress is a matter of intense debate. Nevertheless, the flow-over, in terms of scientific certainty (mechanisms such as Joint Implementation and emissions trading require high standards of reporting which sinks may not be able to deliver) and political considerations onto the area of sinks is now beginning to become apparent.

What Nauru called “the broader arena of socio-economic concerns”⁴⁶ of the sinks issue is yet to fully surface. However, the linkage into emissions trading may exacerbate this. Specifically, carbon sequestration, if unchecked, may create a powerful incentive to begin or accelerate the felling of old growth forests, the destruction of biodiversity, and the movement of indigenous peoples — all in efforts to secure space so that signatories or their financially poorer partners can take credit for planting fast-growing mono-culture forests to fix carbon. The promise of financial benefits from sinks for poor countries may prove a powerful trump card over other domestic considerations. Accordingly, the inclusion of sinks in QELRO may actually end up running counter to the objectives of other international treaties. As such, measures designed to benefit the climate may “do greater harm to the environment at large”.⁴⁷

In their critique of my earlier article on this issue, Chapman and Gray also produce my quote about reforestation as a primary method for solving the issue of climatic change. In doing so they have failed to read either the full paragraph or appreciate the context of the article. I never suggested that New Zealand has

43 Marshall Islands in *Response From Parties*, supra note 21, at 22.

44 New Zealand in *Response From Parties*, supra note 21, at 40.

45 Upton, S., “New Zealand’s Climate Change Policy: Speech to the Energy Federation of New Zealand” (31 October 1997) 8.

46 Nauru in *Response From Parties*, supra note 21, at 27.

47 Nauru, the Marshall Islands and Kenya all made similar points on this issue: *Response From Parties*, supra note 21.

put this approach on the world stage which all countries should follow. Rather, the context of my concern is that equity is the key to successful negotiations in this area. Equity, by definition, is about fairness and one of the best ways to examine fairness is to see what would happen if every other nation pursued the same policies (sequestration as the overt primary response mechanism) as New Zealand does. Quite simply, not only is this physically impossible but it is also morally dubious. It is dubious in terms of historical causation and per-capita emission differences between countries. It is also deeply problematic because although a ton of (weighted) greenhouse gas sequestered from planting trees may be the same for the atmosphere as a ton of greenhouse gas prevented from entering the atmosphere from methane from rice paddies, the social and political context of these reductions is not.

In light of this type of consideration, when Chapman and Gray suggest that “whether our per-capita ... emissions are comparatively high is irrelevant ...”⁴⁸ I could not be more diametrically opposed in my view. They would do well to re-consider the broader implications of the New Zealand delegation report which noted: “The final hours of the negotiations almost saw a complete breakdown as India tried at the last minute to make emissions trading subject to prior agreement on an allocation end-point of equal per-capita shares.”⁴⁹

Future gridlock

Finally, in their section on sinks, Chapman and Gray produced my sentence suggesting that New Zealand’s approach is “helping to gridlock further attempts at successful international negotiations”. Chapman and Gray took my sentence to be referring specifically to Kyoto. Unfortunately, the key word was “further” for this process will probably stretch out for many decades. Admittedly, the sinks issue did not cause “gridlock” at Kyoto — although there were “angry exchanges”.⁵⁰ However, gridlock was approached at Kyoto in respect to developing country participation (the fact that New Zealand acted as the charger on

48 Chapman & Gray, *supra* note 6, at 228.

49 *The New Zealand Delegation Report*, *supra* note 21, at 2–3.

50 Brown, *supra* note 14.

the attack upon non-Annex I countries⁵¹ probably did not help), and emissions trading.⁵² Given that these two concerns are now becoming paramount, and the sinks issue will be drawn into these whirlpools, it will become a matter for a later debate to see who is correct with our differing interpretations of what is most important.

Non-CO₂ Greenhouse Gases

The suggestion that I contended that a singular approach with a gas-by-gas focus could have left New Zealand “very exposed” is correct. This contention was justified by the fact that New Zealand has the highest ratio of (cumulative) non-CO₂ greenhouse gas emissions to CO₂ emissions of any of the Annex I parties to the FCCC.⁵³ On an individual gas basis, New Zealand’s methane emission rate per capita is about 10 times higher than the global average.⁵⁴ Currently, methane emissions amount to 44.9% of New Zealand’s total greenhouse emissions.⁵⁵ New

51 From the outset, G-77/China has steadfastly refused to discuss the evolution of commitments for developing countries. The responsibility for emission reductions was, in their opinion, clearly one for Annex I countries, who must operate under the principle of common but differentiated responsibilities. Moreover, the Berlin Mandate process had been premised on increasing commitments from Annex I countries only. Accordingly, they suggested that to try to bring non-Annex I countries into the equation was nothing more than a political move led by some countries to evade their responsibilities, intended to destroy the FCCC’s principles of differentiated responsibility and equity, and could easily lead to the failure of COP-3. See “The Third Conference of the Parties to the United Nations Framework on Climate Change” (1997) 12(68) *Earth Negotiations Bulletin* 2; & (1997) 12(75) *Earth Negotiations Bulletin* 1. Despite this strong warning, New Zealand led the demand that following the lead of developed countries, developing (but not least developed) countries must accept “binding limitation commitments ... by 2002 at the latest ...” (New Zealand Intervention, 5 December 1997, Plenary, FCCC, COP 3, Kyoto, 2–3). See also Young, A., “Upton Defends New Zealand Initiative on Greenhouse Emissions”, *The New Zealand Herald*, 8 December 1997. The developing countries saw the proposal as disruptive, provoking tension and creating resistance at a very delicate stage of negotiations: see “The Third Conference of the Parties to the United Nations Framework on Climate Change” (1997) 12(67) *Earth Negotiations Bulletin* 1. The final conclusion on this issue was a complete victory to the non-Annex I countries, with Article 10 stipulating that any new commitments were explicitly to exclude them.

52 See Reuters, “Gas Treaty Vital Turning Point”, *The New Zealand Herald*, 12 December 1997.

53 See MfE, *Climate Change: More Than Just Carbon Dioxide* (1998) vii.

54 MfE, *The State of New Zealand’s Environment* (1997) (“*State of the Environment*”) 5:32.

55 Livestock digestive processes account for 39.9%; animal waste 0.5%, landfills 3.5%; wastewater 0.1%; and energy 1.0%.

Zealand's other prominent⁵⁶ non-CO₂ greenhouse gas is nitrous oxide.⁵⁷ This accounts for 18.9% of New Zealand's total.⁵⁸

If reductions had been applied across individual gases, New Zealand could have (if methane emissions had not fallen) found itself between a rock and a hard place. However, as history now tells us, the Kyoto Protocol adopted a comprehensive approach in which six different greenhouse gases were included for reductions cumulatively and not individually. The possibility of listing gases separately (the China/G77 preference),⁵⁹ which was still on the table at the end of the first working week of Kyoto,⁶⁰ was pushed aside by the idea of a "flexible basket" of gases. Within this basket, gases are aggregated and rated according to their global warming potential (GWP)⁶¹ and parties can then, in seeking to make overall reductions (made up of a cumulative target), choose to make reductions in whichever gas or gases they choose.⁶²

The inclusion of non-CO₂ gases within the Protocol should benefit New Zealand by "... lowering the costs of meeting a given target".⁶³ This is because in 1996 emissions of methane (by about 7%)⁶⁴ and nitrous oxide were below their 1990 levels. The methane reduction was due to the earlier removals of agricultural subsidies, lower prices for beef and sheep meat and the increase in pasture land being used for planted forests. Accordingly, as the MfE noted, a "reduction in these gases can be offset against CO₂ emissions ... so that, in aggregate, less action than otherwise will be needed for New Zealand to meet its legally binding target".⁶⁵

At this point the legitimate question needs to be asked whether one country should be allowed to claim a benefit, ie, increased emission space to be filled by

56 New Zealand's remaining less prominent non-CO₂ greenhouse gases are SF₆ (sulphur hexafluoride), HFCs (hydrofluorocarbons), and PFCs (perfluorocarbons). These make up less than 0.5% of New Zealand's total greenhouse gas emissions.

57 Around 94% of this comes from the agricultural sector with animal waste, soil processes and nitrogen fertiliser.

58 MfE, *supra* note 53, at ix.

59 See "The Third Conference of the Parties to the United Nations Framework on Climate Change" (1997) 12(67) *Earth Negotiations Bulletin* 1; *Late Paper*, *supra* note 8, at 4.

60 See "The Third Conference of the Parties to the United Nations Framework on Climate Change" (1997) 12(72) *Earth Negotiations Bulletin* 1–2.

61 Due to uncertainties with these, Article 5 of the Kyoto Protocol suggests that GWPs shall be those agreed to by the IPCC and the COP, and these may be revised in the future.

62 *Late Paper*, *supra* note 8, at 4.

63 MfE, *Points to Note Regarding Attached Reports on Modelling Impacts For New Zealand of Reducing Greenhouse Gas Emissions* (1997) 1.

64 Chapman & Gray, *supra* note 6, at 228.

65 MfE, *supra* note 53, at 7. This produces "a good deal ... for many developed countries": Upton, S., *Address to the Royal Institute of International Affairs: Climate Change, Addressing the Real Issues* (19 September 1997) 4.

rising CO₂ emissions, because of something that happened fortuitously (without intention) which creates less emissions than predicted? Should such a fortuitous outcome be an excuse to reduce the need to control emissions in another field?

Aside from such questions is the security of Chapman and Gray's claim that New Zealand's methane emissions will decline, and by 2020 be "well below their 1990 levels".⁶⁶ This prediction is largely based upon the assumption that New Zealand's main methane producers, ruminant livestock, "will continue to decrease"⁶⁷ in terms of total numbers. Similar claims that "it just so happens that New Zealand's biggest contributing gas (methane) happens to hold some excellent emission reduction prospects"⁶⁸ have been advanced elsewhere. Such contentions may be difficult to defend because of scientific uncertainty and market unpredictability.

The claim of a 7–10% drop in methane emissions is difficult to reconcile with earlier MfE suggested emissions projections which suggested that for methane, the uncertainties⁶⁹ are in the range of 22%.⁷⁰ The 1996 IPCC Guidelines specify the uncertainty for methane for biomass burning at 100%, for animals at 25% and animal waste at 25%.⁷¹ That is, the uncertainty in methane emissions is at least three times larger than the drop in emissions between 1990–1996. The MfE suggested an uncertainty of up to 59% for nitrous oxide,⁷² whereas the IPCC placed the uncertainties for nitrous oxide between 50% and 100%.⁷³ These uncertainties increase to "very high levels" (due to data, process and methodological uncertainties)⁷⁴ the further into the future the projections are cast (ie, from 2000–2010). According to the National Science Strategy Committee for

66 Chapman & Gray, *supra* note 6, 228.

67 *Ibid.*

68 Upton, S., *New Zealand's Climate Change Policy: Speech to the Energy Federation of New Zealand* (31 October 1997) 2.

69 This uncertainty is distinctly concerned with GWPs for non-CO₂ gases. The National Science Strategy Committee for Climate Change noted in 1997 that "there is a level of uncertainty in global warming potentials, typically of the order of +/- 35%". These are particular concerns with methane and nitrous oxide: Royal Society of New Zealand, *National Science Strategy Committee for Climate Change* (1997) 2, 15.

It is important to note that the Minister for the Environment has also stated that "the measurement uncertainty for non-CO₂ emissions and net CO₂ removals by sinks is higher than for energy emissions. In reality, due to uncertainty, emissions projections could be significantly higher or lower than the central estimate figures presented": *Late Paper*, *supra* note 8, at Annex A.

70 MfE, *supra* note 53, at viii.

71 *IPCC Guidelines*, *supra* note 32, at A1-1, Table A1-1.

72 MfE, *supra* note 53, at viii.

73 *IPCC Guidelines*, *supra* note 32, at A1-1, Table A1-1.

74 MfE, *supra* note 53, at 14, 17; Royal Society of New Zealand, *supra* note 40, at 17.

Climate Change (1997), such uncertainties in emission figures for non-CO₂ greenhouse gases “have implications for the robustness of policy”.⁷⁵

The connection of reduced ruminant numbers and falling methane emissions is also problematic. It has already been noted by the MfE in 1998 that “the degree of uncertainty in estimating livestock emissions beyond 2000 is high; livestock numbers are driven by world prices, which cannot be predicted accurately”.⁷⁶ This conclusion was probably assisted by their 1997 report which noted that “the increase in cattle numbers, particularly dairy cows in the mid-1990s has partially reversed this trend [declining methane emissions in the order of 10%] so that overall methane reduction between 1990 and 1995 was 3.5%”.

The differences between the 3.5% figure (for 1995), which is exactly half what Chapman and Gray quote for 1996, is another example of the uncertainty in this area. However, it is with the long-term predictions that their statements are most contestable. For example, the recent OECD Environmental Performance Review of New Zealand came to the exact opposite conclusion of Chapman and Gray. The OECD review suggested, “Recent economic developments suggest that continued agricultural expansion is likely.”⁷⁷ Incidentally, it was also noted by the OECD that fertiliser use (which has a link to the greenhouse gas nitrous oxide) in the mid-1990s was at its highest level since 1980, and sales were exceeding the levels when fertiliser was subsidised.⁷⁸ Despite this, to quote New Zealand’s second national report under the FCCC, “As yet, few rules have been introduced to restrict fertiliser application.”⁷⁹

Such scientific and market uncertainties should lead to the question of the technological prospects of reducing methane in this area. Unfortunately, the most successful technologies in this area, such as dosing animals with anti-methane-producing compounds, is problematic in New Zealand. As such, the successes in the Northern Hemisphere may not be so easily replicated because of less intensive farming practices.⁸⁰ The Second New Zealand statement under the FCCC noted that “possible measures, such as feed additives to reduce emissions of methane from ruminants would be difficult and prohibitively expensive to implement under New Zealand’s extensive pastoral systems”. Additionally, reductions through improved agricultural productivity, such as improving the reproductive performance of animals, “are not quantifiable”.⁸¹

75 Royal Society of New Zealand, *supra* note 69, at 24.

76 MfE, *supra* note 53, at 13.

77 OECD, *Environmental Performance Reviews: New Zealand* (1996) 134.

78 *Ibid.*

79 *Second National Communication*, *supra* note 19, at 67.

80 MfE, *supra* note 53, at 21–23, 26.

81 *Second National Communication*, *supra* note 19, at 64.

Transport

Chapman and Gray suggest that I give “too positive an impression of success in other countries”⁸² through their greenhouse emission controls for vehicles. The OECD Environmental Review of New Zealand stated: “New Zealand requires no tests for vehicle exhaust emissions.”⁸³ A comparison with similar countries to New Zealand may easily make New Zealand look bad. However, I do not deny that many other OECD countries are as lax as New Zealand. Rather, I attempt to juxtapose important comparable countries and regions to New Zealand (such as the United States, the European Community, Japan and Australia)⁸⁴ which have emission regulations and, as such, have at least attempted (with mixed results) to confront this problem.

Chapman and Gray then go on to suggest that the problem in New Zealand is “principally driven by increasing vehicle numbers and trip length”.⁸⁵ This aspect of their paper I agree with, although I think that their point has been understated, and is missing emphasis. Currently, New Zealand has 69 vehicles for every 100 people. The global average is 11 vehicles per 100 people. Behind the United States, New Zealand possesses the second highest car ownership ratio in the world. The number of licensed vehicles in New Zealand has grown at more than twice the rate of human population since 1972. Moreover, the light vehicle fleet is expected to expand by a further 40% by 2021.⁸⁶ With such figures, it is not surprising that at 40% of the total CO₂ emissions of New Zealand, the transport sector is the single largest contributor.⁸⁷

The solution to this problem does not lie purely in reducing emissions through technical means, as eventually sheer numerical increases in vehicles will eclipse savings.⁸⁸ Of particular importance to this equation is the provision of public

82 Chapman & Gray, *supra* note 6, at 229.

83 OECD, *supra* note 77, at 123. New Zealand has no laws requiring vehicles to be fitted with pollution-control devices or to meet emission standards. The only laws targeting air pollution from motor vehicles are the Petroleum Products Specifications Regulations 1995, issued pursuant to the Ministry of Energy Abolition Act 1989, which ban the sale of leaded petrol, and Traffic Regulations 1976, issued pursuant to the Transport Act 1962, which makes it an offence to emit smoke from a vehicle to such an extent that it obstructs the visibility of other drivers.

84 Ministry of Transport, *Vehicle Fleet Emissions Control Strategy for Local Air Quality Management* (1997) 20–24; Ministry of Transport, *Full Report: Environmental Externalities* (1996) 119–123.

85 Chapman & Gray, *supra* note 6, at 229.

86 Ministry of Transport, *supra* note 84, at 1; *State of the Environment*, *supra* note 54, at 6:13.

87 Second National Communication, *supra* note 19, at 8; *State of the Environment*, *supra* note 54, at 5:31.

88 Thus, as the MfE noted in 1997, “It is becoming clear that behaviour change, public transport systems and strategic urban planning have as great a role to play as technical solutions”: *State of the Environment*, *supra* note 54, at 6:14.

transport. However, the government has dragged its feet on this issue, just as it has with failing to set emissions standards and withdrawing from supporting favourable fuels (such as CNG).⁸⁹ Central government funding for public transport was \$50.43 million in 1990/91. Eight years later, following some overt cuts of 40% in 1992–1996,⁹⁰ the figure has settled at \$41.87 million.⁹¹ Coincidentally, in this eight-year period the transport sector accounted for the largest portion of the growth in CO₂ emissions.⁹²

Finally, Chapman and Gray suggest that I “imply” that catalytic converters would be beneficial in reducing greenhouse emissions. They then make the questionable point that they actually increase CO₂. Had Chapman and Gray fully prepared their research, they would not have tried to wrongly speculate about what I “imply” and would have read in my book⁹³ that at no point do I make the mistake they attempt to impugn me with. My concern with catalytic converters is noted because localised air pollution⁹⁴ caused by vehicles is linked to multiple deaths resulting from over-exposure to carbon monoxide, dioxins, fine particulate matter, butadiene and benzene.⁹⁵ Catalytic converters can at least stop some of these and the failure of the government to confront this problem with vehicles is very similar to its failure to confront the CO₂ side of this equation.

Economic Instruments

In the last section of their paper Chapman and Gray attempt to deflect my suggestion that the government has gone to “extreme lengths” to avoid imposing clear price signals to support suitable choices to either slow detrimental activities, or support progressive ones with respect to global warming.

Unfortunately, Chapman and Gray have only grasped one side of the economic equation, and have assumed that a carbon tax is the focus of my concern. However, the numerous deferments by the government of a carbon tax over the last four years (and now with the promise of another “public consultation document”)⁹⁶ is only one element of the government’s attempts to avoid this issue.

89 See *Burning Issues*, supra note 4, at 102–105.

90 OECD, supra note 77, at 123. This was reduced due to the regional petrol tax.

91 Personal communication, Transfund New Zealand, 9 June 1998. The figures are also available in Transfund’s National Roding Programme Annual Reports.

92 *Second National Communication*, supra note 19, at 8; *State of the Environment*, supra note 54, at 6:31.

93 *Burning Issues*, supra note 4, at 91–106.

94 See *State of the Environment*, supra note 54, at 6:10–11.

95 Ministry of Transport, supra note 84, at 159–164.

96 Treasury, *The Design of a Possible Low-Level Carbon Charge for New Zealand* (1997); Orsman, B., “Carbon Tax Deferral Is Surrender, Govt Told”, *The New Zealand Herald*, March 13 1997; *Second National Communication*, supra note 19, at 47.

Carbon charges are only the positive side of clear price signals. Negative price signals already exist, which the government has not addressed in terms of pricing structures for the provision of electricity, energy efficiency, renewable energy and transport policy. In this regard, the OECD Environmental Review was quite explicit and is worth quoting at length. It stated:⁹⁷

The country has made relatively little use of prices, taxation or subsidies to encourage conservation and energy efficiency ... The Government has offered no significant financial inducements or incentives to invest in or consume energy produced from renewable resources ... New Zealand's low energy prices, compared to other OECD countries encourage relatively high consumption ... a further issue is the need for electricity prices to fully reflect costs, including environmental costs ... because this is not currently the case, prices are lower than they would otherwise be ...

These points are merely indicative of the generally accepted⁹⁸ principle that the polluter should pay the full cost (ie, internalise the cost) of the pollution that they produce. However, in the area of climate change, New Zealand has had difficulty with this. For example, it can be argued that the inclusion of sinks runs counter to the "polluter-pays" principle because the promotion of sinks shifts the burden of pollution control to a sector that is not the major contributor of the pollution. With such considerations in mind it will be interesting to see how the government intends to allocate the polluter-pays principle to the agricultural sector in particular, which currently contributes 58% of New Zealand's total greenhouse gas emissions (on a CO₂-equivalent basis).⁹⁹

On a national per-capita level this overall question of the polluters paying their fair share is very pertinent. This is because on an "all greenhouse gas" basis, globally New Zealand has the fourth highest per-capita emissions.¹⁰⁰ In addition to this stark fact are two pertinent considerations. First, New Zealand does not have to make the average 5% cuts in greenhouse gases that most other Annex I countries have to make following Kyoto.¹⁰¹ Secondly, with the current way the Kyoto Protocol is set up (with its allowance for sinks, a comprehensive approach and an entry point for emissions trading), it is likely that for New Zealand, not

97 OECD, *supra* note 77, at 113, 116, 122, 126–130.

98 MfE, *Environment 2010 Strategy* (1995), Principle 4.

99 MfE, *supra* note 53, at viii. The earlier Ministry report placed this figure at "approximately 60%": *Second National Communication*, *supra* note 19, at 7.

100 MfE, *supra* note 53, at 6.

101 The New Zealand target is 0% increase on the 1992 FCCC target by the end of the first commitment period (2008–2012). This compares with an average for developed countries of around –5%.

only will these “significantly reduce negative economic impacts. [They] may even create positive welfare impacts for New Zealand.”¹⁰²

Conclusion

The Hon Simon Upton was, in a sense, correct when he suggested that the Kyoto Protocol was a “successful outcome for New Zealand”.¹⁰³ This success is a direct reflection of his achievements in negotiations that were (according to him) “self-interested hard-ball from beginning to end”.¹⁰⁴ However, in terms of the much larger picture, the question of the success that New Zealand obtained may be more dubious. That is, New Zealand is a country with the fourth largest per-capita greenhouse gas emissions in the world, which may now be set to obtain a net financial benefit from the processes, which are scientifically uncertain, and make no further reductions than initially promised in 1992. Whether this is really successful given the multitude of uncertainties, quagmires and political traps it has created in the face of what may be the foremost environmental threat for humanity in the third millennia is open to question.

102 *Late Paper*, supra note 8, Annex B. Irrespective of the possible benefits, the inclusion of such approaches could reduce the costs of reducing greenhouse gases by up to 70–80%: Minister for the Environment, “Upton Announces Climate Change Position”, *Press Release*, 2 December 1997, 4; *Kyoto Outcome*, supra note 10, at 1. Previously, it was suggested that actions taken to reduce greenhouse emissions (without sinks or international emissions trading) in New Zealand could mean facing “some of the highest abatement costs within the Annex 1 Group”. This is because “We can’t cancel any subsidies for fossil fuel production because we do not have any subsidies and we don’t have inefficient coal fired power stations that we can replace with efficient gas ones: over 80% of our electricity is already generated from renewable resources”: The Hon Simon Upton, Minister for the Environment, supra note 20, at 1. Accordingly, it was suggested that a carbon tax set to achieve stabilisation at 1990 levels by 2010 for New Zealand would have to be four times higher than one in the US, and 1.5 times higher than one in Australia: *Late Paper*, supra note 8, Annex B:2. These documents were based on the Centre for International Economics, *Impacts on the New Zealand Economy of Commitments for Abatement of Carbon Dioxide Emissions* (1997) vii–viii. Certain sectors of the New Zealand economy may well bear the brunt of these adjustments, including, in particular, the coal mining, oil and gas extraction, petroleum, gas and electric utilities. On the other hand, certain industries, such as renewable energy, are likely to benefit. Furthermore, unanticipated changes in technology, consumer behaviour and new market opportunities during transition to lower levels of emissions are likely to emerge, which could reduce aggregate output losses over time: Ministry of Commerce, *Impacts on the New Zealand Economy of Commitments For Abatement of Carbon Dioxide Emissions* (27 November 1997) 12; *Late Paper*, supra note 8, at 4 and Annex B:2. The MfE (internally) even went so far as to suggest that “even if we do not achieve an outcome involving ‘sinks the way we want them’ the costs for New Zealand of achieving a stabilisation or a –5% target may not be intolerable”: MfE, *Climate Change Negotiations Paper: Comment* (24 November 1997) 2; New Zealand Institute of Economic Research, *Potential Macroeconomic Impacts of Trade in Carbon Removal: Report to the Ministry for the Environment* (1997) 2.

103 See Chapman, R., “Successful Outcome at Kyoto”, *Ministry for the Environment, Newsletter*, 8 March 1998.

104 Upton, S., “Reflections on the Kyoto Conference”, *Press Release*, 29 December 1997 1.