Burning Follies: The Creation and Failure of the New Zealand Response to Climate Change

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Within the last eight months there have been a growing number of reports, all reiterating a very similar theme - the planet could be in for a large climatic shock unless some direct action is taken. Despite the possibilities of these implications, the development of New Zealand's climate change response has tended to move between the sublime and the ridiculous. This paper offers a critical assessment of New Zealand's response to global climate change as compared with the international community's response.

I: THE SCIENTIFIC CONSENSUS ON CLIMATE CHANGE

Since the beginning of 1996 the global warming debate has been heating up. Within the last eight months there have been a growing number of reports, all reiterating a very similar theme - the planet could be in for a large climatic shock unless some direct action is taken. However, the New Zealand response to this has been nothing short of myopic.

At the end of 1995, the Intergovernmental Panel on Climate Change ("IPCC") released its fourth report.[1] The IPCC expect that due to the increasing concentrations of carbon dioxide, methane, nitrous oxide and

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1 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 1995: Impacts, Adaptations, and Mitigation* (1996); IPCC, *The Science of Climate Change: Summary for Policy Makers* (1996). Together, these two publications are known

halocarbons, that within the next 100 years these will *probably* begin to affect the climate by a process of warming. Specifically, they suggest as a "best guess" that the average temperature will be two degrees (celsius) warmer by 2100 than it is now.[2] This increase represents a warming greater than anything in the previous 10,000 years.[3] Accompanying the temperature increases will be rises in sea levels of around 50 centimetres (as a "best guess").[4]

Although these figures are small, the implications may be stupendous as climatic change is expected to occur at a rate which outpaces the speed by which certain ecosystems grow, reproduce and re-establish themselves. Accordingly, complete ecosystems may end up either migrating or collapsing in the face of temperature changes[5]. This is expected to lead not only to a reduction in global biodiversity, but also to a disruption of crop productivity (possibly more famine)[6] and the disappearance of up to one third of the

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as the "Synthesis" Report.

2 IPCC, *The Science of Climate Change*, ibid, 44-45.

3 This "10,000 year" statement originated with the so called Toronto Summit. See United Nations Environmental Program & World Meteorological Organisation, *Proceedings of the World Conference on the Changing Atmosphere: Implications For Global Security* (1988). The statement was subsequently adopted by the IPCC in the Internet version of their Synthesis Report, para 2.7.

4 IPCC, *The Science of Climate Change*, supra, note 1, at 45-47.

5 One of the more notable 1996 reports pertaining to moving climates is the second report by the UK Climate Change Impacts Review Group, *Review of the Potential Effects of Climate Change to the United Kingdom* (1996). This report suggested that within 50 years, large parts of the lower end of the UK could have the climate of the Bordeaux Region in France. The Press Release by the Department of the Environment (2 July 1996), 285, elaborates at length upon this report.

6 IPCC, *Climate Change 1995: Impacts, Adaptations, and Mitigation*, supra, note 1, at 10-12.

world's forests.[7] Aquatic and coastal ecosystems such as wetlands, salt water marshes, coral reefs and sandy beaches are also at great risk. Between one-third and one-half of existing mountain glacier mass could disappear over the next 100 years. Deserts and desertification is expected to become more extreme. There may also be an intensification upon the global hydrological cycle which may have major impacts upon regional water resources.[8] The coastal populations of the world are facing a particularly precarious future. Estimated land losses from sea level rises range from 17.5% for Bangladesh through to 80% for the Majuro Atoll in the Marshall Islands.[9]

Climate change may also have a direct impact upon human health with temperature extremes causing mortality and illness from deepening heat waves in terms of intensity and duration. Additionally, the introduction in new areas or the increase in existing areas of vector-borne diseases such as malaria, dengue and yellow fever is expected to increase.[10]

The specific impacts of climatic change upon New Zealand is still a matter of research and debate. It is generally expected that the effects of climate change will not be as severe in New Zealand as in other countries.[11] While some consequences in New Zealand may be obvious, such as a 50cm increase in water levels around New Zealand's 1,100 kilometre coast line,[12]

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7 Ibid, 6-9.

8 Ibid, 9-10.

9 Ibid, 9-10 and 13-14.

10 See World Health Organisation & United Nations Environmental Program, *Climate Change and Human Health* (1996); IPCC, *Climate Change 1995: Impacts, Adaptations, and Mitigation*, supra, note 1, at 13-14.

11 Manning, M., "Climate Change- What is Happening and Why?" in AIC Conferences, *Greenhouse Gases and Carbon Dioxide Policy in New Zealand* (Wellington, 1996), ch 13.

12 See McGlone, M., Clarkson, T., & Fitzharris, B., *Unsettled Outlook: New Zealand in a Greenhouse World* (1990) 77-86.

other effects will not be so obvious. For example, in some areas increased crop growth may occur due to the warmer temperatures, whereas in others, certain crops may no longer be feasible.[13] The kiwifruit industry situated in the Bay of Plenty may be such an exemplar. New Zealand may also expect incursions of undesirable subtropical grasses, pests and diseases.[14] It is possible that all of these effects could drastically alter New Zealand's agricultural and tourist based economy.[15]

Despite the possibilities of these implications, the development of New Zealand's climate change response has tended to move between the sublime and the ridiculous. For example, in early 1996 it was reported that the "Long range climate forecasters" in New Zealand were "optimistic" about the effects of climate change. The two principal reasons given for this were firstly that warmer temperatures could lower winter electricity demand whilst melting snow would increase hydro-lake inflows, thus enhancing electricity production. Secondly, as less mountainous countries would lose their snow, New Zealand would gain a strong tourist drawcard.[16]

II: THE INTERNATIONAL RESPONSE TO GLOBAL WARMING

As the science of climatic change has become more precise, the required reductions in emissions of the climatic gases have been pinpointed.

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13 Salinger, J., *Greenhouse New Zealand. Our Climate: Past, Present & Future* (1991) chs 6-11. See also McGlone, ibid, 86-97.

14 National Science Strategy Committee, *Report on Climate Change* (1995) 28-29, 33; Ministry for the Environment, New Zealand Climate Change Programme, *Climate Change: Impacts Upon New Zealand* (1990) 108-133.

15 National Science Strategy Committee, ibid, 26-27.

16 Gamble, W., "Long-Range Climate Forecasters Optimistic" *New Zealand Herald* (12 March 1996) 1.

Specifically, the IPCC have been telling the community of nations since 1992 that at least a 60% reduction in carbon dioxide emissions (the main greenhouse gas) is required *just to stabilise its build-up in the atmosphere.*[17] This 60% reduction yardstick, is 60% more than the wealthy countries of the international community have agreed to reduce their carbon dioxide emissions by. Rather, the international community has, to date, been guided by the 1992 Framework Convention on Climate Change[18] ("FCCC") by which the industrialised countries of the world agreed to "aim" at stabilising their carbon dioxide emissions at the level they were in 1990.[19] New Zealand signed and ratified this agreement,[20] but suggested at the time of signing that it intended to go even further by reducing their carbon dioxide emissions by 20% below their 1990 level, by the year 2000.[21]

Unfortunately, even the goal of stabilising carbon dioxide emissions at 1990 levels has proved too onerous for a number of countries, who are now on track for a "carbon-blowout". That is, their emissions, will by the year 2000 be substantially above their 1990 levels. The United States carbon dioxide emissions are already up 4.4% since 1990. Canada's have increased by 5.3% and Australia's by 4.2%.[22] These increases are dwarfed by the

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17 IPPC, *Climate Change 1994 : Radiative Forcing of Climate Change & An Evaluation of the IPCC 1992 Emission Scenario* (1995) 12-14, 19-24.

18 United Nations Framework Convention on Climate Change. UNCED. A/ AC.237 / 18 (Part II) / Add.1. (15 May. 1992).

19 Article 4 (2)(c), ibid.

20 New Zealand ratified the FCCC on 18 September 1993. It was the 34th country to do so.

21 This was accepted as a formal target in Ministry for the Environment, *Climate Change: The New Zealand Response. New Zealand's First National Communication Under the Framework Convention on Climate Change* (1994) 7.

22 See *Second Compilation & Synthesis Report of National Communications* Doc FCCC/CP/1996/12.

increases of some developing countries such as India at 24%, South Korea with 44% and China with a daunting 13%, which represents an increase that if maintained may surpass the United States as the world's number one carbon emitter within two decades.[23]

New Zealand has been among the more notable failures in being unable to reduce its carbon dioxide emissions to 1990 levels.[24] Among the other developed countries of the world, only Portugal and Finland are projected to have a higher growth rate in carbon emissions than New Zealand by the year 2000.[25]

Since 1987, New Zealand's emissions have risen from 23 million tonnes per year, to around 27.4 million in 1994.[26] These are projected to reach 31.5 million tonnes by the year 2000.[27] Thus, by the year 2000, New Zealand's gross emissions will have risen above their 1990 levels by between 22-25%. If the focus is taken from the net approach (where a total is arrived at after the gross emissions have been added or subtracted to by whatever amounts of carbon dioxide have been absorbed or released by a country's sinks - usually forests) then the increase in total net emissions is 61% higher than they were in 1990.[28] This blow-out with the net approach is due to the

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23 See Flavin, C., "Facing Upto the Risks of Climate Change" in Brown, L.R., (ed), *State of the World: 1996* (1996) 21, 29-32.

24 Working Group on Carbon Dioxide Policy, Ministry for the Environment, *Climate Change and CO2 Policy: A Durable Response* (1996) 59, 62.

25 Ministry of Foreign Affairs & Trade, *Third Meeting of the Ad-Hoc Group on the Berlin Mandate and the Second Meetings of the Subsidiary Bodies: New Zealand Delegation Brief* (1996) 2-3.

26 NZPA; "Emissions of Carbon Dioxide Rise by 7%." *New Zealand Herald* (12 January 1996).

27 Working Group on Carbon Dioxide, supra, note 24, at 59.

28 Ministry of Foreign Affairs & Trade, supra, note 25, at 2.

high rate of absorption when the counting started in 1990, as well as a failure to reach the necessary planting rates needed to contain the already sequested carbon *and* the growth in gross carbon dioxide emissions.[29]

In the light of such failures the international community reassembled in Berlin in 1995 and in Geneva in early 1996, in an attempt to establish more stringent reduction targets. At the Berlin meeting, the Alliance of Small Island States ("AOSIS") proposed a 20% immediate reduction in carbon dioxide emissions and specific directives on energy efficiency.[30] New Zealand voted *against* the adoption of these proposals.[31] Nevertheless, New Zealand did support the Berlin Mandate,[32] by which the signatories promised to commitment themselves to further specific reductions at the second conference of the parties in 1997 at Kyoto.

III: NEW ZEALAND'S NET CLIMATE CHANGE RESPONSE

Between 1994 and 1995 New Zealand's climate policy came into

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29 See Baddeley, C., "Forest Sinks: Some Methodology & Policy Issues" in AIC Conferences, supra, note 11, at ch 20, 4-8.

30 AOSIS Protocol, INC A/AC.237/L.23 (27 September 1994). Article 3 (1)(a) of the Draft Protocol suggested that each of the Annex 1 parties shall "reduce its level of anthropogenic emissions of carbon dioxide by at least 20 % by the year 2005".

31 See NZPA; "Greenhouse Gas Policy Under Fire", *New Zealand Herald* (1 April 1995) 5; NZPA, "New Zealand Supporting Island Nations", *New Zealand Herald* (6 April 1995) 9; AFP, "New Zealand Takes Lonely Stand At Climate Summit", *New Zealand Herald* (7 April 1995) 15. The specific justifications for this can be found in the Delegation document, Ministry for the Environment, *New Zealand Intervention, 1995. February 8: Agenda Item 7 B: Review of the Adequacy of the Commitments* (1995).

32 See 7 (2) *United Nations Climate Change Bulletin* (1995). The Mandate itself is found under *The Berlin Mandate: Decision.* 1/CP. 1 (1995).

focus.[33] Leading up to the 1992 FCCC, the New Zealand delegations agreed with the general necessity to reduce greenhouse emissions and followed the broad trend of international opinion.[34] In 1994 this changed as the government adopted two basic precepts for its climate change response. The first is minimal interference in the market. The second, as a follow on from this, is that if action is required, it must be done at the lowest possible economic cost.[35]

The lowest cost option for New Zealand to mitigate its carbon dioxide emissions is to plant more (pine) forests which sequest carbon from the atmosphere.[36] In theory, if more trees are planted than carbon dioxide is emitted into the atmosphere then New Zealand should be make a *net* reduction in its emissions. This is opposed to an approach where less emissions are produced at the source, through either energy efficiency or

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33 This is not to suggest that New Zealand did not have an active response to climate change before 1994. Indeed, prior to this time three important reports were issued by the New Zealand Climate Change Programme, operating through the Ministry for the Environment. However, it was not until 1994 that a specific method to reduce carbon emissions was formally introduced. See Ministry for the Environment, *Exploring the Options for Reducing Net Emissions of Carbon Dioxide: Consultation Document* (1994).

34 See Palmer, G., *Environmental Politics: A Greenprint For New Zealand* (1990) 59-75.

35 Upton, S., "Address to NZ National Committee, World Energy Council" in New Zealand National Committee of World Energy Council (ed), *Impacts of Climate Change Policy on New Zealand Incorporated* (1994) 2, 3-4. See also, Ministry for the Environment, supra, note 21, at 7.

36 Dixon, R.K., (et al), "Conservation and Sequestration of Carbon: The Potential of Forest and Agroforest Management Practices", *Global Environmental Change* (1993) 159, 168-169, 172; Chisholm, A., & Moran, A., "A Perspective on the

by reducing demand for carbon dioxide intensive processes.[37] This is known as *gross* reductions. New Zealand rejected the gross approach, and instead, in 1994 proposed that the control of carbon dioxide emissions would be achieved domestically with increased plantations making up 80% of the response, and voluntary agreements with industry and the promotion of energy efficiency making up the residual 20%.[38]

The net approach received a full ascendance with the 1995 Stratford Inquiry[39] into the proposed gas fired power station at Stratford. This Inquiry was sparked by a challenge of a consortium of "Green Groups" who argued that the proposed power station, which would increase New Zealand's gross emissions of carbon dioxide by 5%, was inconsistent with New Zealand's

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Potential Economic Impacts of Climate Change Policy in New Zealand" in New Zealand National Committee of World Energy Council (ed), ibid, 1, 7-9. The argument that the planting of carbon sinks was not a "costly option" was accepted by the Board of Inquiry, *Proposed Taranki Power Station: Air Discharge Effects* (The "Stratford Inquiry") (1995). See paragraphs 9.55, 9.57-9.62, 9.62.

37 This net approach was recognised by the INC at its first session. See Decision 1/1 which refers to "appropriate commitments ... for limiting and reducing *net* emissions of carbon dioxide and other gases" (emphasis added), *Report of the Intergovernmental Negotiating Committee For A Framework Convention on Climate Change on the Work of its First Session,* U.N. GAOR. INC/FCCC, 1st Sess. U.N. Doc. A/AC.237/6 (1991), 24.

This approach was favoured by certain countries as it took the pressure off specific gases such as carbon dioxide. This should theoretically allow countries some "breathing time" as they can concentrate on other ways to reduce greenhouse emissions. See Nitze, W.A., "A Failure of Presidential Leadership" in Mintzer, I.M., (ed), *Negotiating Climate Change: The Inside Story of the Rio Convention* (1994) 187-189.

38 Ministry for the Environment, supra, note 21, at 9-10.

39 The "Stratford Inquiry", supra, note 36.

obligation under the FCCC to stabilise their carbon emission rates at 1990 levels.[40] The Inquiry concluded that the building of the power station was in accordance with the FCCC, provided that enough trees were planted to offset the growth in emissions.[41] Accordingly, it was accepted that the net approach was supposedly consistent with the objectives of the FCCC, as the FCCC did *not* say it was not an unauthorised avenue to pursue.[42]

This idea - that the net approach is a legitimate approach to pursue - has formed the basis of New Zealand's climate policy, and was again re-emphasised with the 1996 Working Group on Carbon Dioxide.[43] These two documents have given New Zealand the mandate to push (or at least, justify) the net approach as the foremost way to reduce greenhouse emissions

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40 *Stratford Inquiry: Greenpeace and Eco Submission* (1994), in the possession of the author. For some discussions of the Stratford Inquiry as a catalyst for New Zealand's inertia over climate change responses, see Bosselmann, K., "Plants, Power and Power Plants: New Zealand's Implementation of the Climate Change Convention", (1995) 12 *Environmental and Planning Law Journal* 423-439; Taylor, P., "The Stratford Power Station Decision" (1996) 121 *Planning Quarterly* 3-5; Gillespie, A., "Climate Change and the Conflict Between International and Domestic Responses: The New Zealand Experience" in AIC Conferences, *Greenhouse Gases and CO2 Policies* (Auckland, 1996) ch 4.

41 Paragraph 12.2 (23) concluded that "Mitigation... of the adverse environmental effects of allowing the discharge of CO2 could be carried out by ongoing planting of a sufficient number of trees to act as a permanent carbon sink. The imposition of a mitigation condition to this effect would be reasonable and practicable in the circumstance.", the "Stratford Inquiry", supra, note 36.

42 Thus, "The FCCC in effect urges a net approach since it is worded in terms of both reducing the emissions and enhancing absorption", the "Stratford Inquiry", supra, note 36, at para 4.44 (i). See also paras 4.30- 4.34, 9.2, 9.14-9.21, 10.8, 12.4 (4).

43 Working Group on Carbon Dioxide; supra note 24, at 66-71.

at all the relevant international meetings.

IV: THE DIFFICULTIES OF THE NET APPROACH

Unfortunately, the adoption and advocation of the net approach has left New Zealand taking an "isolated stand"[44] at some of the international meetings pertaining to climate change, with many countries reacting with "open hostility"[45] towards the New Zealand stance. This is because it is seen as helping gridlock further attempts at successful international negotiations for reducing carbon dioxide emissions.

The net approach is troubled for three reasons. The first pertains to distinct methodological difficulties. For example, it is difficult to obtain accurate estimates of carbon sequestration rates for differing species of trees, accurate information on the type of land being planted; the effects that mass planting will have on volatile hydrocarbons and carbon monoxide; required improvements in the understanding of the carbon exchanges between soil, forest and atmosphere; information about decomposition and storage times of carbon deposited after soil erosion; and the necessity to develop sequestration models for indigenous as well as plantation forests.[46] This last consideration is of particular concern, as the net approach has, to date, only been built upon the sequestration by planted forests and has largely

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44 Supra, note 31.

45 Cabinet Committee on Enterprise, Industry & Environment, *Reviewing The Government's Climate Change Policy* (26 June 1995).

46 National Science Strategy Committee, supra, note 14, at 35-36. These problems have also been reflected on the international stage. For example, Borine and Ripert stated, "It is in fact quite impossible, in the present state of scientific knowledge, to aggregate on a common basis the figures of reductions of emissions of the different greenhouse gases.... [I]t is also difficult at this stage, to identify and to quantify all the sinks. Commitments on net emissions could therefore be considered impossible

ignored the sequestration of carbon (or emissions) by indigenous forests.[47] The distinct problem is, no-one is certain how much carbon is being held in these forests which make up around 95% of New Zealand's forest cover, or how much is being released through residual clearances by humans or by non-anthropogenic natural phenomena, from fires to opossums.[48] These losses *or* net sequestration could throw New Zealand's national net estimates of carbon dioxide by up to 300% either way.[49] It was in light of all of these considerations that the 1995 Report on Climate Change by the New Zealand National Science Strategy Committee urged caution in the government's pursuit of this net approach as "a number of research questions" have not yet been satisfactorily addressed.[50]

The second challenge to the net approach has been identified in domestic planting rates. It was estimated in 1994 that planting rates of around 100,000 extra hectares each year would be required to offset our carbon dioxide emissions.[51] This planting rate never eventuated, and instead, has settled at around 70,000 hectares per year.[52] This is insufficient to

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to implement." Borine, D., & Ripert, J., "Exercising Common But Differentiated Responsibility" in Mintzer, supra, note 37, at 77, 88. See also Brown, K., & and Adger, N., "Estimating National Greenhouse Gas Emissions Under the Climate Change Convention", *Global Environmental Change* (1993) 145-158.

47 Working Group on Carbon Dioxide, supra, note 24, at 58-59, 61.

48 Orsman, B., "Opossums New Enemy In War on Carbon Gas", *New Zealand Herald* (22 May 1996).

49 Working Group on Carbon Dioxide, supra, note 24, at 61-62.

50 National Science Strategy Committee, supra, note 14, at 35.

51 Ministry for the Environment, supra, note 21, at 40.

52 Baddeley, supra at note 29; Working Group on Carbon Dioxide, supra, note 24, at 61-62.

maintain the high levels of sequestration already achieved in 1990 (the base year of the FCCC obligations) and the gross carbon dioxide emissions which are substantially higher than predicted. The result has been a substantial abyss between what was projected and what has actually been achieved.

Failure to meet necessary planting rates domestically has been mirrored on the global stage. For example, just to keep pace with global carbon dioxide emissions (about 3.2 billion tonnes per year), tree planting an area the size of India annually would have to be implemented.[53] Clearly, despite the desirability of such a goal, the sheer magnitude of the planting required makes this option wholly unfeasible, as a *primary* method to reduce global carbon dioxide emissions. For even if all the available land speculated upon by numerous studies was reafforested (approximately 4 million square kilometres, ie. about half the size of Australia), only 10% of the estimated emissions from fossil fuel burning world wide would be sequested. This is especially the case in a number of developing countries where there are other, greater demands for the land. This is not to suggest that the planting of new forests and the preservation of existing forests does not have an important role to play in combating global warming,[54] but rather, that it must be considered, where it is applicable, as a secondary method as opposed to making directly reducing emissions at the source.

This is not the approach that New Zealand has adopted, despite the

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53 See Schneider, S.H., *Global Warming* (1989) 188-189; Adger, W.N., & Brown, K., *Land Use and the Causes of Global Warming* (1994) 189-195, 227-230.

54 Indeed, paragraph 21 of the 1989 *Noordwijk Ministerial Conference on Climate Change* calls for an additional 12 million hectares of forests to be planted by the year 2000. This document is reprinted in (1990) 5 *American University Journal of International Law and Policy* 592. For the general recognition of the importance of sinks, see Principle 2(b) and Principle 4 of the *Non-Legally Binding Authorative Statement of Principles For a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests,* UNCED. A/CONF. 151/26

fact that no other country relies on the net approach to such an extent ie. 80% of the total carbon solution, as New Zealand does. The closest is the United States, which only intends to rely upon it for 9% of their response. However, even this should be seen as a "support" for New Zealand, as a number of other industrialised countries such as Finland, Germany, Ireland, Japan, the Netherlands, Sweden, Switzerland, Britain and the European Union have all rejected the net approach and have opted for the gross approach.[55] Their reasons for the rejection of the net approach range from the inherent inequities of trying to hoist an approach which only a few countries can geographically and demographically adopt, through to realisations that sequestering carbon only postpones the inevitable, as the carbon that is stored must eventually be released anyway.[56]

V: INTERNATIONAL EQUITY AND PER-CAPITA EMISSIONS OF INDIVIDUAL GASES

The final problem with the net approach develops when it is taken to the international negotiating table, where since the outset of climate negotiations it has been consistently rejected by a number of already heavily forested countries, such as Malaysia and Brazil.[57] These countries fear that the international community may try to tell them not to destroy their terrestrial forests (after the rich countries have historically destroyed theirs) because they are important carbon sinks within the global ecosystem. These

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(Vol.III) (14 August 1992).

55 See International Energy Agency / OECD; *Climate Change Initiatives: 1994 Update. OECD Countries* (1995) 19-23.

56 See National Academy of Sciences, *Policy Implications of Greenhouse Warming: Mitigation, Adoption and the Science Basis* (1992) 76-77.

57 See Bodansky, D., "The United Nations Framework Convention on Climate Change: A Commentary" (1993) 18 *Yale Journal of International Law* 451, 481.

countries wish to pursue the path of development which may include the "utilisation" of their forests.[58] Accordingly, they have fought to keep the debate fixed squarely on gross and not net emissions.

The international focus and the net approach also leads to some distinct equity issues. For example, the question must be asked, is it fair that a population of 3.5 million people produce more carbon than much smaller, yet vastly more populated countries than New Zealand, and then claim that they are doing their bit by planting trees? The answer, in terms of international equity must be no, as the concern is not just about how much these wealthy 3.5 million people emit, but how disproportionate on a per-capita basis, as opposed to a sovereign basis.[59] Thus, the fact that New Zealand only produces 0.2% of the global greenhouse emissions[60] gets subsumed beneath the greater equity consideration that although New Zealand's per-capita carbon dioxide emissions are broadly consistent with other OECD countries,[61] with an average (for New Zealand) of 8.12 tonnes of carbon dioxide emission per person per year, this is still radically ahead of the global average of 2.59 tonnes per person.[62]

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58 For an examination of this drive, see Gillespie, A., "The Malaysian Agenda and Influence on the Tropical Deforestation Debate" (1996) 1 *Asia Pacific Journal of Environmental Law*.

59 See Bhaskar, V., "Distributive Justice and the Case of Global Warming" in Bhaskar, V., & Glyn, A., (eds) *The North, The South and the Environment: Ecological Constraints and the Global Economy* (1995) 102, 103, 105, 115-116; Dasgupta, C., "The Climate Change Negotiations" in Mintzer, supra, note 37, at 129, 133-136; Rahman, A., "A View From the Ground Up" also in Mintzer, at 239, 263.

60 Energy Foundation of New Zealand, *Global Warming: An Alternative Perspective* (1993) 20.

61 International Energy Agency, supra, note 55, at 19-26.

62 World Resources Institute, United Nations Environmental Programme, *World Resources 1994-1995: A Guide to the Global Environment* (1994) 201-203.

Aside from the current differences in emission rates, there is also the historical differences to consider.[63] In this regard, New Zealand is again inequitably exposed through historical greenhouse emissions[64] from its deforestation, industrialisation and agricultural industry.[65] Indeed, the current emissions total which is extrapolated from the 1990 base year of the FCCC, only reflects a "snap-shot" of any given year, as opposed to say a 150 year period.

The net approach tries to hide both of these aspects of equity. While the developing countries are trying to bring them out into the open as the

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63 The importance of historical contributions is recognised in paragraph 3 of the Preamble which states "that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions from developing countries are still relatively low and that the share of global emissions originating in developing countries will grow to meet their social and development needs". Additionally, paragraph 6 of the Preamble identifies "the differentiated responsibilities and respective capabilities" of the parties. This differentiation of response measures is operationalised in Article 4, which distinguishes between the commitments of developed and developing countries. FCCC; supra, note 18.

64 This occurs as greenhouse gases, such as carbon dioxide have lifespans that last up to 200 years. See IPCC, supra, note 17, at 32-34. Accordingly, the gases that New Zealand released over this time period, may still be having an effect upon the climatic system.

65 New Zealand Climate Change Programme, Ministry for the Environment, *Responding to Climate Change: A Discussion of Options for New Zealand* (1990) 21. Thus, as Ford-Robertson, J.B., noted, "[t]rees planted now, even if they sequestrate CO2 only serve to credit the historical carbon debt that New Zealand has incurred due to earlier deforestation and consequent release of carbon to the atmosphere", *The Carbon Balance of Plantation Forestry in New Zealand. A Report for Greenpeace New Zealand* (1993) 23.

foundation for a fair international solution to the problem of climatic change.

As disproportionate as New Zealand's carbon dioxide emissions are within a global per-capita setting, they are much better than their methane emissions, which on a per-capita basis, are 9 times above the global average.[66] This figure is primarily because of New Zealand's relatively small human population as opposed to their vast number of ruminants,[67] which account for around 71% of New Zealand total methane emissions of around 2.2 million tonnes per year.[68] Although this figure is substantially less than New Zealand's carbon dioxide emissions in weight terms, it is, conversely, New Zealand's foremost greenhouse gas due to the greater global warming potential[69] of methane which has a much greater heat trapping strength than carbon dioxide.[70] The result of this is that *methane, not carbon dioxide, is currently*[71] *New Zealand's primary greenhouse gas.*

Thankfully for New Zealand, the international focus is currently only upon carbon dioxide. However, if the global community does decide to focus upon other individual greenhouse gases, such as methane, then New Zealand could be left "very exposed".[72] Accordingly, New Zealand has been arguing that the international attention should be upon a *comprehensive approach* whereby all the greenhouse gases are viewed within a cumulative

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66 Ulyatt, M., "Is Emission Control Technology Advanced Enough to Control or Monitor Emissions Other Than Carbon Dioxide?" in AIC conferences, supra, note 40, at ch 18, 2.

67 Ibid.

68 Ibid.

69 New Zealand Climate Change Programme, supra, note 65, at 14.

70 IPCC, supra, note 17, at 32-34.

71 This will change over a very long period of time, when carbon dioxide is expected to eclipse methane. See New Zealand Climate Change Programme, supra, note 65, at 14.

72 National Science Strategy Committee, supra, note 14, at 35.

index and then placed within a single metric for each country.[73] That is, all the greenhouse gases are added together and one singular total is arrived at, for which it is then up to the requisite country to reduce. This is a particularly attractive option for New Zealand[74] as it allows them to hide their disproportionate methane emissions behind their other greenhouse emissions (ie. carbon dioxide), which they can try to reduce cumulatively, without having to directly address the foremost source of the methane problem - agriculture.

Again, this comprehensive approach is decidedly unattractive to the developing countries.[75] This is because a tonne of greenhouse gas from a rich country is not necessarily the same as a tonne of greenhouse gas from a poor country. For example, whereas carbon dioxide may come from cars in Australia, correspondingly, in Vietnam it might be in the form of methane from a paddy field of rice. Clearly, one is a luxury emission whereas the other is what is classified as a survival emission. To argue for a comprehensive approach to redress climatic change ignores these very subtle details which could cause, yet again, another gridlock in the search for an appropriate response.

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73 This approach originated with the World Research Institute, *Greenhouse Warming: Negotiating A Global Regime* (1991). See also World Resources Institute, *World Resources 1990-1991* (1990) 14-18. See also Hammond, A.L., (et al), "Calculating National Accountability for Climate Change" (1991) 33(1) *Environment* 11-35.

74 Ministry of Foreign Affairs & Trade, supra, note 25, at paras 15 and 16. See also Taylor, D., "New Zealand and the Climate Change Convention: Where to Now?" in New Zealand National Committee of the World Energy Council, *New Zealand and the Climate Change Convention: Where to Now* (1995).

75 See McCully, P., "Discord in the Greenhouse: How the WRI is Attempting to Shift the Blame for Global Warming" (1991) 21 *Ecologist* 213; Redclift, M., "Throwing Stones in the Greenhouse" (June 1992) *Global Environmental Change* 90-92.

VI: ADVANCED MYOPIA IN THE CLIMATE CHANGE RESPONSE

New Zealand's climate policy is currently stuck between a rock and a rising sea. It is desperately trying to keep the international community from creating an individual focus upon methane emissions, whilst simultaneously trying to get them to focus upon a dysfunctional net approach with carbon dioxide which few countries in either the developed or developing countries want. Despite the difficulties of these approaches and the troubles that this has engendered on the international stage, New Zealand has steadfastly refused to adopt a more direct approach in terms of gross reductions. This is despite obvious anomalies in current approaches. There are two particular examples of this.

1. Transport

The transport sector in New Zealand is responsible for around 40% of its total carbon dioxide emissions[76] and was largely responsible for the higher than expected gross carbon dioxide emissions revealed in 1996.[77] This growth, in part, reflects the additional 100,000 cars[78] on the New

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76 Ministry for the Environment, supra at note 21, places the figure at 34.2%, however, when the industrial processes of creating the fuel are added, this rises to around 40%. See the Working Group on Carbon Dioxide; supra, note 24, at 42. For a detailed account of all of the greenhouse gases caused by New Zealand's transport infrastructure, see Ministry of Transport, *Greenhouse Gas Emissions From New Zealand Transport* (1995). This report puts the transportation contribution, when including the fuel creation process, at 45%.

77 Indeed, 77% of the growth of this figure was put down to increases in emissions from domestic transport. See Working Group on Carbon Dioxide, supra, note 21, at 53.

78 Statistics New Zealand, *The New Zealand Official Yearbook: 1996* (1996).

Zealand roads since 1992, as well as increases in road commercial transportation, as opposed to less greenhouse gas intensive mass transportation systems.[79] Despite this exponential growth, New Zealand is one of the few OECD countries which does not have emission controls for cars relating to greenhouse emissions, nor does it require either existing or new vehicles to have catalytic converters.[80] This problem is furthered by the aging (and overall inefficiency) of New Zealand's vehicle fleet.[81] Finally, despite leading the international community in the support of alternative (and less greenhouse inducing) fuels such as Compressed Natural Gas in the 1980s, the government has now fully stepped out of active support for this.[82]

2. Energy Efficiency

New Zealand is notoriously inefficient in its energy production, with its total primary energy supply, as a proportion of GDP being substantially higher than the OECD average.[83] This is hardly surprising, given the fact that energy intensity, as per total primary energy requirement for OECD

Additionally, New Zealand has the second highest car ownership rate, on a per-capita basis in the world, with one car for every two people. The highest is the USA, with one car for every 1.7 persons. See Redshaw, D., & Dawber, K., *Sustainable Energy: Options For New Zealand* (1996) 87.

79 See Energy Efficiency & Conservation Authority, "Transport Sector Energy Use: Highlights" (1995) 2 *Energy Wise Monitoring Quarterly* 1-2.

80 Ministry of Transport, supra, note 76, at 18.

81 Ibid, 19.

82 NZPA, "The Decline of Compressed Natural Gas As A Transportation Fuel", *New Zealand Herald* (13 March 1996).

83 Parliamentary Commissioner for the Environment, *Report to the House of Representatives: Sustainable Energy Management in New Zealand: Improvements*

countries is getting less (that is, other OECD countries are getting *more* results for their energy expenditure) whereas New Zealand's is increasing (ie. New Zealand's are getting *less*).[84] In this area, the New Zealand government has restricted its intervention in the market place to primarily, one of being an information provider of the benefits of energy efficiency and researching its possible applications.[85] That is, it will rarely directly subsidise the cost of energy efficiency to make it more attractive to the consumer.[86] The same logic applies for new forms of renewable energy in

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Required in Government Policy (1992) 4. Between 1979 and 1990 New Zealand's energy intensity increased by 32.8%, at an annual rate of increase of 2.4%. From 1990 to 1993 energy intensity grew at a rate of 1.7% per year. Between 1993 and 1994, consumer energy intensity fell by 2.91%. This was the first reversal in energy intensity since 1979. See Energy Efficiency & Conservation Authority, *1994/95 Annual Report* (1996) 17.

84 Ibid, 6. For an attempt to reject the conclusion that New Zealand is inefficient in its energy production, compared to other OECD countries, see Energy Efficiency & Conservation Authority, *1993/94 Annual Report and 1994/95 Business Plan* (1995) 12-13.

85 Energy Efficiency & Conservation Authority, ibid, 7, 20-24. Indeed, as the *1994/95 Annual Report* emphasised, "[a]bove all, the Authority is a facilitator", supra, note 83, at 2. The only dictate to facilitate energy efficiency is in the 1992 *Building Regulations*, Clause H1. However, this clause says little more than the fact that energy efficiency should be encouraged, without laying down any specifics of how this is to be done.

86 This is not to suggest that the EECA does not help with certain grants. Indeed, in the period of 1994-1995, $2.9 million was advanced to public sector bodies for improved energy efficiency. However, given the vast market for energy efficiency in New Zealand (See Ministry of Commerce, *Renewable Energy Opportunities in New Zealand* (1993)), this amount and the direction of its application (ie., only certain public bodies) is minuscule. This is especially so when compared with the

New Zealand, where despite growing evidence that solar and wind power could effectively make huge reductions in New Zealand's carbon dioxide emissions,[87] is not *directly* encouraged.

VII: THE CORE PROBLEM

Despite the overt benefits of increased energy efficiencies and new forms of minimal greenhouse gas producing renewable technologies, these options remain fundamentally restrained by an overall pricing system which makes nearly all forms of New Zealand's energy comparatively cheap.[88] Accordingly, there is little economic incentive to reduce or conserve.

This has meant that the requirement that greenhouse producing sources and gases must be *priced progressively, so as to internalise the environmental costs*[89] of these choices, and therefore move towards the social goal of reducing such emissions has *not* been adopted. The New Zealand

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trends in other countries which are actively promoting alternative forms of renewable energy and increased energy efficiencies. See Flavin, C., "Harnessing the Sun and the Wind" in Brown, L.R., (ed), *State of the World: 1995* (1995) 58-76.

87 Ministry of Commerce, ibid.

88 See Ministry of Commerce, *Energy Data File: 1996* (1996).

89 World Commission on Environment and Development, *Our Common Future* (1987), 168-169, 196, 198, and 201; Williamson, A., "Technology and Market Issues" in *Sustainable Energy For New Zealand: How Do We Make It Happen?* (1994) 37, 38; Bertram, G., "Economics and Finance Issues" in the same volume, at 49, 52-55; Peet, J., (et al), "Climate Change and Energy: Challenge and Choice" in Ministry for the Environment, *Climate Change: The New Zealand Response: A Workshop* (1988) 157, 161; The Parliamentary Commissioner for the Environment, supra, note 83, was very direct on this point, at 8, 23-26, 41, 44. The same conclusions were recognised by the "Stratford Inquiry", supra, note 36, at paras 8.63, 8.64, 8.68, 8.74-8.76, 8.81-8.83, 8.85-8.87, 8.91, 12.2 (17).

government has continually baulked at such a solution as it contains a core problem - *that the market must be controlled.* This is not a pleasant option for a government trying to make a deregulated economy in multiple sectors look attractive. Any suggestions of imposing extra costs or burdens upon free markets from commercial road transportation through to electricity generation are overtly unpopular, and the government has gone to extreme lengths to avoid them.

However, if New Zealand intends to reduce carbon dioxide emissions then it is necessary to either increase the price of the processes which produce the worst carbon dioxide emissions, or subsidise the cost of the alternatives which do not produce or reduce these emissions. It is this drive to create incentives for energy efficiency and renewable energies, and disincentives for inefficient energy productions and wasteful processes (from heavy taxes on gasoline and automobiles, as opposed to real incentives for consumer-friendly public transport) which lie at the heart of any serious attempt to combat climatic change.

VIII: CONCLUSION: HALF WAY TOWARDS A SOLUTION

In a very broad nutshell, this was also the conclusion of the 1996 Working Group on Carbon Dioxide, which realised, that without some fundamental changes in the way the carbon dioxide emission market is structured, New Zealand will not fulfil its goal of reducing its carbon dioxide emissions to their 1990 level by the year 2000. The problem with the Working Group's conclusion was that they endorsed the net approach, which if invoked, basically halves any necessary costs imposed upon carbon.[90]

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90 This is because only a lesser amount of reductions need to be contemplated as a large part of the solution is being met through sequestration. If sequestration is not considered as part of the reduction process, then higher costs must be imposed to meet the requisite levels for reductions.

Thus, while they may have realised that New Zealand needs to alter the market to help redirect their carbon dioxide emissions, they failed to see that using the net approach as the foundation for a reorientated pricing structure for carbon dioxide emissions, while perhaps good for New Zealand, is not an appropriate method to take to the international negotiating table.